

5.1 NOISE

This section presents the aircraft noise exposure to surrounding communities resulting from implementation of the Proposed Action alternatives as compared to the No Action Alternative. The impact of airport-related noise levels upon the surrounding area is presented in terms of housing units, population, and noise-sensitive land uses within the noise contours. The existing land use and zoning surrounding Port Columbus International Airport (CMH or Airport) is described in Chapter Four, *Affected Environment*. The methodologies used to develop the Geographic Information System (GIS) land use database, the estimated population, and classification of housing units and other noise-sensitive land uses are provided in Appendix F, *Geographic Information System Database Development and Land Use Methodology*. A detailed description of the methodology used to prepare the Day-Night Average Sound Level (DNL) noise contours using the Integrated Noise Model (INM), Version 6.2a, is provided in Appendix D, *Noise*.

Based on Federal Aviation Administration (FAA) standards, aircraft noise impacts are analyzed for areas located within the 65+ DNL noise contour compared to Alternative A the No Action Alternative. The No Action Alternative noise contour provides a baseline for noise impact analysis in this Environmental Impact Statement (EIS). Within the 65+ DNL noise contour, the analysis identifies noise-sensitive land uses such as churches, schools, libraries, hospitals, and nursing homes. An increase in the noise level of DNL 1.5 decibels (dB) or more for a noise-sensitive land use located within the 65+ DNL noise contour is the threshold FAA uses for determining significant noise impacts.

The following alternatives are analyzed for potential noise impacts for 2012 and 2018 conditions:

- Alternative A: No Action;
- Alternative C2a: Relocate Runway 10R/28L 800 feet to the South – Noise Abatement Scenario A;
- Alternative C2b: Relocate Runway 10R/28L 800 feet to the South – Noise Abatement Scenario B;
- Alternative C3a: Relocate Runway 10R/28L 702 feet to the South – Noise Abatement Scenario A; and
- Alternative C3b: Relocate Runway 10R/28L 702 feet to the South – Noise Abatement Scenario B (Sponsor's Proposed Project).

5.1.1 NOISE ANALYSIS AND IMPACT ASSESSMENT – 2012 CONDITIONS

This section provides a summary of the noise analysis of the 2012 conditions for each alternative. An analysis of the 2012 conditions provides potential impacts during the first full year of operation of the runway relocation alternatives.

The 2012 Alternative A will be compared to each of the 2012 runway relocation alternatives, including the Sponsor's Proposed Project (Alternative C3b). More detailed descriptions of the operational characteristics of each alternative are provided later in this section.

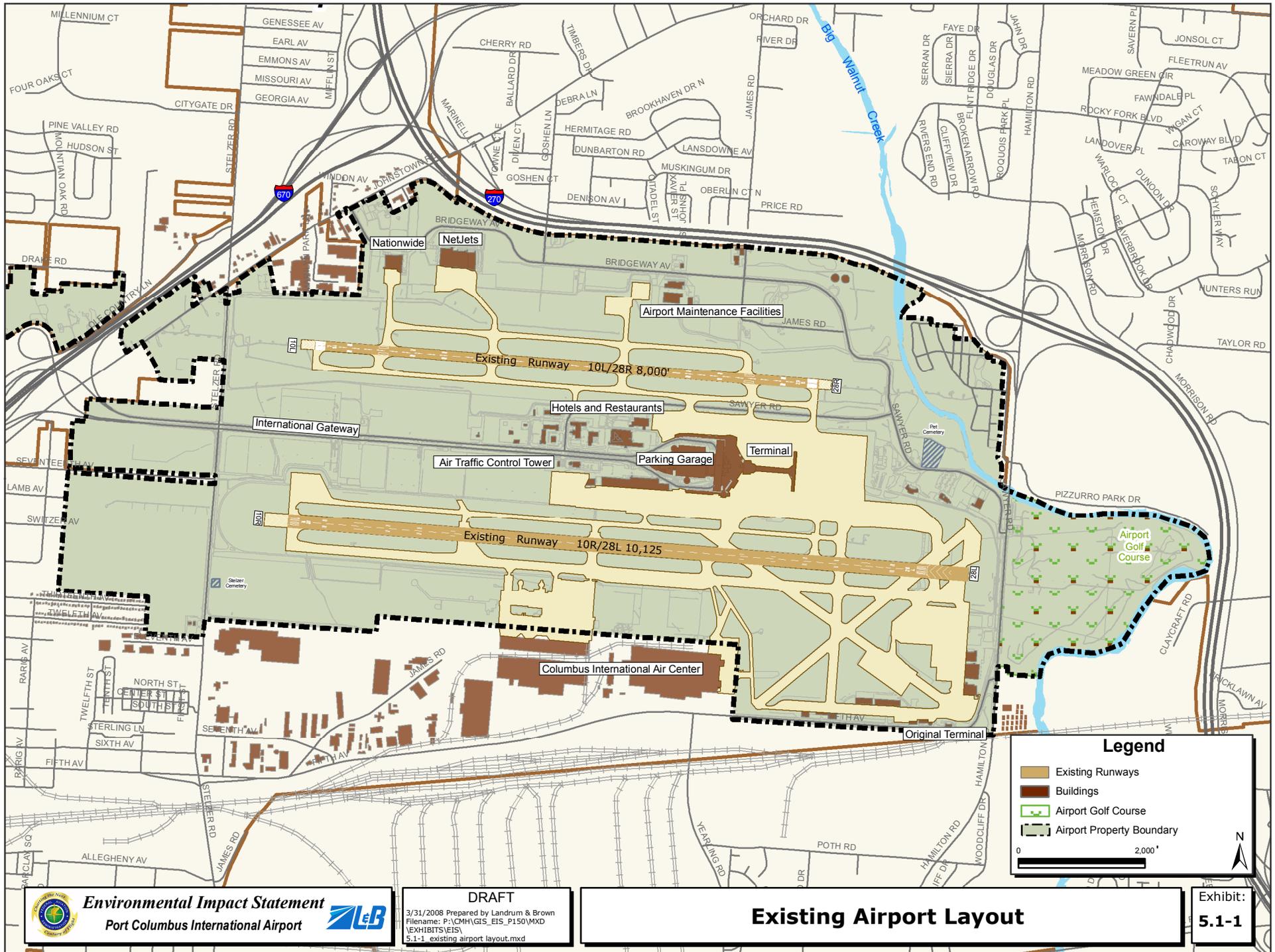
5.1.1.1 2012 Alternative A: No Action

This section provides a summary of the INM input data, the resulting noise exposure pattern, and the disclosure of the potential noise impacts resulting from the operation of the Airport under Alternative A in 2012. The noise exposure and impact assessment prepared for the 2012 Alternative A is the baseline against which all other 2012 alternatives are evaluated.

Runway Definition: CMH has two east/west parallel runways (10L/28R and 10R/28L) spaced 2,800 feet apart. Runway 10R/28L is the longest runway on the airfield at 10,125 feet in length and 150 feet wide. Runway 10L/28R is 8,000 feet long and 150 feet wide. All existing runway ends are equipped with a CAT I Instrument Landing System (ILS). **Exhibit 5.1-1** graphically depicts the existing Airport layout.

Activity Levels and Fleet Mix: **Table 5.1-1** and **Table 5.1-2** provide the operating levels and fleet mix for the 2012 Alternative A. The 2012 aircraft operations are based on the forecast prepared for the 2007 Part 150 Noise Compatibility Study Update¹ (2007 Part 150 Study) and this EIS. The forecast was approved on January 9, 2007 and is included in Appendix C, *Aviation Activity Forecast*. The forecast is based on aviation industry trends and specific airline activity at CMH. The 2012 Alternative A includes 241,600 annual aircraft operations or 662 average-annual day operations, an increase of 22.6 percent from the Existing (2006) Baseline operating levels. The forecast shows a projected increase in the percentage of commuter jet aircraft because airlines are expected to continue the trend of replacing large jets with commuter jets. The percentage of commuter jets in the fleet mix increases from 42 percent in the Existing (2006) Baseline to 51 percent in the 2012 Alternative A. For large jets, there is an overall increase in total numbers, but the percentage decreases from 21 percent in the Existing (2006) Baseline to 19 percent in the 2012 Alternative A. Embraer 145s, Embraer 170s, and Canadair Regional Jets are expected to continue to be the most common aircraft at CMH.

¹ The Final Part 150 Study Update for Port Columbus International Airport was submitted to the FAA for approval in November 2007. The FAA accepted the NEMs on December 5, 2007. The FAA anticipates issuing a Record of Approval on the NCP by June 1, 2008.



Environmental Impact Statement
Port Columbus International Airport



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Existing Airport Layout

Exhibit:
5.1-1

**Table 5.1-1
AVERAGE DAY OPERATIONS – 2012 ALTERNATIVE A
Port Columbus International Airport**

Aircraft Category	Arrivals		Departures		Total		Grand Total	Percent of Total
	Day	Night	Day	Night	Day	Night		
Large Jet	49	15	55	9	104	24	128	19%
Commuter Jet	144	26	141	29	285	55	340	51%
Commuter Prop	5	2	5	2	10	4	14	2%
General Aviation Jet	39	6	39	6	78	12	90	14%
General Aviation Prop	41	4	41	4	82	8	90	14%
Total	278	53	281	50	559	103	662	100%

Day: 7:00 a.m. to 9:59 p.m.

Night: 10:00 p.m. to 6:59 a.m.

Source: ATCT records, Official Airline Guide (OAG), and Landing Fee Reports, Landrum & Brown, 2007.

**Table 5.1-2
AVERAGE DAY OPERATIONS BY AIRCRAFT TYPE –
2012 ALTERNATIVE A
Port Columbus International Airport**

Aircraft Type	INM Code	Arrivals		Departures		Total	
		Day	Night	Day	Night	Day	Night
Large Jet							
Boeing 737-300	737300	11	4	12	3	23	7
Boeing 737-300	7373B2	3	0	3	0	6	0
Boeing 737-400	737400	4	1	5	0	9	1
Boeing 737-500	737500	3	1	3	1	6	2
Boeing 737-700	737700	14	3	14	3	28	6
Boeing 737-800	737800	5	1	6	0	11	1
Boeing 757-300	757300	1	0	1	0	2	0
Airbus 320	A320	0	1	1	0	1	1
Airbus 320	A32023	0	1	1	0	1	1
McDonnell-Douglas DC-9	DC93LW	5	1	5	1	10	2
Military Tanker	KC135R	1	0	1	0	2	0
McDonnell-Douglas MD-83	MD83	2	2	3	1	5	3
Subtotal		49	15	55	9	104	24

Table 5.1-2, *Continued*
AVERAGE DAY OPERATIONS BY AIRCRAFT TYPE – 2012 ALTERNATIVE A
Port Columbus International Airport

Aircraft Type	INM Code	Arrivals		Departures		Total	
		Day	Night	Day	Night	Day	Night
Commuter Jet							
BAe Avro RJ-85	BAE146	1	0	1	0	2	0
Dessault Falcon 2000	CL600	3	0	3	0	6	0
Canadair Regional Jet / Embraer ERJ-170 / 190	CL601	43	4	42	5	85	9
Embraer 135 / 145	EMB145	6	0	4	2	10	2
Embraer 145	EMB14L	62	17	62	17	124	34
Commuter Jet	GIV	3	0	2	1	5	1
Commuter Jet	LEAR25	4	2	6	0	10	2
Cessna Citation / BAE125 Hawker	LEAR35	10	1	10	1	20	2
Cessna 560	MU3005	12	2	11	3	23	5
Subtotal		144	26	141	29	285	55
Commuter Prop							
Beech 1900D	DHC6	2	1	2	1	4	2
Bombardier Dash-8 Series	DHC8	1	1	1	1	2	2
Commuter Turbo Prop	HS748A	2	0	2	0	4	0
Subtotal		5	2	5	2	10	4
General Aviation Jet							
Business Jet	CIT3	3	0	3	0	6	0
Business Jet	CL600	5	2	5	2	10	4
Business Jet	CNA500	1	1	2	0	3	1
Business Jet	FAL20	2	0	2	0	4	0
Business Jet	GIIB	2	0	2	0	4	0
Business Jet	GIV	3	0	2	1	5	1
Business Jet	LEAR25	10	0	9	1	19	1
Business Jet	LEAR35	6	3	7	2	13	5
Business Jet	MU3001	7	0	7	0	14	0
Subtotal		39	6	39	6	78	12
General Aviation Prop							
Twin-Engine Prop	BEC58P	11	2	11	2	22	4
Twin-Engine Turbo Prop	CNA441	3	0	3	0	6	0
Single-Engine Prop	GASEPF	15	2	15	2	30	4
Single-Engine Prop	GASEPV	9	0	9	0	18	0
Single-Engine Prop	PA28	2	0	2	0	4	0
Twin-Engine Prop	PA31	1	0	1	0	2	0
Subtotal		41	4	41	4	82	8
Grand Total		278	53	281	50	559	103

Day: 7:00 a.m. to 9:59 p.m.

Night: 10:00 p.m. to 6:59 a.m.

Source: Landing Fee Reports, ATCT records, ANOMS data, Landrum & Brown, 2007.

Runway End Utilization: Average-annual runway end utilization for the 2012 Alternative A was derived from analysis of the CMH Airport Noise and Operations Monitoring System (ANOMS) data from 2005 through 2007 with modifications to account for operational conditions expected in 2012.

It was observed that during the Day (7:00 a.m. - 9:59 p.m.), the Airport is operated in one of two configurations — west flow (approximately 75 percent of the time) or east flow (approximately 25 percent of the time). West flow is the more dominant flow due to the prevailing southwest winds. This ratio of east-west flow would be expected to continue under the 2012 Alternative A. However, by not reconstructing the south runway (Runway 10R/28L), it is expected that increasing periodic closures for maintenance would be required, thus necessitating more usage of the north runway than was seen in the Existing (2006) Baseline. In general, it was assumed that the north runway would experience six percent additional use due to the increased periodic closures. The runway use modeled for the 2012 Alternative A is shown in **Table 5.1-3**

**Table 5.1-3
RUNWAY END UTILIZATION – 2012 ALTERNATIVE A
Port Columbus International Airport**

Day Arrivals				
Aircraft Category	10L	10R	28L	28R
Large Jet	11.4	13.6	44.9	30.1
Commuter Jet	18.8	4.3	19.4	57.5
Commuter Prop	15.8	8.3	27.5	48.4
General Aviation Jet	8.0	14.5	53.8	23.7
General Aviation Prop	8.7	14.6	51.3	25.4
Night Arrivals				
Aircraft Category	10L	10R	28L	28R
Large Jet	13.2	37.3	35.5	14.0
Commuter Jet	27.8	6.6	17.2	48.4
Commuter Prop	17.6	25.0	30.2	27.2
General Aviation Jet	9.2	22.6	46.2	22.0
General Aviation Prop	15.0	34.1	28.9	22.0
Day Departures				
Aircraft Category	10L	10R	28L	28R
Large Jet	8.5	13.2	50.1	28.2
Commuter Jet	16.5	5.4	25.6	52.5
Commuter Prop	15.6	8.7	30.8	44.9
General Aviation Jet	7.4	13.8	56.1	22.7
General Aviation Prop	8.9	14.6	51.5	25.0
Night Departures				
Aircraft Category	10L	10R	28L	28R
Large Jet	7.6	10.3	52.3	29.8
Commuter Jet	12.5	8.4	18.3	60.8
Commuter Prop	7.6	17.6	40.1	34.7
General Aviation Jet	7.3	16.8	54.7	21.2
General Aviation Prop	7.3	20.3	43.0	29.4

Day: 7:00 a.m. – 9:59 p.m.

Night: 10:00 p.m. – 6:59 a.m.

Source: 2005, 2006, 2007 ANOMS data, Landrum & Brown, 2007.

Flight Tracks: A flight track is the path over the ground as an aircraft flies to or from the Airport. ANOMS radar data was gathered for the period from May 2005 through April 2006 and analyzed to verify the location, density, and width of existing flight corridors. Consolidated flight tracks were developed from this radar data and used in the INM to model the flight corridors present around the Airport.

There are two components to flight tracks used for noise modeling: track definition and percentage of use. Exhibits showing the individual flight tracks modeled for the 2012 alternatives and the corresponding tables providing the proportion of aircraft

operations assigned to each of the flight tracks are included in Appendix D. Flight corridors at CMH are a function of the standard departure procedures, which assign jet aircraft to fly the runway heading until reaching five miles or 3,500 feet mean sea level (MSL). The use of each flight track is a function of runway use and the destination or origin of each aircraft.

Aircraft Weight and Trip Length: Aircraft weight during departure is a factor in the dispersion of noise because it impacts the rate at which an aircraft is able to climb. Generally, heavier aircraft have a slower rate of climb and a wider dispersion of noise along their flight routes. Where specific aircraft weights are unknown, the INM uses the distance flown to the first stop as a surrogate for the weight, by assuming that the weight has a direct relationship with the fuel load necessary to reach the first destination. The INM groups trip lengths into seven stage categories and assigns standard aircraft weights to each stage category. These categories are:

<u>Stage Category</u>	<u>Stage Length</u>
1	0-500 nautical miles
2	500-1000 nautical miles
3	1000-1500 nautical miles
4	1500-2500 nautical miles
5	2500-3500 nautical miles
6	3500-4500 nautical miles
7	4500+ nautical miles

The trip lengths flown from CMH are based on scheduled operations for the baseline period. **Table 5.1-4** indicates the proportion of the operations that fell within each of the seven stage length categories for the 2012 Alternative A operating levels. This table shows that 53 percent of all large jet departures and 84 percent of all commuter jet departures operated to destinations with a stage length of one.

**Table 5.1-4
DEPARTURE TRIP LENGTH DISTRIBUTION –
2012 ALTERNATIVE A
Port Columbus International Airport**

Stage Length	Large Jet	Commuter Jet	Commuter Prop	General Aviation Jet	General Aviation Prop
1	53%	84%	100%	100%	100%
2	20%	16%	0%	0%	0%
3	13%	0%	0%	0%	0%
4	14%	0%	0%	0%	0%
5	0%	0%	0%	0%	0%
6	0%	0%	0%	0%	0%
7	0%	0%	0%	0%	0%

Source: Landrum & Brown, 2007.

Results from the correlation of noise levels and altitude distances from the Noise Measurement Program conducted in June 2006 for the 2007 Part 150 Study Update² found that in most cases the standard approach to assigning aircraft weights adequately represents the activity at CMH. However, during aircraft monitoring sessions it was noted that Boeing 737-300, Airbus 320, and McDonnell Douglas MD-80 Series aircraft were consistently lower (and presumably heavier) than their distance-based stage length would define them to be. Therefore, a higher stage length was assigned when modeling these aircraft to more accurately reflect their measured noise levels and departure profiles. A complete discussion of the aircraft monitoring results is included in Appendix D.

Ground Run-up Noise: Engine run-up locations and times were obtained from the Columbus Regional Airport Authority (CRAA) and modeled in the INM. At CMH, engine run-ups are primarily performed on regional jet, general aviation jet, and narrowbody aircraft. These run-ups occur at the three locations described below and graphically depicted on **Exhibit 5.1-2, Ground Run-up Locations**. Nearly all engine run-ups occur during the Night (10:00 p.m. - 6:59 a.m.). **Table 5.1-5** shows the number, types, and the duration of engine run-ups that were modeled for the 2012 Alternative A.

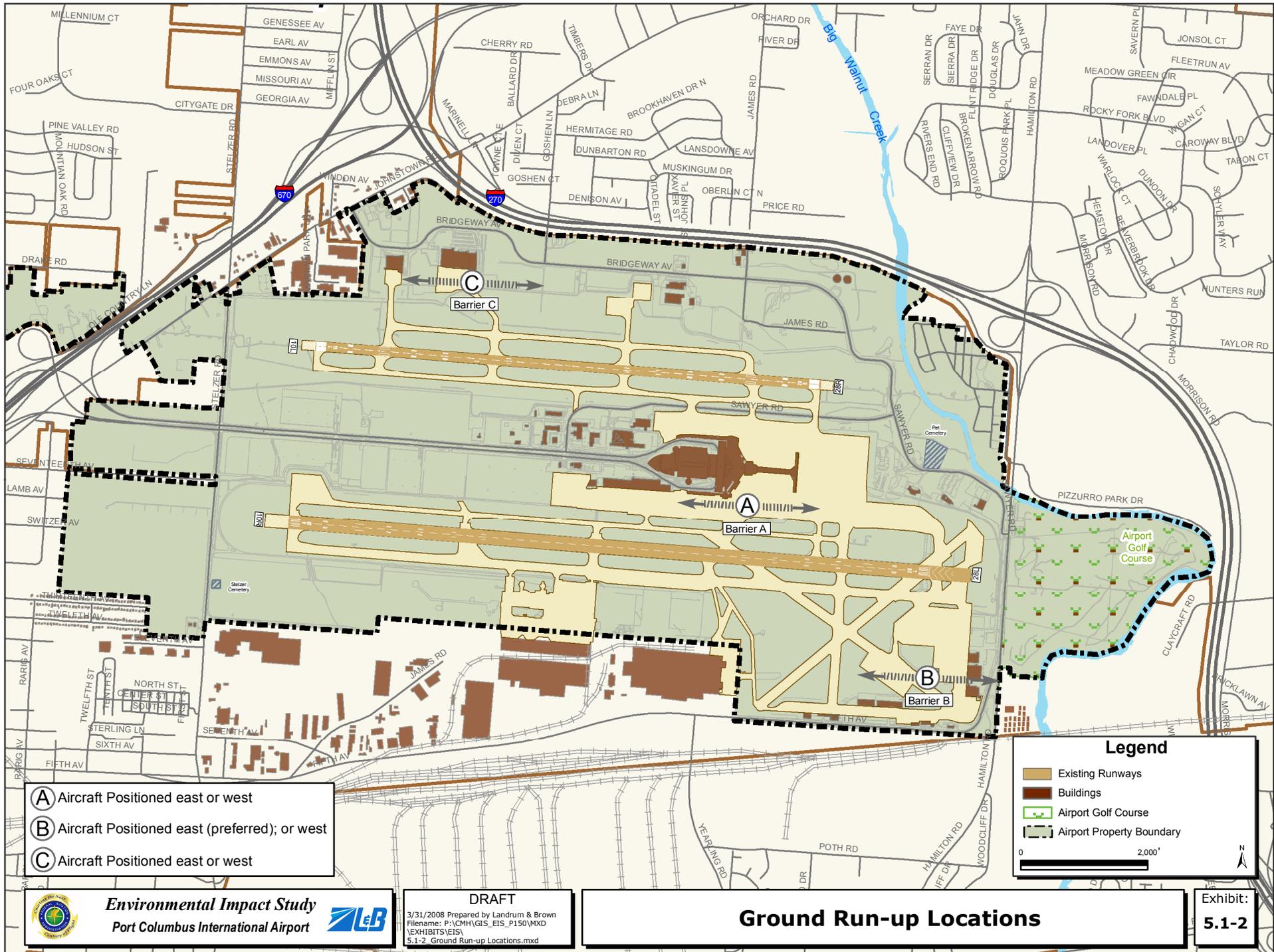
- **Barrier A:** Located to the south of Concourse B, along the south edge of the terminal apron. Aircraft face either east or west, parallel to the wall, and are positioned on the north side of the barrier.
- **Barrier B:** Located just north of the southeast end of Taxiway G. Aircraft face east (preferred) or west between the two sound barrier walls. The majority of run-ups occur here due to the proximity to the American Eagle maintenance hangar. This location is also where the narrowbody run-ups will occur in the future after modifications are made to the barrier.
- **Barrier C:** Located on the north airfield near the NetJets ramp, north of Runway 10L/28R. Aircraft face either east or west, parallel to the wall, and are positioned on the south side of the barrier.

**Table 5.1-5
GROUND RUN-UP OPERATIONS – 2012 ALTERNATIVE A: NO ACTION
Port Columbus International Airport**

INM Aircraft Type	Average Daily Ground Run-up Operations	Average Duration in Seconds	Power (Thrust) Settings
CL600	2.3	420	6000 lbs.
Narrowbody (i.e., A319, A320, B737)	0.5	420	70%

Source: Landrum & Brown, 2007.

² The Final Part 150 Study Update for Port Columbus International Airport was submitted to the FAA for approval in November 2007. The FAA accepted the NEMs on December 5, 2007. The FAA anticipates issuing a Record of Approval on the NCP by June 1, 2008.



- (A)** Aircraft Positioned east or west
- (B)** Aircraft Positioned east (preferred); or west
- (C)** Aircraft Positioned east or west

Legend

- Existing Runways
- Buildings
- Airport Golf Course
- Airport Property Boundary

0 2,000'

N

Noise Exposure Contour: The 2012 Alternative A noise exposure contour for 60, 65, 70, and 75 DNL levels are graphically depicted on **Exhibit 5.1-3, 2012 Alternative A: No Action Noise Exposure Contour.**

A DNL noise contour does not represent the noise levels present on any specific day, but rather represents the energy-average of all 365 days of operation during the year. Noise contour patterns extend from an airport along each extended runway centerline, reflective of the flight tracks used by all aircraft. The relative distance of a contour from the airport along each route is a function of the frequency of use of each runway end for total arrivals and departures, as well as its use at night and the type of aircraft flying each route.

The size and shape of the noise contours for CMH are a function of the combination of flight tracks and runway use. As modeled for the 2012 Alternative A, 75 percent of operations were in west flow (arriving to and departing from Runways 28L/28R) and 25 percent of the operations were in east flow (arriving to and departing from Runways 10L/10R). As a result, the 2012 Alternative A noise contour is longer and wider to the west of the Airport than to the east. **Table 5.1-6** provides the total area within the 2012 No Action noise contours.

**Table 5.1-6
COMPARISON OF AREAS WITHIN THE 2012 ALTERNATIVE A NOISE
EXPOSURE CONTOUR (IN SQUARE MILES)
Port Columbus International Airport**

CONTOUR RANGE	2012 ALTERNATIVE A
60-65 DNL	5.8
65-70 DNL	2.7
70-75 DNL	1.3
75 + DNL	1.1
65 + DNL	5.1

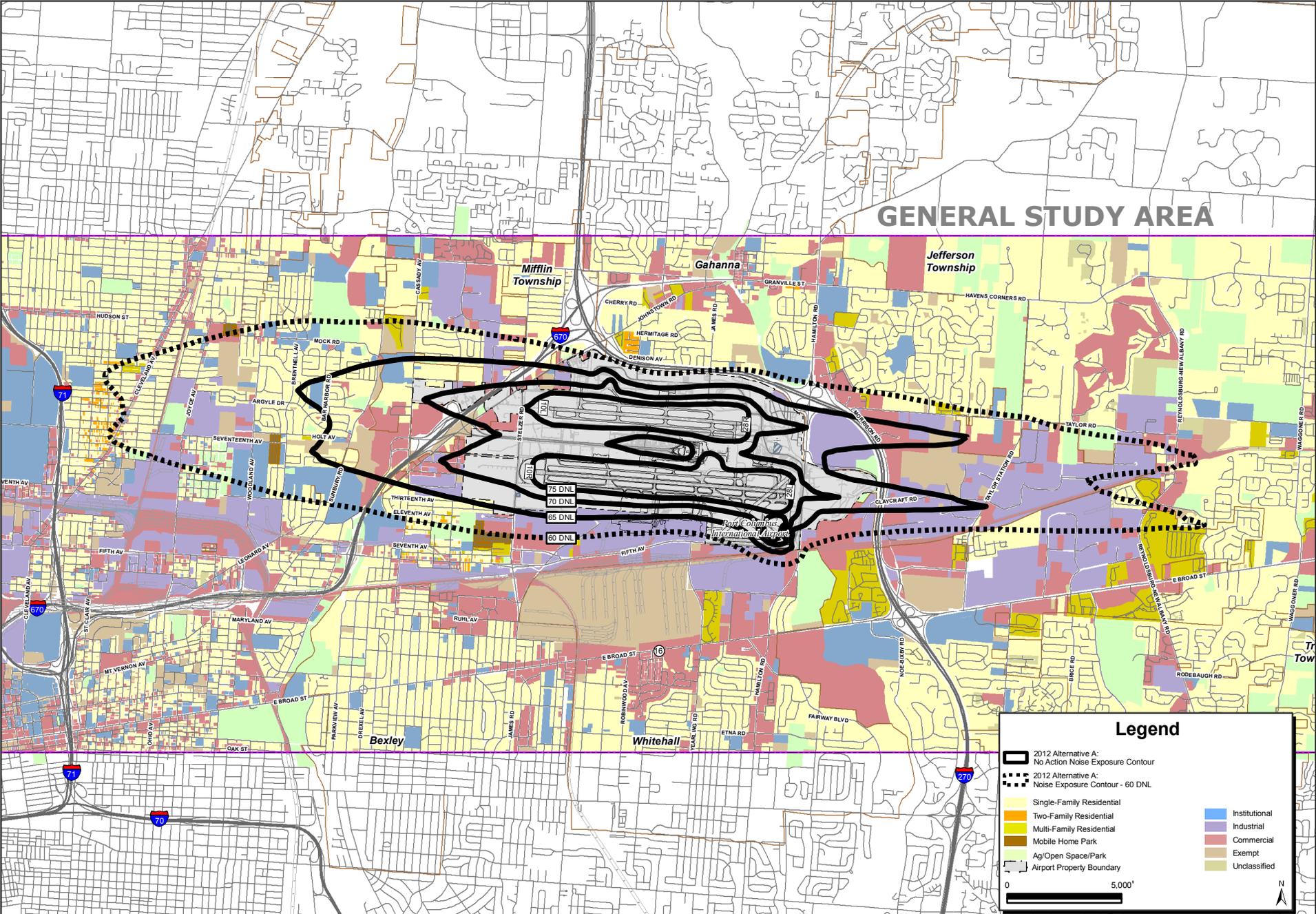
Contour: 2012_NA_rev6.

Source: Landrum & Brown, 2007.

Land Use Impact Assessment: The 65 DNL noise contour for the 2012 Alternative A, encompasses 5.1 square miles of land. Additional discussion of land use impacts, including the number of housing units and noise-sensitive facilities within the noise contours are included in Section 5.2, *Compatible Land Use*.

Grid Point Assessment: FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, Appendix A, paragraph 14.1a states that DNL is the primary metric for describing aircraft noise exposure. However, DNL analysis may be supplemented with additional metrics to assist in the public's understanding of the noise impact. Therefore, supplemental noise analysis is being prepared for this EIS.

GENERAL STUDY AREA



75 DNL
70 DNL
65 DNL
60 DNL

Legend

- 2012 Alternative A: No Action Noise Exposure Contour
- 2012 Alternative A: Noise Exposure Contour - 60 DNL
- Single-Family Residential
- Two-Family Residential
- Multi-Family Residential
- Mobile Home Park
- Ag/Open Space/Park
- Airport Property Boundary
- Institutional
- Industrial
- Commercial
- Exempt
- Unclassified

0 5,000'

N

Regularly spaced grid points and specific noise-sensitive facility grid points were located throughout the Airport environs for supplemental analysis. Exhibits depicting the grid point locations and tables comparing the grid point results for DNL, equivalent sound level (Leq), single event noise level (SEL), maximum noise levels (Lmax), and Time Above 65 dB (TA65) for all of the conditions assessed in this EIS are provided in Appendix D.

5.1.1.2 Alternative C2a: 2012 Relocate Runway 10R/28L 800 feet to the South – Noise Abatement Scenario A

This section provides a summary of the INM input data, the resulting noise exposure pattern, and the disclosure of the potential noise impacts resulting from the operation of the Airport under Alternative C2a in 2012.

Runway Definition: Alternative C2a includes the relocation of Runway 10R/28L 800 feet to the south. The proposed relocated runway would be 10,113 feet in length and would be separated from the north runway by 3,600 feet. For discussion purposes in this document the proposed relocated runway will be referred to as Runway 10X/28X. **Exhibit 5.1-4** graphically depicts the Airport layout proposed under Alternative C2a.

Activity Levels and Fleet Mix: The operating levels and fleet mix discussed for the 2012 Alternative A and shown on Table 5.1-1 and Table 5.1-2, would remain the same for the 2012 Alternative C2a.

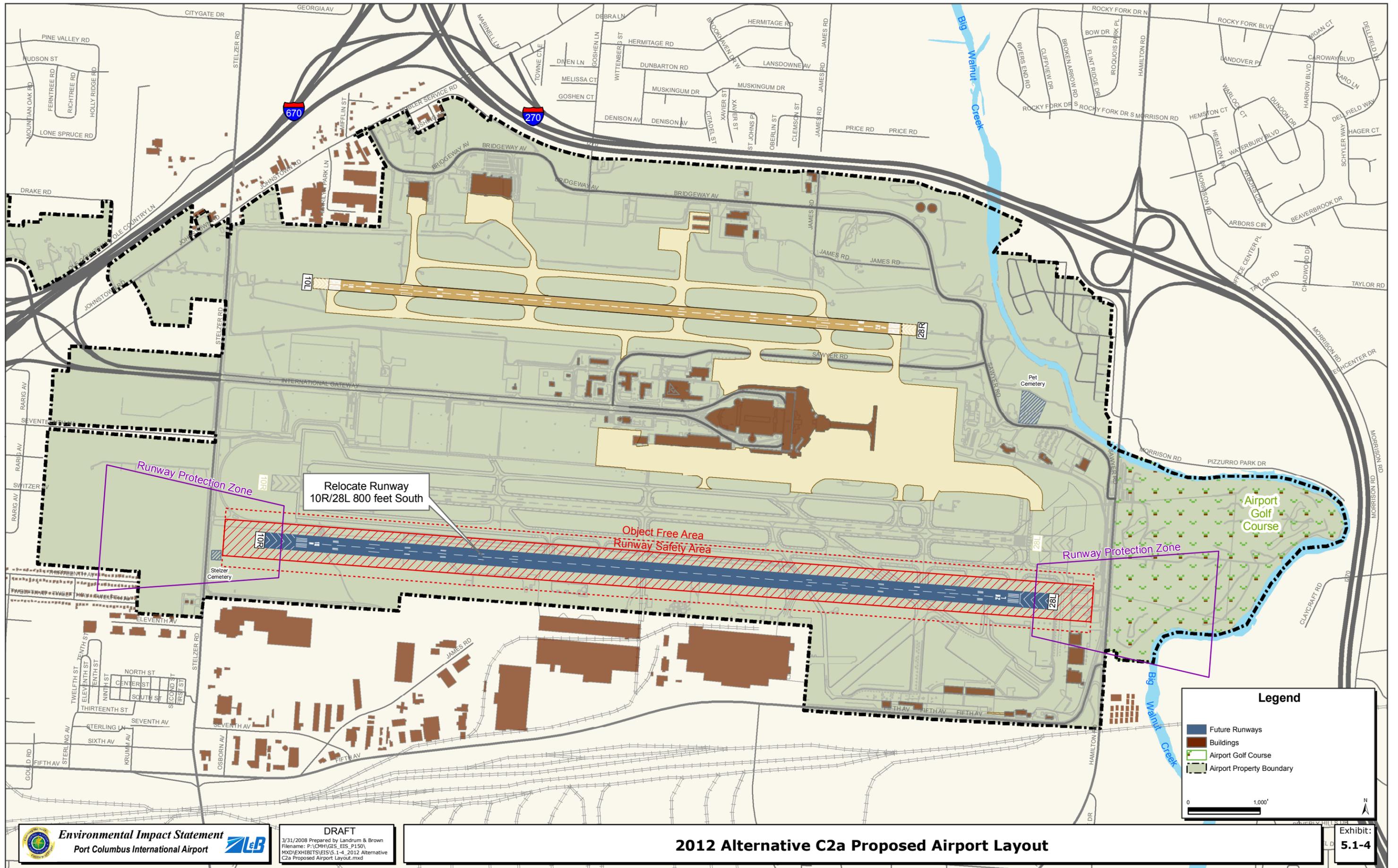
Runway End Utilization: The proposed relocation of Runway 10R/28L (10X/28X) is not expected to affect runway use percentages from what was modeled for the Existing (2006) Baseline. Under this alternative, by 2012 the relocated runway would be fully operational. **Table 5.1-7** shows the runway use that was modeled for 2012 Alternative C2a.

Flight Tracks: Proposed Runway 10X/28X under Alternative C2a would not affect the flight track utilization percentages shown in Appendix D. However, it would affect the location of flight tracks because they would shift in relation to the proposed relocated runway. Exhibits in Appendix D show the INM flight tracks modeled for the 2012 Alternative C2a.

Aircraft Weight and Trip Length: The departure trip length distribution discussed for the 2012 Alternative A, and shown in Table 5.1-4, would remain the same for the 2012 Alternative C2a.

Ground Run-up Noise: The number, type, and duration of engine run-ups discussed for the 2012 Alternative A and shown in Table 5.1-5 and graphically depicted on Exhibit 5.1-2, would remain the same for the 2012 Alternative C2a.

Noise Exposure Contour: The 2012 Alternative C2a noise exposure contour for 60, 65, 70, and 75 DNL levels is graphically depicted on **Exhibit 5.1-5, 2012 Alternative C2a Noise Exposure Contour.**



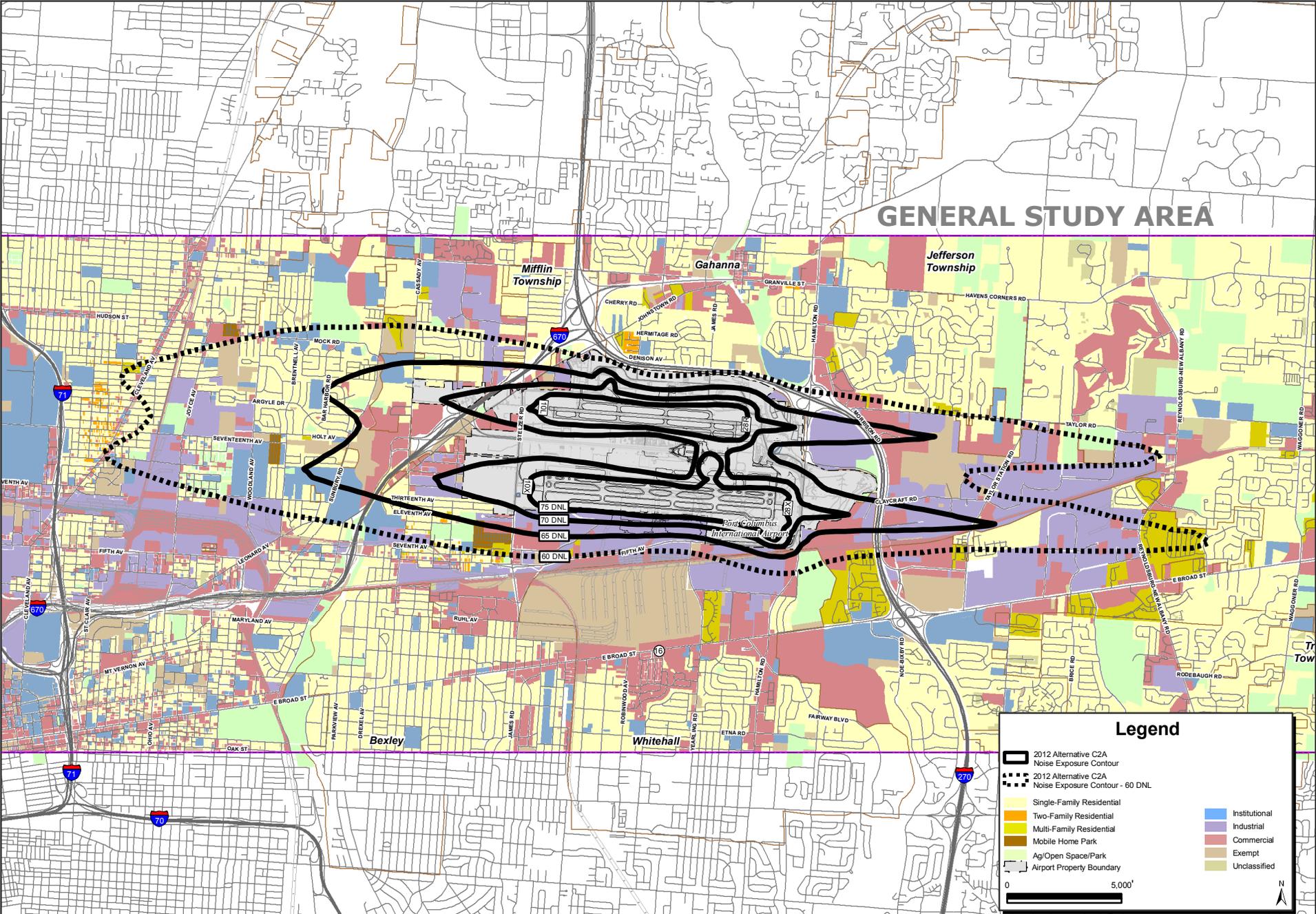
Legend

- Future Runways
- Buildings
- Airport Golf Course
- Airport Property Boundary

0 1,000'

N

GENERAL STUDY AREA



**Table 5.1-7
RUNWAY END UTILIZATION – 2012 ALTERNATIVE C2a
Port Columbus International Airport**

Day Arrivals				
Aircraft Category	10L	10X	28R	28X
Large Jet	8.4	16.6	27.1	47.9
Commuter Jet	15.8	7.3	54.5	22.4
Commuter Prop	12.8	11.3	45.4	30.5
General Aviation Jet	5.0	17.5	20.7	56.8
General Aviation Prop	5.7	17.6	22.4	54.3
Night Arrivals				
Aircraft Category	10L	10X	28R	28X
Large Jet	10.2	40.3	11.0	38.5
Commuter Jet	24.8	9.6	45.4	20.2
Commuter Prop	14.6	28.0	24.2	33.2
General Aviation Jet	6.2	25.6	19.0	49.2
General Aviation Prop	12.0	37.1	19.0	31.9
Day Departures				
Aircraft Category	10L	10X	28R	28X
Large Jet	5.5	16.2	25.2	53.1
Commuter Jet	13.5	8.4	49.5	28.6
Commuter Prop	12.6	11.7	41.9	33.8
General Aviation Jet	4.4	16.8	19.7	59.1
General Aviation Prop	5.9	17.6	22.0	54.5
Night Departures				
Aircraft Category	10L	10X	28R	28X
Large Jet	4.6	13.3	26.8	55.3
Commuter Jet	9.5	11.4	57.8	21.3
Commuter Prop	4.6	20.6	31.7	43.1
General Aviation Jet	4.3	19.8	18.2	57.7
General Aviation Prop	4.3	23.3	26.4	46.0

Day: 7:00 a.m. – 9:59 p.m.

Night: 10:00 p.m. – 6:59 a.m.

Note: 10X/28X denotes the proposed relocated Runway 10R/28L.

Source: 2005, 2006, 2007 ANOMS data, Landrum & Brown, 2007.

The 2012 Alternative C2a noise contour is larger than the 2012 Alternative A noise contour due to the proposed relocation of Runway 10R/28L. The proposed relocated runway would shift aircraft operations further south. The flight paths that aircraft would use when arriving to and departing from the proposed relocated runway would shift south by approximately 800 feet. Current arrival and departure procedures would remain the same for the proposed relocated runway. However, because the location of the flight paths shift, new areas would be included in the 65+ DNL noise contour. **Table 5.1-8** provides a comparison of the areas within the 2012 Alternative A and the 2012 Alternative C2a noise contours.

**Table 5.1-8
COMPARISON OF AREAS WITHIN THE 2012 ALTERNATIVE C2a AND THE
2012 NO ACTION NOISE EXPOSURE CONTOUR (IN SQUARE MILES)
Port Columbus International Airport**

CONTOUR RANGE	2012 NO ACTION	2012 ALTERNATIVE C2a	DIFFERENCE
60-65 DNL	5.8	6.1	0.3
65-70 DNL	2.7	3.1	0.4
70-75 DNL	1.3	1.1	-0.2
75 + DNL	1.1	1.1	0.0
65 + DNL	5.1	5.3	0.2

Note: Difference between areas may not equal subtracted value due to rounding.

Contours: 2012_NA_rev6/ 2012_C2a

Source: Landrum & Brown, 2007.

Land Use Impact Assessment: The 65+ DNL noise contour for the 2012 Alternative C2a encompasses 5.3 square miles of land, an increase of 0.2 square miles compared to the 65+ DNL of the 2012 Alternative A noise contour. Additional discussion of land use impacts, including the number of housing units and noise-sensitive facilities within the noise contours are included in Section 5.2, *Compatible Land Use*.

Grid Point Assessment: Regularly spaced grid points and specific noise-sensitive facility grid points were located throughout the Airport environs for supplemental analysis. Exhibits depicting the grid point locations and tables comparing the grid point results of all of the conditions assessed in this EIS are provided in Appendix D.

Mitigation Commitments: Mitigation for this alternative includes offering sound insulation to homes affected by significant noise levels. Section 5.2, *Compatible Land Use*, discusses the specific areas impacted and the proposed sound insulation boundary.

5.1.1.3 Alternative C2b: 2012 Relocate Runway 10R/28L 800 feet to the South – Noise Abatement Scenario B

This section provides a summary of the INM input data, the resulting noise exposure pattern, and the disclosure of the potential noise impacts resulting from the operation of the Airport under Alternative C2b in 2012.

Runway Definition: The runway layout discussed for the 2012 Alternative C2a including the relocation of Runway 10R/28L (10X/28X) 800 feet to the south graphically depicted on Exhibit 5.1-4, would remain the same for the 2012 Alternative C2b.

Activity Levels and Fleet Mix: The operating levels and fleet mix discussed for the 2012 Alternative A and shown on Table 5.1-1 and Table 5.1-2, would remain the same for 2012 Alternative C2b.

Runway End Utilization: 2012 Alternative C2b includes the recommendations of the 2007 Noise Compatibility Plan (NCP). The 2007 NCP recommends renewed efforts to maximize east flow during calm winds, which is currently in the Airport Traffic Control Tower (ATCT) Tower Order for CMH. Renewed efforts will include identifying impediments to higher use of east flow, and working with ATCT staff and the airlines to address these issues. For the 2012 Alternative A, it was assumed that the Airport would continue to operate in west flow approximately 75 percent of the time and east flow approximately 25 percent of the time. For the purposes of modeling the 2012 Alternative C2b, which includes the implementation of the 2007 NCP, it was assumed that renewed efforts to maximize east flow would result in at least a five percent shift towards east flow (70 percent west flow, 30 percent east flow). **Table 5.1-9, Runway End Utilization – 2012 Alternative C2b,** shows runway use percentages modeled for the 2012 Alternative C2b.

**Table 5.1-9
RUNWAY END UTILIZATION – 2012 ALTERNATIVE C2b
Port Columbus International Airport**

Day Arrivals				
Aircraft Category	10L	10X	28R	28X
Large Jet	10.1	19.9	25.3	44.7
Commuter Jet	20.5	9.5	49.6	20.4
Commuter Prop	15.9	14.1	41.9	28.1
General Aviation Jet	6.7	23.3	18.7	51.3
General Aviation Prop	7.3	22.7	20.4	49.6
Night Arrivals				
Aircraft Category	10L	10X	28R	28X
Large Jet	10.2	40.3	11	38.5
Commuter Jet	24.8	9.6	45.4	20.2
Commuter Prop	14.6	28	24.2	33.2
General Aviation Jet	6.2	25.6	19	49.2
General Aviation Prop	12	37.1	19	31.9
Day Departures				
Aircraft Category	10L	10X	28R	28X
Large Jet	7.6	22.4	22.5	47.5
Commuter Jet	18.5	11.5	44.4	25.6
Commuter Prop	15.6	14.4	38.7	31.3
General Aviation Jet	6.2	23.8	17.5	52.5
General Aviation Prop	7.5	22.5	20.1	49.9
Night Departures				
Aircraft Category	10L	10X	28R	28X
Large Jet	7.7	22.3	22.9	47.1
Commuter Jet	13.6	16.4	51.2	18.8
Commuter Prop	5.5	24.5	29.7	40.3
General Aviation Jet	5.4	24.6	16.8	53.2
General Aviation Prop	4.7	25.3	25.5	44.5

Day: 7:00 a.m. – 9:59 p.m.

Night: 10:00 p.m. – 6:59 a.m.

Note: 10X/28X denotes the proposed relocated Runway 10R/28L.

Source: 2005, 2006, 2007 ANOMS data, Landrum & Brown, 2007.

Flight Tracks: 2012 Alternative C2b includes the NCP measures recommended by the 2007 Part 150 Study. The following recommendation would affect flight tracks:

- NA-6** Implement a 15-degree divergent turn off of Runway 28R, after crossing the runway end to a 295-degree heading, only during peak operating periods when traffic warrants.

Exhibits showing the individual flight tracks modeled for the 2012 alternatives and the corresponding tables providing the proportion of operations assigned to each of the flight tracks are included in Appendix D.

Aircraft Weight and Trip Length: The departure trip length distribution discussed for the 2012 Alternative A and shown in Table 5.1-4, would remain the same for the 2012 Alternative C2b.

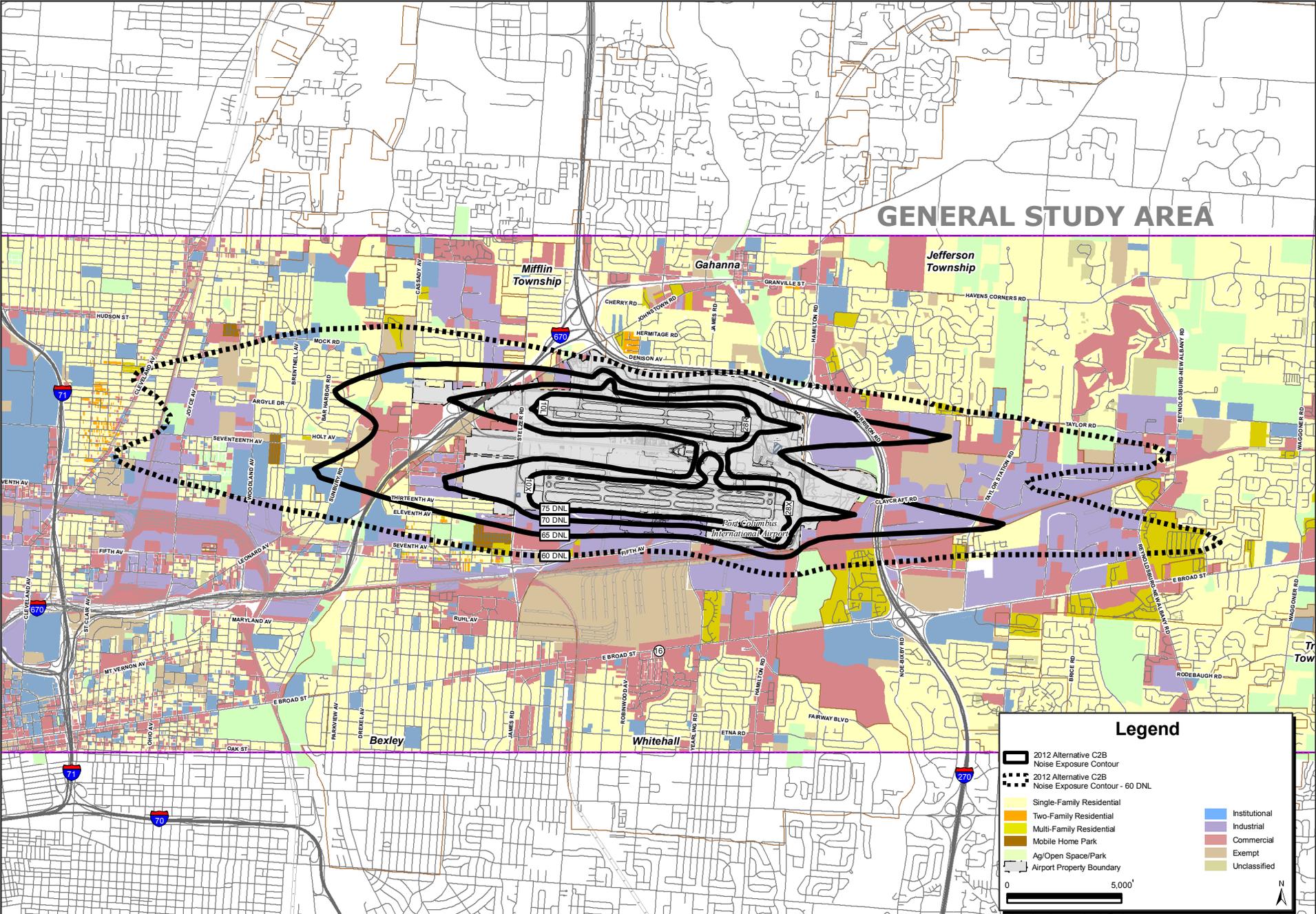
Ground Run-up Noise: The number, type, and duration of engine run-ups discussed for the 2012 Alternative A, and shown in Table 5.1-5 and graphically depicted on Exhibit 5.1-2, would remain the same for the 2012 Alternative C2b.

Noise Exposure Contour: The 2012 Alternative C2b noise exposure contour for 60, 65, 70, and 75 DNL levels is graphically depicted on **Exhibit 5.1-6, 2012 Alternative C2b Noise Exposure Contour.**

The 2012 Alternative C2b noise contour is larger than the 2012 Alternative A noise contour due to the proposed relocation of Runway 10R/28L. The proposed relocated runway would shift aircraft operations further south. The flight paths that aircraft would use when arriving to and departing from the proposed relocated runway would shift south by approximately 800 feet. Therefore, the noise contour would shift in relation to the relocated runway. Current arrival and departure procedures would remain the same for the proposed relocated runway. However, because the location of the flight paths shift, new areas would be included in the 65+ DNL noise contours.

The implementation of the 2007 NCP also affects the noise contour compared to the 2012 Alternative A noise contour. Due to the recommendation to maximize east flow, the noise contour increases in size to the east while decreasing in size to the west. **Table 5.1-10** provides a comparison of the areas within the 2012 Alternative A and the 2012 Alternative C2b noise contours.

GENERAL STUDY AREA



Legend

- 2012 Alternative C2b Noise Exposure Contour
- 2012 Alternative C2b Noise Exposure Contour - 60 DNL
- Single-Family Residential
- Two-Family Residential
- Multi-Family Residential
- Mobile Home Park
- Ag/Open Space/Park
- Airport Property Boundary
- Institutional
- Industrial
- Commercial
- Exempt
- Unclassified

0 5,000'

N

**Table 5.1-10
COMPARISON OF AREAS WITHIN THE 2012 ALTERNATIVE C2b AND THE
2012 ALTERNATIVE A NOISE EXPOSURE CONTOUR
(IN SQUARE MILES)
Port Columbus International Airport**

CONTOUR RANGE	2012 ALTERNATIVE A	2012 ALTERNATIVE C2b	DIFFERENCE
60-65 DNL	5.8	6.3	0.5
65-70 DNL	2.7	3.1	0.4
70-75 DNL	1.3	1.1	-0.2
75 + DNL	1.1	1.1	0.0
65 + DNL	5.1	5.3	0.2

Note: Difference between areas may not equal subtracted value due to rounding.

Contours: 2012_NA_rev6/ 2012_C2b_rev2

Source: Landrum & Brown, 2007.

Land Use Impact Assessment: The 65+ DNL noise contour for the 2012 Alternative C2a encompasses 5.3 square miles of land, an increase of 0.2 square miles compared to the 65+ DNL of the 2012 Alternative A noise contour. Additional discussion of land use impacts, including the number of housing units and noise-sensitive facilities within the noise contours are included in Section 5.2, *Compatible Land Use*.

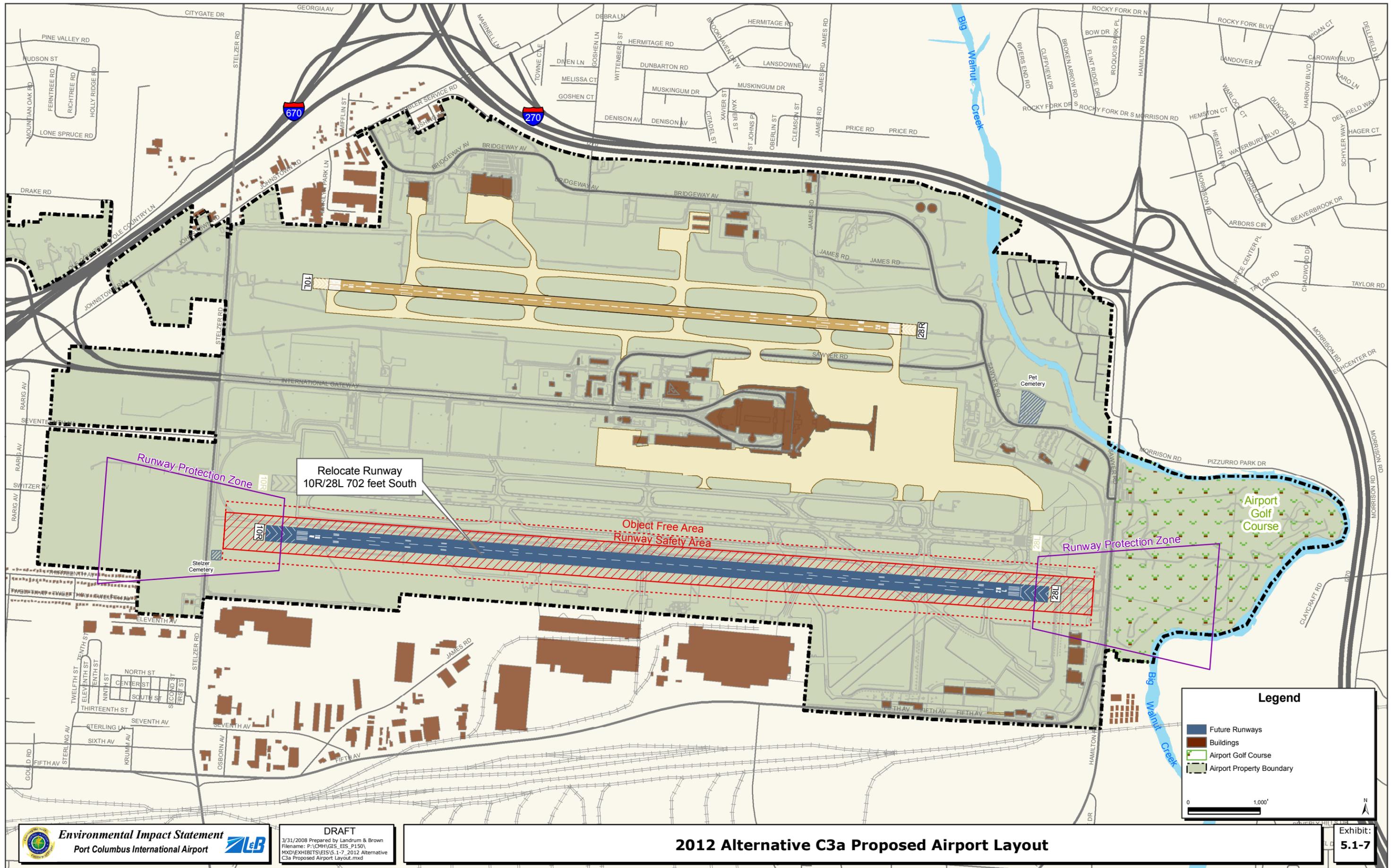
Grid Point Assessment: Regularly spaced grid points and specific noise-sensitive facility grid points were located throughout the Airport environs for supplemental analysis. Exhibits depicting the grid point locations and tables comparing the grid point results of all of the conditions assessed in this EIS are provided in Appendix D.

Mitigation Commitments: Mitigation for this alternative includes offering sound insulation to homes affected by significant noise levels. Section 5.2, *Compatible Land Use*, discusses the specific areas impacted and the proposed sound insulation boundary.

5.1.1.4 Alternative C3a: 2012 Relocate Runway 10R/28L 702 feet to the South – Noise Abatement Scenario A

This section provides a summary of the INM input data, the resulting noise exposure pattern, and the disclosure of the potential noise impacts resulting from the operation of the Airport under Alternative C3a in 2012.

Runway Definition: Alternative C3a includes the relocation of Runway 10R/28L 702 feet to the south. The proposed relocated runway would be 10,113 feet and would be separated from the north runway by 3,502 feet. For discussion purposes in this document, the proposed relocated runway will be referred to as Runway 10X/28X. **Exhibit 5.1-7, 2012 Alternative C3a Proposed Airport Layout**, graphically depicts the Airport layout proposed under Alternative C3a.



Activity Levels and Fleet Mix: The operating levels and fleet mix discussed for the 2012 Alternative A and shown on Table 5.1-1 and 5.1-2 would remain the same for the 2012 Alternative C3a.

Runway End Utilization: The runway end utilization discussed for the 2012 Alternative C2a and shown in Table 5.1-7, would remain the same for the 2012 Alternative C3a.

Flight Tracks: The proposed relocation of Runway 10R/28L under Alternative C3a would not affect the flight track utilization percentages shown in Appendix D. However, it would affect location of flight tracks as they would shift in relation to the proposed relocated runway. Exhibits in Appendix D depict flight tracks modeled for the 2012 Alternative C3a, which includes the proposed relocated runway.

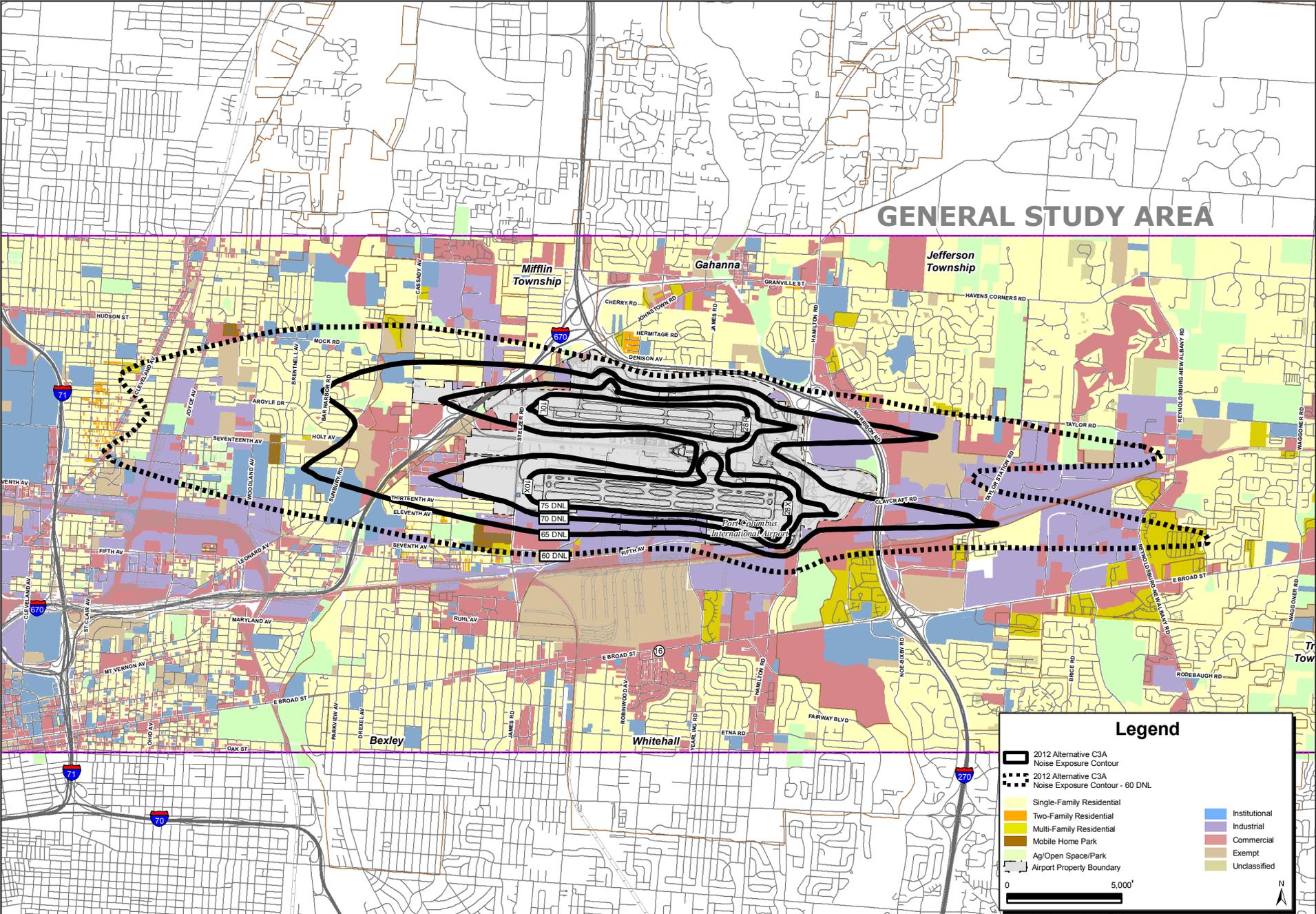
Aircraft Weight and Trip Length: The departure trip length distribution discussed for the 2012 Alternative A, and shown in Table 5.1-4, would remain the same for the 2012 Alternative C3a.

Ground Run-up Noise: The number, type, and duration of engine run-ups discussed for the 2012 Alternative A, shown in Table 5.1-5 and graphically depicted on Exhibit 5.1-2, would remain the same for the 2012 Alternative C3a.

Noise Exposure Contour: The 2012 Alternative C3a noise exposure contour for 60, 65, 70, and 75 DNL levels is graphically depicted on **Exhibit 5.1-8, 2012 Alternative C3a Noise Exposure Contour.**

The 2012 Alternative C3a noise contour is larger than the 2012 Alternative A noise contour due to the proposed relocation of Runway 10R/28L. The proposed relocated runway would shift aircraft operations farther south. The flight paths that aircraft would use when arriving to and departing from the proposed relocated runway would shift south by approximately 702 feet. Current arrival and departure procedures would remain the same for the proposed relocated runway. However, because the location of the flight paths shift, new areas would be included in the 65+ DNL noise contour. **Table 5.1-11** provides a comparison of the areas within the 2012 Alternative A and the 2012 Alternative C3a noise contours.

GENERAL STUDY AREA



Legend

- 2012 Alternative C3a Noise Exposure Contour
- 2012 Alternative C3a Noise Exposure Contour - 60 DNL
- Single-Family Residential
- Two-Family Residential
- Multi-Family Residential
- Mobile Home Park
- Ag/Open Space/Park
- Airport Property Boundary
- Institutional
- Industrial
- Commercial
- Exempt
- Unclassified

0 5,000'

N

**Table 5.1-11
COMPARISON OF AREAS WITHIN THE 2012 ALTERNATIVE C3a AND THE
2012 ALTERNATIVE A NOISE EXPOSURE CONTOUR
(IN SQUARE MILES)
Port Columbus International Airport**

CONTOUR RANGE	2012 ALTERNATIVE A	2012 ALTERNATIVE C3a	DIFFERENCE
60-65 DNL	5.8	6.0	0.2
65-70 DNL	2.7	3.0	0.3
70-75 DNL	1.3	1.1	-0.2
75 + DNL	1.1	1.1	0.0
65 + DNL	5.1	5.2	0.1

Note: Difference between areas may not equal subtracted value due to rounding.

Contours: 2012_NA_rev6/ 2012_WP_rev7

Source: Landrum & Brown, 2007.

Land Use Impact Assessment: The 65+ DNL noise contour for the 2012 Alternative C3a, encompasses 5.2 square miles of land, an increase of 0.1 square miles compared to the 65 DNL of the 2012 Alternative A noise contour. Additional discussion of land use impacts, including the number of housing units and noise-sensitive facilities within the noise contours, are included in Section 5.2, *Compatible Land Use*.

Grid Point Assessment: Regularly spaced grid points and specific noise-sensitive facility grid points were located throughout the Airport environs for supplemental analysis. Exhibits depicting the grid point locations and tables comparing the grid point results of all of the conditions assessed in this EIS are provided in Appendix D.

Mitigation Commitments: Mitigation for this alternative includes offering sound insulation to homes affected by significant noise levels. Section 5.2, *Compatible Land Use*, discusses the specific areas impacted and the proposed sound insulation boundary.

5.1.1.5 Alternative C3b: 2012 Relocate Runway 10R/28L 702 feet to the South – Noise Abatement Scenario B (Sponsor’s Proposed Project)

This section provides a summary of the INM input data, the resulting noise exposure pattern, and the disclosure of the potential noise impacts resulting from the operation of the Airport under Alternative C3b in 2012.

Runway Definition: The runway layout discussed for the 2012 Alternative C3a, including the relocation of Runway 10R/28L (10X/28X) 702 feet to the south, and graphically depicted on Exhibit 5.1-7, would remain the same for the 2012 Alternative C3b.

Activity Levels and Fleet Mix: The operating levels and fleet mix discussed for the 2012 Alternative A and shown on Table 5.1-1 and Table 5.1-2, would remain the same for Alternative C3b.

Runway End Utilization: The runway end utilization discussed for 2012 Alternative C2b and shown in Table 5.1-9, would remain the same for the 2012 Alternative C3b.

Flight Tracks: In addition to the proposed relocated runway, 2012 Alternative C3b includes the following recommendation that would affect flight tracks:

- NA-6** Implement a 15-degree divergent turn off of Runway 28R, after crossing the runway end to a 295-degree heading, only during peak operating periods when traffic warrants.

Exhibits depicting the individual flight tracks modeled for the 2012 alternatives and the corresponding tables providing the proportion of operations assigned to each of the flight tracks are included in Appendix D.

Aircraft Weight and Trip Length: The departure trip length distribution discussed for the 2012 Alternative A, and shown in Table 5.1-4, would remain the same for the 2012 Alternative C3b.

Ground Run-up Noise: The number, type, and duration of engine run-ups discussed for the 2012 Alternative A, and shown in Table 5.1-5 and graphically depicted on Exhibit 5.1-2, would remain the same for the 2012 Alternative C3b.

Noise Exposure Contour: The 2012 Alternative C3b noise exposure contour for 60, 65, 70, and 75 DNL levels is graphically depicted on **Exhibit 5.1-9, 2012 Alternative C3b Noise Exposure Contour.**

The 2012 Alternative C3b noise contour is larger than the 2012 Alternative A noise contour due to the proposed relocation of Runway 10R/28L. The proposed relocated runway would shift aircraft operations farther south. The flight paths that aircraft would use when arriving to and departing from the proposed relocated runway would shift south by approximately 702 feet. Current arrival and departure procedures would remain the same for the proposed relocated runway. However, because the location of the flight paths shift, new areas would be included in the 65+ DNL noise contour.

The implementation of the 2007 NCP also affects the noise contour compared to the 2012 Alternative A noise contour. Due to the recommendation to maximize east flow, the noise contour increases in size to the east while decreasing in size to the west. **Table 5.1-12** provides a comparison of the areas within the 2012 Alternative A and the 2012 Alternative C3b noise contours.

**Table 5.1-12
COMPARISON OF AREAS WITHIN THE 2012 ALTERNATIVE C3b AND THE
2012 ALTERNATIVE A NOISE EXPOSURE CONTOUR
(IN SQUARE MILES)
Port Columbus International Airport**

CONTOUR RANGE	2012 ALTERNATIVE A	2012 ALTERNATIVE C3b	DIFFERENCE
60-65 DNL	5.8	6.2	0.4
65-70 DNL	2.7	3.1	0.4
70-75 DNL	1.3	1.1	-0.2
75 + DNL	1.1	1.1	0.0
65 + DNL	5.1	5.3	0.2

Note: Difference between areas may not equal subtracted value due to rounding.

Contours: 2012_NA_rev6/ 2012_C3b_rev2

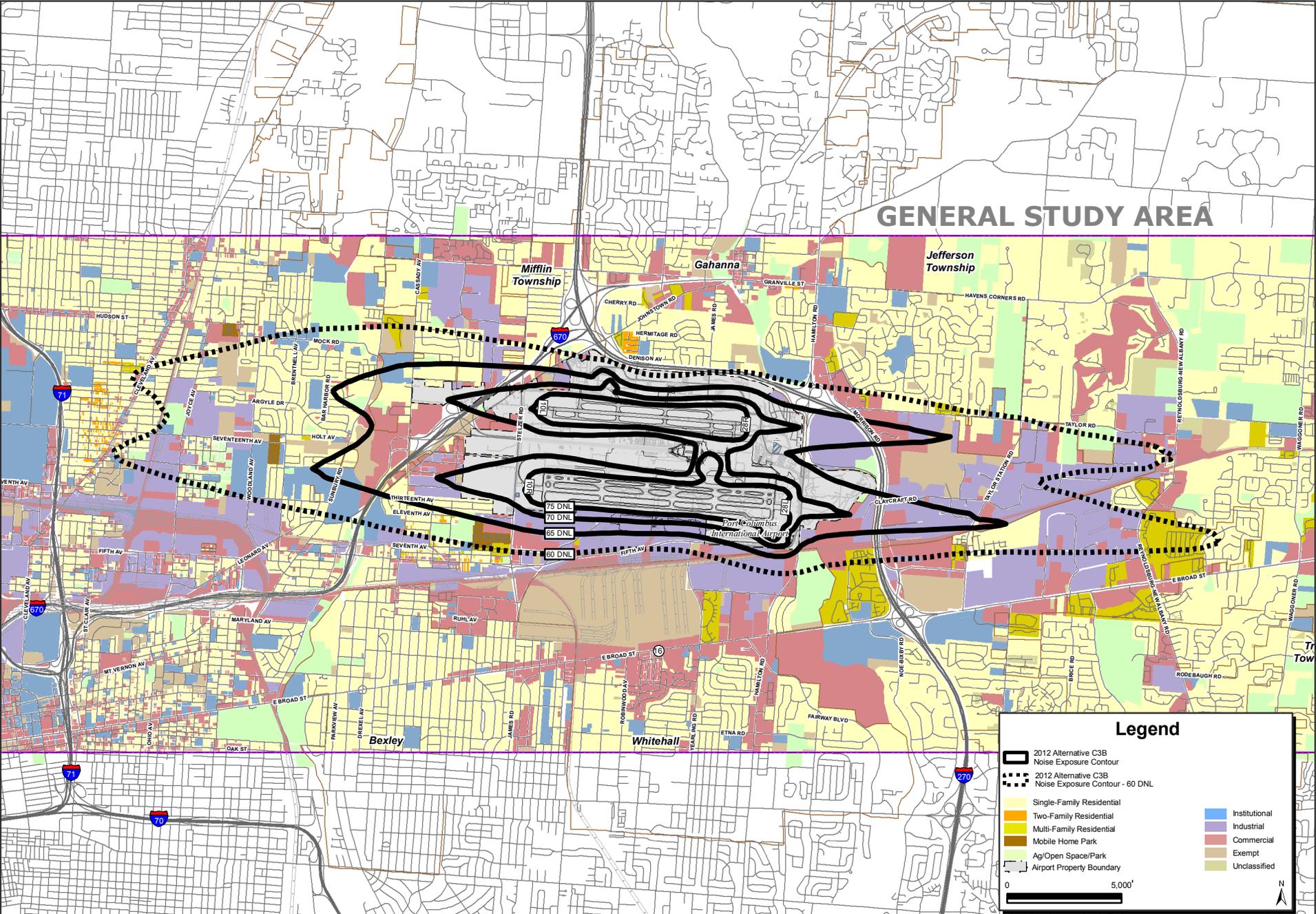
Source: Landrum & Brown, 2007.

Land Use Impact Assessment: The 65 DNL noise contour for the 2012 Alternative C3b encompasses 5.3 square miles of land, an increase of 0.2 square miles compared to the 65 DNL of the 2012 Alternative A noise contour. Additional discussion of land use impacts, including the number of housing units and noise-sensitive facilities within the noise contours are included in Section 5.2, *Compatible Land Use*.

Grid Point Assessment: Regularly spaced grid points and specific noise-sensitive facility grid points were located throughout the Airport environs for supplemental analysis. Exhibits depicting the grid point locations and tables comparing the grid point results of all of the conditions assessed in this EIS are provided in Appendix D.

Mitigation Commitments: Mitigation for this alternative includes offering sound insulation to homes affected by significant noise levels. Section 5.2, *Compatible Land Use*, discusses the specific areas impacted and the proposed sound insulation boundary.

GENERAL STUDY AREA



Legend

	2012 Alternative C3b Noise Exposure Contour		Institutional
	2012 Alternative C3b Noise Exposure Contour - 60 DNL		Industrial
	Single-Family Residential		Commercial
	Two-Family Residential		Exempt
	Multi-Family Residential		Unclassified
	Mobile Home Park		
	Ag/Open Space/Park		
	Airport Property Boundary		

0 5,000'

N

5.1.2 NOISE ANALYSIS AND IMPACT ASSESSMENT – 2018 CONDITIONS

This section provides a summary of the noise analysis of the 2018 conditions for each alternative. An analysis of the 2018 conditions provides potential impacts five years after the first full year of operation of the runway replacement alternatives, and also represents the opening year of the proposed passenger terminal. The 2018 No Action Alternative will be compared to each of the 2018 runway replacement alternatives, including the Sponsor's Proposed Project (Alternative C3b). More detailed descriptions of the operational characteristics of each alternative are provided later in this section.

5.1.2.1 Alternative A: 2018 No Action

This section provides a summary of the INM input data, the resulting noise exposure pattern, and the disclosure of the potential noise impacts resulting from the operation of the Airport under Alternative A, the No Action Alternative in 2018. The noise exposure and impact assessment prepared for the 2018 Alternative A is the baseline against which all other 2018 alternatives are evaluated.

Runway Definition: The runway layout discussed for the 2012 Alternative A and graphically depicted on Exhibit 5.1-1, would remain the same for the 2018 Alternative A.

Activity Levels and Fleet Mix: Table 5.1-13 and Table 5.1-14 provide the operating levels and fleet mix for the 2018 Alternative A. The 2018 operations are based on the forecast prepared for the 2007 Part 150 Study and this EIS. The forecast was approved on January 9, 2007 and is included in Appendix C. The forecast is based upon aviation industry trends and specific airline activity at CMH. The 2018 No Action Alternative includes 271,450 annual operations or 744 average annual day operations, an increase of 12.4 percent from the 2012 forecasted operating levels. The forecast shows a projected increase in the percentage of commuter jet aircraft. The percentage of commuter jets in the fleet mix increases from 47 percent in the 2012 forecast to 56 percent in the 2018 forecast. Embraer 145s, Embraer 170s, and Canadair Regional Jets are expected to continue to be the most common aircraft at CMH.

**Table 5.1-13
AVERAGE DAY OPERATIONS – 2018 ALTERNATIVE A
Port Columbus International Airport**

Aircraft Category	Arrivals		Departures		Total		Grand Total	Percent of Total
	Day	Night	Day	Night	Day	Night		
Large Jet	55	16	59	12	114	28	142	19%
Commuter Jet	174	33	173	34	347	67	414	56%
Commuter Prop	2	0	2	0	4	0	4	1%
General Aviation Jet	39	8	40	7	79	15	94	13%
General Aviation Prop	40	5	41	4	81	9	90	12%
Total	310	62	315	57	625	119	744	100%

Day: 7:00 a.m. to 9:59 p.m.

Night: 10:00 p.m. to 6:59 a.m.

Source: ATCT records, Official Airline Guide (OAG), and Landing Fee Reports, Landrum & Brown, 2007.

**Table 5.1-14
AVERAGE DAY OPERATIONS BY AIRCRAFT TYPE –
2018 ALTERNATIVE A
Port Columbus International Airport**

Aircraft Type	INM Code	Arrivals		Departures		Total	
		Day	Night	Day	Night	Day	Night
Large Jet							
Boeing 737-300	737300	16	6	18	4	34	10
Boeing 737-400	737400	2	0	2	0	4	0
Boeing 737-500	737500	2	1	2	1	4	2
Boeing 737-700	737700	21	3	18	6	39	9
Boeing 737-800	737800	6	1	7	0	13	1
Boeing 757-300	757300	1	0	1	0	2	0
Boeing 737-300	7373B2	3	1	4	0	7	1
Boeing 757-200	757PW	1	1	2	0	3	1
Airbus 320	A320	0	1	1	0	1	1
McDonnell-Douglas DC-9	DC93LW	1	1	2	0	3	1
Military Tanker	KC135R	1	0	1	0	2	0
McDonnell-Douglas MD-83	MD83	1	1	1	1	2	2
Subtotal		55	16	59	12	114	28

**Table 5.1-14, Continued
AVERAGE DAY OPERATIONS BY AIRCRAFT TYPE –
2018 ALTERNATIVE A
Port Columbus International Airport**

Aircraft Type	INM Code	Arrivals		Departures		Total	
		Day	Night	Day	Night	Day	Night
Commuter Jet							
Dessault Falcon 2000	CL600	3	1	3	1	6	2
Canadair Regional Jet / Embraer ERJ-170 / 190	CL601	71	6	68	9	139	15
Embraer 135 / 145	EMB145	7	2	7	2	14	4
Embraer 145	EMB14L	58	14	56	16	114	30
Commuter Jet	GIV	3	1	2	2	5	3
Commuter Jet	LEAR25	5	2	7	0	12	2
Business Jet	CIT3	3	1	4	0	7	1
Cessna Citation / BAE125 Hawker	LEAR35	12	1	12	1	24	2
Cessna 560	MU3001	12	5	14	3	26	8
Subtotal		174	33	173	34	347	67
Commuter Prop							
Commuter Turbo Prop	HS748A	2	0	2	0	4	0
Subtotal		2	0	2	0	4	0
General Aviation Jet							
Business Jet	CL600	5	3	5	3	10	6
Business Jet	CNA500	1	1	2	0	3	1
Business Jet	FAL20	2	0	2	0	4	0
Business Jet	GIIB	2	0	2	0	4	0
Business Jet	GIV	3	1	3	1	6	2
Business Jet	LEAR25	11	0	10	1	21	1
Business Jet	LEAR35	7	3	8	2	15	5
Business Jet	MU3001	8	0	8	0	16	0
Subtotal		39	8	40	7	79	15
General Aviation Prop							
Twin-Engine Prop	BEC58P	10	2	10	2	20	4
Twin-Engine Turbo Prop	CNA441	3	0	3	0	6	0
Twin-Engine Turbo Prop	DHC6	3	1	3	1	6	2
Single-Engine Prop	GASEPF	14	2	15	1	29	3
Single-Engine Prop	GASEPV	7	0	7	0	14	0
Single-Engine Prop	PA28	2	0	2	0	4	0
Twin-Engine Prop	PA31	1	0	1	0	2	0
Subtotal		40	5	41	4	81	9
Grand Total		310	62	315	57	625	119

Day: 7:00 a.m. to 9:59 p.m.

Night: 10:00 p.m. to 6:59 a.m.

Source: Landing Fee Reports, ATCT records, ANOMS data, Landrum & Brown, 2007.

Runway End Utilization: Average-annual runway end utilization discussed for the 2012 Alternative A and shown on Table 5.1-3, would remain the same for the 2018 Alternative A.

Flight Tracks: The flight track locations discussed for the 2012 Alternative A would not change for the 2018 Alternative. However, because runway use would change, the flight track utilization percentages would also change. Exhibits depicting the individual flight tracks modeled for the 2018 alternatives and the corresponding tables providing the proportion of operations assigned to each of the flight tracks are included in Appendix D.

Aircraft Weight and Trip Length: The trip lengths flown from CMH are based on scheduled operations for the baseline period. **Table 5.1-15, Departure Trip Length Distribution – 2018 Alternatives**, indicates the proportion of the operations that fell within each of the seven trip length categories for the 2018 Alternative A operating levels. This table shows that 68 percent of all large jet departures and 87 percent of all commuter jet departures operated to destinations with a stage length of one.

**Table 5.1-15
DEPARTURE TRIP LENGTH DISTRIBUTION –
2018 ALTERNATIVE A
Port Columbus International Airport**

Stage Length	Large Jet	Commuter Jet	Commuter Prop	General Aviation Jet	General Aviation Prop
1	68%	87%	100%	100%	100%
2	17%	13%	0%	0%	0%
3	8%	0%	0%	0%	0%
4	7%	0%	0%	0%	0%
5	0%	0%	0%	0%	0%
6	0%	0%	0%	0%	0%
7	0%	0%	0%	0%	0%

Source: Landrum & Brown, 2007.

As discussed for the 2012 Alternative A, a higher stage length was assigned when modeling Boeing 737-300, Airbus 320, and McDonnell Douglas MD-80 Series to more accurately reflect their measured noise levels and departure profiles based upon field monitoring. A complete discussion of the aircraft monitoring results is included in Appendix D.

Ground Run-up Noise: No change would occur in time, location, and thrust settings from the 2012 Alternative A. The number of operations and fleet mix was updated to reflect 2018 conditions. **Table 5.1-16, Ground Run-up Operations—2018 Alternative A**, shows the number, types, and duration of the engine run-ups assumed to occur at CMH during the 2018 No Action condition.

Table 5.1-16
GROUND RUN-UP OPERATIONS – 2018 ALTERNATIVE A
Port Columbus International Airport

INM Aircraft Type	Average Daily Ground Run-up Operations	Average Duration in Seconds	Power (Thrust) Settings
CL600	2.75	420	6000 lbs.
Narrowbody (i.e. A319, A320, B737)	0.6	420	70%

Source: Landrum & Brown, 2007.

Noise Exposure Contour: The 2018 Alternative A noise exposure contour for 60, 65, 70, and 75 DNL levels is graphically depicted on **Exhibit 5.1-10, 2018 Alternative A: No Action Noise Exposure Contour**.

The 2018 Alternative A noise contour is larger than the 2012 Alternative A noise contour due to a projected increase in the number of operations. For the 2018 Alternative A conditions, operating levels are expected to increase from 662 average-annual day operations to 744 average-annual day operations. **Table 5.1-17** provides the total area within the 2018 Alternative A noise contours.

Table 5.1-17
COMPARISON OF AREAS WITHIN THE 2018 ALTERNATIVE A NOISE EXPOSURE CONTOUR (IN SQUARE MILES)
Port Columbus International Airport

CONTOUR RANGE	2012 ALTERNATIVE A	2018 ALTERNATIVE A	DIFFERENCE
60-65 DNL	5.8	6.1	0.3
65-70 DNL	2.7	2.8	0.1
70-75 DNL	1.3	1.4	0.1
75 + DNL	1.1	1.1	0.0
65 + DNL	5.1	5.3	0.2

Note: Difference between areas may not equal subtracted value due to rounding.

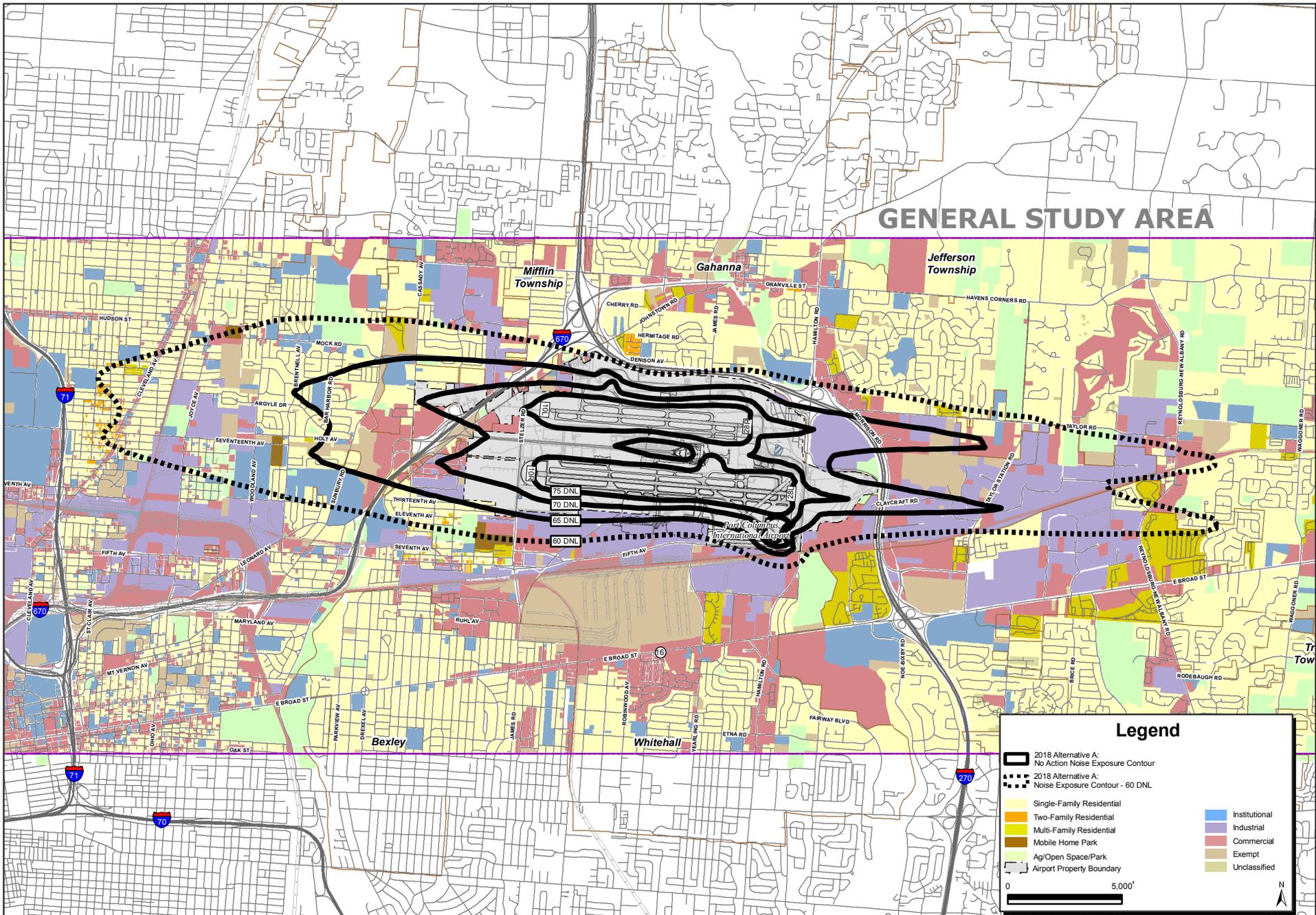
Contour: 2012_NA_rev6 / 2018_NA

Source: Landrum & Brown, 2007.

Land Use Impact Assessment: The 65 DNL noise contour for the 2018 Alternative A encompasses 5.3 square miles of land, an increase of 0.2 square miles compared to the 65 DNL of the 2012 Alternative A noise contour. Additional discussion of land use impacts, including the number of housing units and noise-sensitive facilities within the noise contours, are included in Section 5.2, *Compatible Land Use*.

Grid Point Assessment: Regularly spaced grid points and specific noise-sensitive facility grid points were located throughout the Airport environs for supplemental analysis. Exhibits depicting the grid point locations and tables comparing the grid point results of all of the conditions assessed in this EIS are provided in Appendix D.

GENERAL STUDY AREA



Legend

- 2018 Alternative A: No Action Noise Exposure Contour
- 2018 Alternative A: Noise Exposure Contour - 60 DNL
- Single-Family Residential
- Two-Family Residential
- Multi-Family Residential
- Mobile Home Park
- Ag/Open Space/Park
- Airport Property Boundary
- Institutional
- Industrial
- Commercial
- Exempt
- Unclassified

0 5,000'

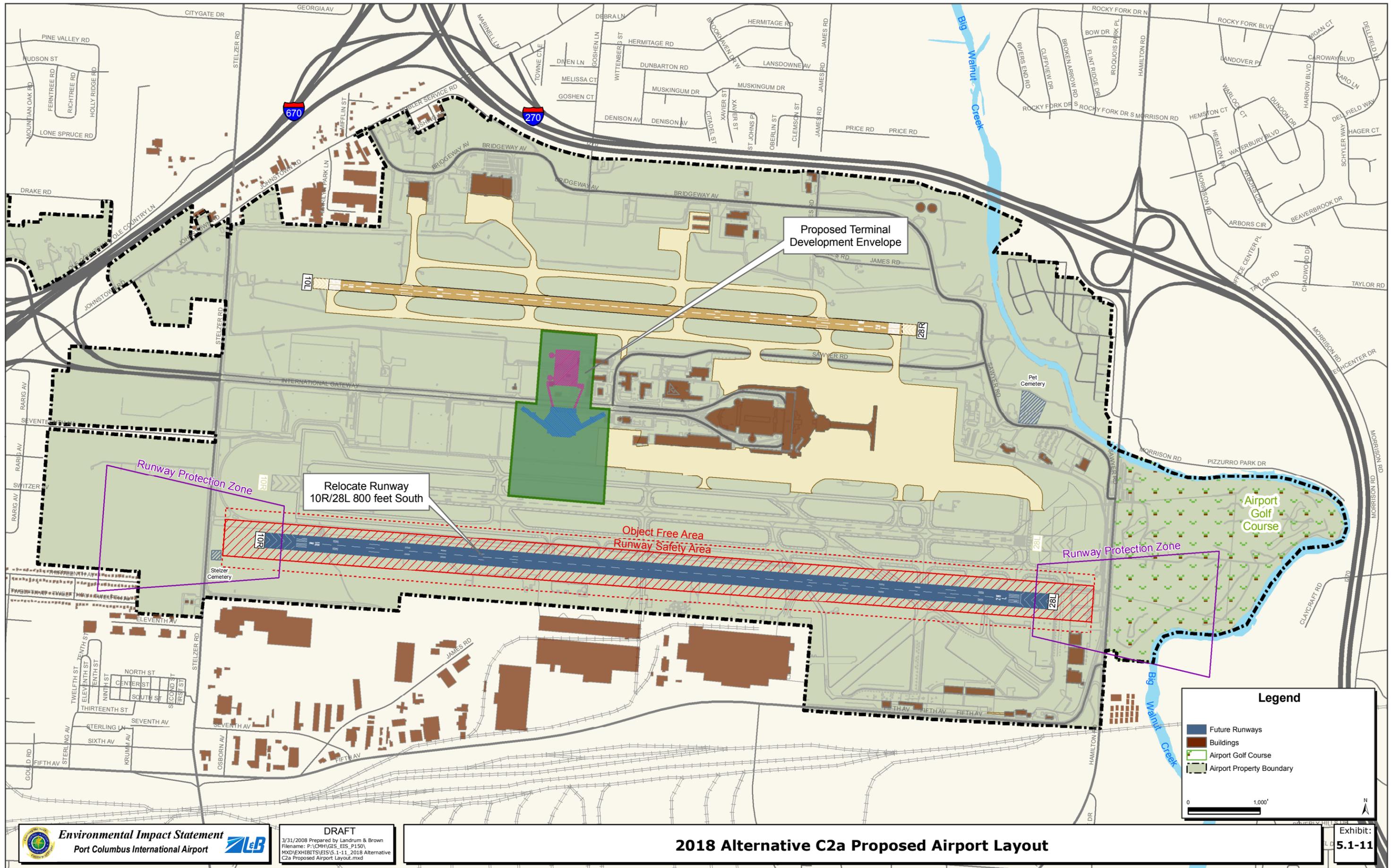
N

5.1.2.2 Alternative C2a: 2018 Relocate Runway 10R/28L 800 feet to the South – Noise Abatement Scenario A

This section provides a summary of the INM input data, the resulting noise exposure pattern, and the disclosure of the potential noise impacts resulting from the operation of the Airport under Alternative C2a in 2018.

Runway Definition: The runway layout discussed for the 2012 Alternative C2a, including the relocation of Runway 10R/28L (10X/28X) 800 feet to the south, would remain the same for the 2018 Alternative C2a. However, the first phase of the new terminal is expected to be completed by 2018. **Exhibit 5.1-11, 2018 Alternative C2a Proposed Airport Layout**, depicts the proposed Airport layout for the 2018 Alternative C2a.

Activity Levels and Fleet Mix: The operating levels and fleet mix discussed for the 2018 Alternative A and shown on Tables 5.1-13 and 5.1-14, would remain the same for the 2018 Alternative C2a.



Runway End Utilization: It is anticipated that the first phase of the proposed passenger terminal will be in operation by 2018. The new terminal will be more centrally located on the airfield, located further south than the existing terminal and is expected to impact runway use. Therefore aircraft operating from the new terminal would likely use the south runway more often than the north runway. **Table 5.1-18, Runway End Utilization, 2018 Alternative C2a**, shows runway use percentages modeled for the 2018 Alternative C2a.

**Table 5.1-18
RUNWAY END UTILIZATION – 2018 ALTERNATIVE C2a
Port Columbus International Airport**

Day Arrivals				
Aircraft Category	10L	10X	28R	28X
Large Jet	3.8	26.3	12.3	57.6
Commuter Jet	11.4	17.0	39.5	32.1
Commuter Prop	8.5	21.0	30.3	40.2
General Aviation Jet	5.0	17.5	20.7	56.8
General Aviation Prop	5.7	17.6	22.4	54.3
Night Arrivals				
Aircraft Category	10L	10X	28R	28X
Large Jet	2.0	25.9	9.3	62.8
Commuter Jet	9.3	18.2	34.3	38.2
Commuter Prop	8.1	21.4	27.0	43.5
General Aviation Jet	4.4	16.8	19.7	59.1
General Aviation Prop	5.9	17.6	22.0	54.5
Day Departures				
Aircraft Category	10L	10X	28R	28X
Large Jet	0.9	50.0	0.9	48.2
Commuter Jet	18.0	19.3	32.8	29.9
Commuter Prop	7.3	37.7	12.1	42.9
General Aviation Jet	6.2	25.6	19.0	49.2
General Aviation Prop	12.0	37.1	19.0	31.9
Night Departures				
Aircraft Category	10L	10X	28R	28X
Large Jet	1.8	23.0	10.3	64.9
Commuter Jet	6.8	21.1	41.1	31.0
Commuter Prop	2.1	30.3	14.8	52.8
General Aviation Jet	4.3	19.8	18.2	57.7
General Aviation Prop	4.3	23.3	26.4	46.0

Day: 7:00 a.m. – 9:59 p.m.

Night: 10:00 p.m. – 6:59 a.m.

Note: 10X/28X denotes the proposed relocated Runway 10R/28L.

Source: 2005, 2006, 2007 ANOMS data, Landrum & Brown, 2007.

Flight Tracks: The flight track locations discussed for the 2012 Alternative C2a would not change for the 2018 Alternative. However, since runway use would change, the flight track utilization percentages would also change. Exhibits depicting the individual flight tracks modeled for the 2018 alternatives and the corresponding tables providing the proportion of operations assigned to each of the flight tracks are included in Appendix D.

Aircraft Weight and Trip Length: The departure trip length distribution discussed for the 2018 Alternative A and shown in Table 5.1-15, would remain the same for the 2018 Alternative C2a.

Ground Run-up Noise: The number, type, and duration of engine run-ups discussed for the 2012 Alternative A, and shown in Table 5.1-5 and graphically depicted on Exhibit 5.1-2, would remain the same for the 2018 Alternative C2a.

Noise Exposure Contour: The 2018 Alternative C2a noise exposure contour for 60, 65, 70, and 75 DNL levels is graphically depicted on **Exhibit 5.1-12, 2018 Alternative C2a Noise Exposure Contour.**

The 2018 Alternative C2a noise contour is larger than the 2018 Alternative A noise contour due to the proposed relocation of Runway 10R/28L. The proposed relocated runway would shift aircraft operations farther south. The flight paths that aircraft would use when arriving to and departing from the proposed relocated runway would shift south by approximately 800 feet. Current arrival and departure procedures would remain the same for the proposed relocated runway. However, because the location of the flight paths shift, new areas would be included in the 65+ DNL noise contour. **Table 5.1-19, Comparison of Areas within the 2018 Alternative C2a and the 2018 No Action Noise Exposure Contour (in Square Miles)**, provides a comparison of the areas within the 2018 Alternative A and the 2018 Alternative C2a noise contours.

**Table 5.1-19
COMPARISON OF AREAS WITHIN THE 2018 ALTERNATIVE C2a AND THE
2018 NO ACTION NOISE EXPOSURE CONTOUR (IN SQUARE MILES)
Port Columbus International Airport**

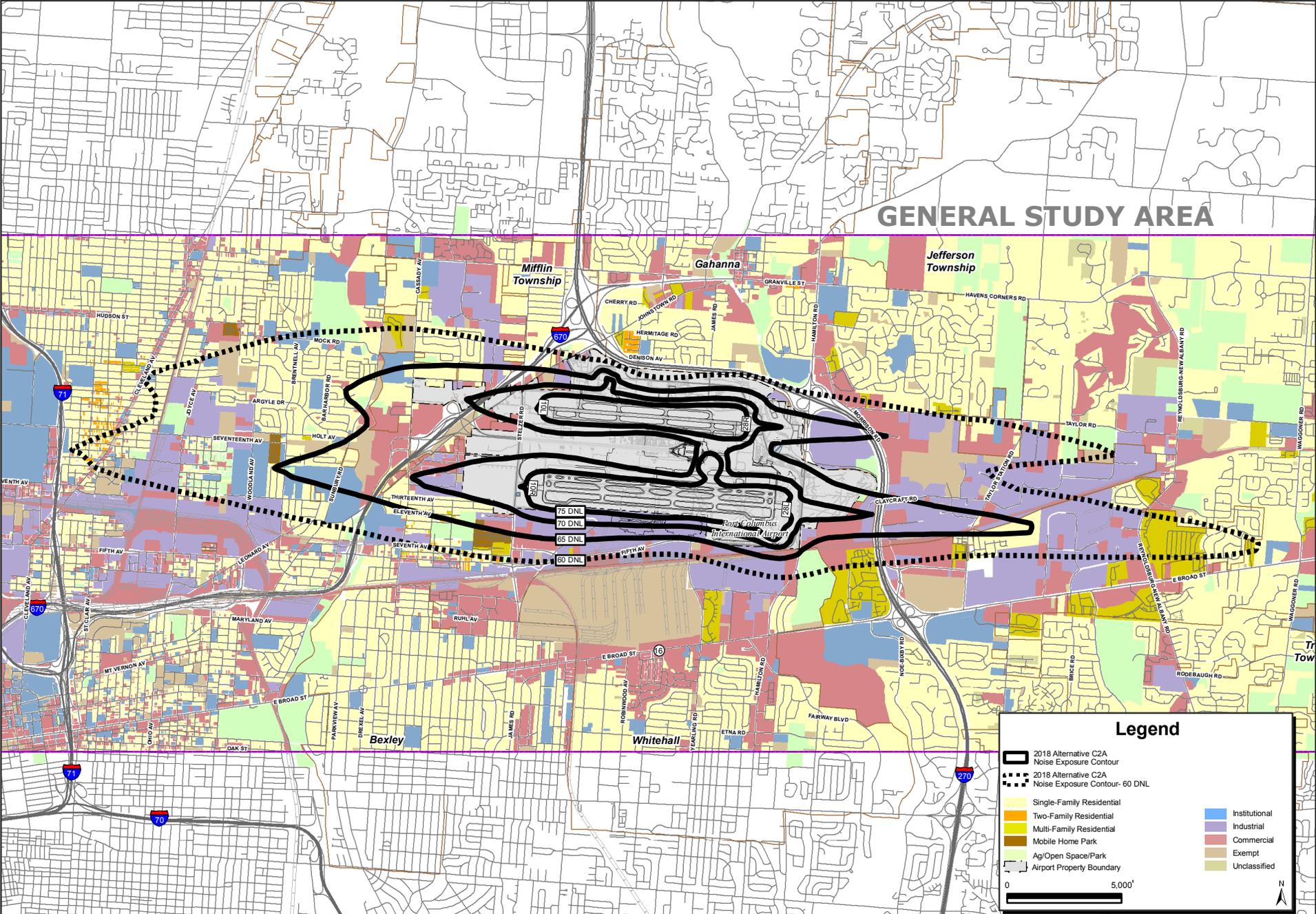
CONTOUR RANGE	2018 ALTERNATIVE A	2018 ALTERNATIVE C2a	DIFFERENCE
60-65 DNL	6.1	6.3	0.2
65-70 DNL	2.8	3.2	0.4
70-75 DNL	1.4	1.2	-0.2
75 + DNL	1.1	1.1	0.0
65 + DNL	5.3	5.4	0.1

Note: Difference between areas may not equal subtracted value due to rounding.

Contours: 2018_NA / 2018_C2a_rev2

Source: Landrum & Brown, 2007.

GENERAL STUDY AREA



Legend

- 2018 Alternative C2a Noise Exposure Contour
- 2018 Alternative C2a Noise Exposure Contour: 60 DNL
- Single-Family Residential
- Two-Family Residential
- Multi-Family Residential
- Mobile Home Park
- Ag/Open Space/Park
- Airport Property Boundary
- Institutional
- Industrial
- Commercial
- Exempt
- Unclassified

0 5,000'

N

Land Use Impact Assessment: The 65 DNL noise contour for the 2018 Alternative C2a encompasses 5.5 square miles of land, an increase of 0.2 square miles compared to the 65 DNL of the 2018 Alternative A noise contour. Additional discussion of land use impacts, including the number of housing units and noise-sensitive facilities within the noise contours, are included in Section 5.2, *Compatible Land Use*.

Grid Point Assessment: Regularly spaced grid points and specific noise-sensitive facility grid points were located throughout the Airport environs for supplemental analysis. Exhibits depicting the grid point locations and tables comparing the grid point results of all of the conditions assessed in this EIS are provided in Appendix D.

Mitigation Commitments: Mitigation for this alternative includes offering sound insulation to homes affected by significant noise levels. Section 5.2, *Compatible Land Use*, discusses the specific areas impacted and the proposed sound insulation boundary.

5.1.2.3 Alternative C2b: 2018 Relocate Runway 10R/28L 800 feet to the South – Noise Abatement Scenario B

This section provides a summary of the INM input data, the resulting noise exposure pattern, and the disclosure of the potential noise impacts resulting from the operation of the Airport under Alternative C2b in 2018.

Runway Definition: The runway layout discussed for the 2018 Alternative C2a, including the relocation of Runway 10R/28L (10X/28X) 800 feet to the south, and graphically depicted on Exhibit 5.1-11, would remain the same for the 2018 Alternative C2b.

Activity Levels and Fleet Mix: The operating levels and fleet mix discussed for the 2018 Alternative A and shown on Table 5.1-13 and Table 5.1-14, would remain the same for Alternative C2b.

Runway End Utilization: The runway use for 2018 alternative C2b is similar to that discussed for the 2012 Alternative C2b, with the exception that, like 2018 Alternative C2a, runway use for 2018 Alternative C2b would be affected by the location of the new terminal, which is anticipated to be in operation by 2018 as depicted in **Table 5.1-20, Runway End Utilization – 2018 Alternative C2b**.

Flight Tracks: 2018 Alternative C2b includes the NCP measures recommended by the 2007 Part 150 Study as discussed for the 2012 Alternative C2b. Exhibits depicting the individual flight tracks modeled for the 2018 alternatives and the corresponding tables providing the proportion of operations assigned to each of the flight tracks are included in Appendix D.

Aircraft Weight and Trip Length: The departure trip length distribution discussed for the 2018 Alternative A and shown in Table 5.1-15, would remain the same for the 2018 Alternative C2b.

Ground Run-up Noise: The number, type, and duration of engine run-ups discussed for the 2012 Alternative A, and shown in Table 5.1-5 and graphically depicted on Exhibit 5.1-2, would remain the same for the 2018 Alternative C2b.

**Table 5.1-20
RUNWAY END UTILIZATION – 2018 ALTERNATIVE C2b
Port Columbus International Airport**

Day Arrivals				
Aircraft Category	10L	10X	28R	28X
Large Jet	4.6	29.6	11.4	54.4
Commuter Jet	14.8	19.2	35.9	30.1
Commuter Prop	10.6	23.8	27.8	37.8
General Aviation Jet	6.7	23.3	18.7	51.3
General Aviation Prop	7.3	22.7	20.4	49.6
Night Arrivals				
Aircraft Category	10L	10X	28R	28X
Large Jet	1.0	50.0	1.0	48.0
Commuter Jet	18.0	19.3	32.8	29.9
Commuter Prop	7.3	37.7	12.1	42.9
General Aviation Jet	6.2	25.6	19.0	49.2
General Aviation Prop	12.0	37.1	19.0	31.9
Day Departures				
Aircraft Category	10L	10X	28R	28X
Large Jet	2.7	32.1	8.0	57.2
Commuter Jet	12.8	21.2	30.7	35.3
Commuter Prop	10.0	24.1	24.9	41.0
General Aviation Jet	6.2	23.8	17.5	52.5
General Aviation Prop	7.5	22.5	20.1	49.9
Night Departures				
Aircraft Category	10L	10X	28R	28X
Large Jet	2.8	32.0	8.4	56.8
Commuter Jet	9.5	26.1	35.9	28.5
Commuter Prop	2.5	34.2	13.3	50.0
General Aviation Jet	5.4	24.6	16.8	53.2
General Aviation Prop	4.7	25.3	25.5	44.5

Day: 7:00 a.m. – 9:59 p.m.

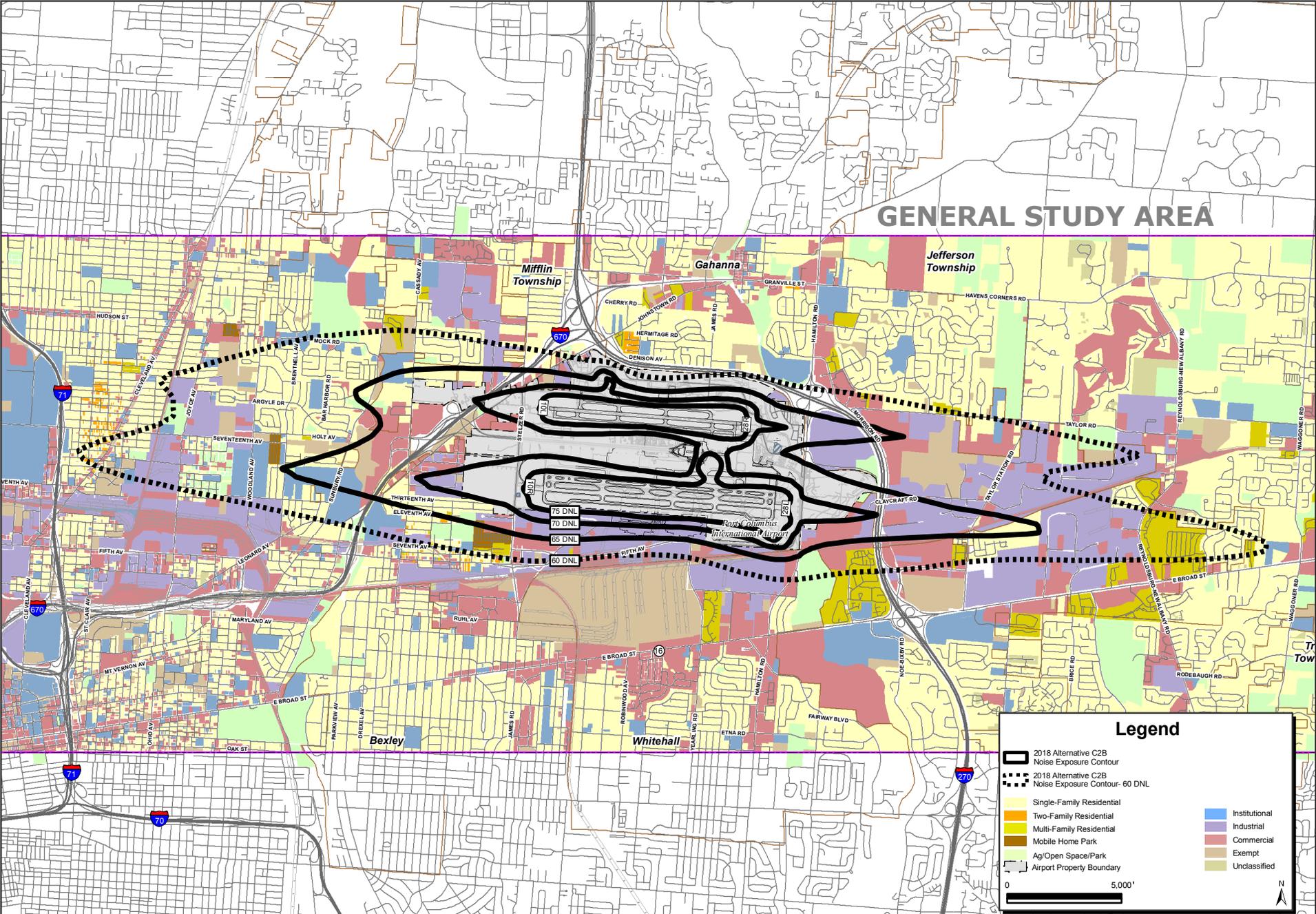
Night: 10:00 p.m. – 6:59 a.m.

Note: 10X/28X denotes the proposed relocated Runway 10R/28L.

Source: 2005, 2006, 2007 ANOMS data, Landrum & Brown, 2007.

Noise Exposure Contour: The 2018 Alternative C2b noise exposure contour for 60, 65, 70, and 75 DNL levels is graphically depicted on **Exhibit 5.1-13, 2018 Alternative C2b Noise Exposure Contour.**

GENERAL STUDY AREA



Legend

- 2018 Alternative C2b Noise Exposure Contour
- 2018 Alternative C2b Noise Exposure Contour - 60 DNL
- Single-Family Residential
- Two-Family Residential
- Multi-Family Residential
- Mobile Home Park
- Ag/Open Space/Park
- Airport Property Boundary
- Institutional
- Industrial
- Commercial
- Exempt
- Unclassified

0 5,000'

N

The 2018 Alternative C2b noise contour is larger than the 2018 Alternative A noise contour due to the proposed relocation of Runway 10R/28L. The proposed relocated runway would shift aircraft operations farther south. The flight paths that aircraft would use when arriving to and departing from the proposed relocated runway would shift south by 800 feet. Current arrival and departure procedures would remain the same for the proposed relocated runway. However, because the location of the flight paths shift, new areas would be included in the 65+ DNL noise contour.

The implementation of the 2007 NCP also affects the noise contour compared to the 2018 Alternative A noise contour. Due to the recommendation to maximize east flow, the noise contour increases in size to the east while decreasing in size to the west. **Table 5.1-21** provides a comparison of the areas within the 2018 Alternative A and the 2018 Alternative C2b noise contours.

**Table 5.1-21
COMPARISON OF AREAS WITHIN THE 2018 ALTERNATIVE C2b AND THE
2018 ALTERNATIVE A NOISE EXPOSURE CONTOUR
(IN SQUARE MILES)
Port Columbus International Airport**

CONTOUR RANGE	2018 ALTERNATIVE A	2018 ALTERNATIVE C2b	DIFFERENCE
60-65 DNL	6.1	6.4	0.3
65-70 DNL	2.8	3.2	0.4
70-75 DNL	1.4	1.1	-0.3
75 + DNL	1.1	1.1	0.0
65 + DNL	5.3	5.4	0.1

Note: Difference between areas may not equal subtracted value due to rounding.

Contours: 2018_NA/ 2018_C2b_rev2

Source: Landrum & Brown, 2007.

Land Use Impact Assessment: The 65 DNL noise contour for the 2018 Alternative C2b encompasses 5.4 square miles of land, an increase of 0.1 square miles compared to the 65 DNL of the 2018 Alternative A noise contour. Additional discussion of land use impacts, including the number of housing units and noise-sensitive facilities within the noise contours, are included in Section 5.2, *Compatible Land Use*.

Grid Point Assessment: Regularly spaced grid points and specific noise-sensitive facility grid points were located throughout the Airport environs for supplemental analysis. Exhibits depicting the grid point locations and tables comparing the grid point results of all of the conditions assessed in this EIS are provided in Appendix D.

Mitigation Commitments: Mitigation for this alternative includes offering sound insulation to homes affected by significant noise levels. Section 5.2, *Compatible Land Use*, discusses the specific areas impacted and the proposed sound insulation boundary.

5.1.2.4 Alternative C3a: 2018 Relocate Runway 10R/28L 702 feet to the South – Noise Abatement Scenario A

This section provides a summary of the INM input data, the resulting noise exposure pattern, and the disclosure of the potential noise impacts resulting from the operation of the Airport under Alternative C3a in 2018.

Runway Definition: The runway layout discussed for the 2012 Alternative C3a, including the relocation of Runway 10R/28L (10X/28X) 702 feet to the south, would remain the same for the 2018 Alternative C3b. However, the first phase of the new terminal is expected to be completed by 2018. **Exhibit 5.1-14, 2018 Alternative C3a Proposed Airport Layout**, graphically depicts the proposed Airport layout for the 2018 Alternative C3a.

Activity Levels and Fleet Mix: The operating levels and fleet mix discussed for the 2018 Alternative A and shown on Table 5.1-13 and Table 5.1-14, would remain the same for the 2018 Alternative C3a.

Runway End Utilization: The runway end utilization discussed for the 2018 Alternative C2a and shown on Table 5.1-17, would remain the same for the 2018 Alternative C3a.

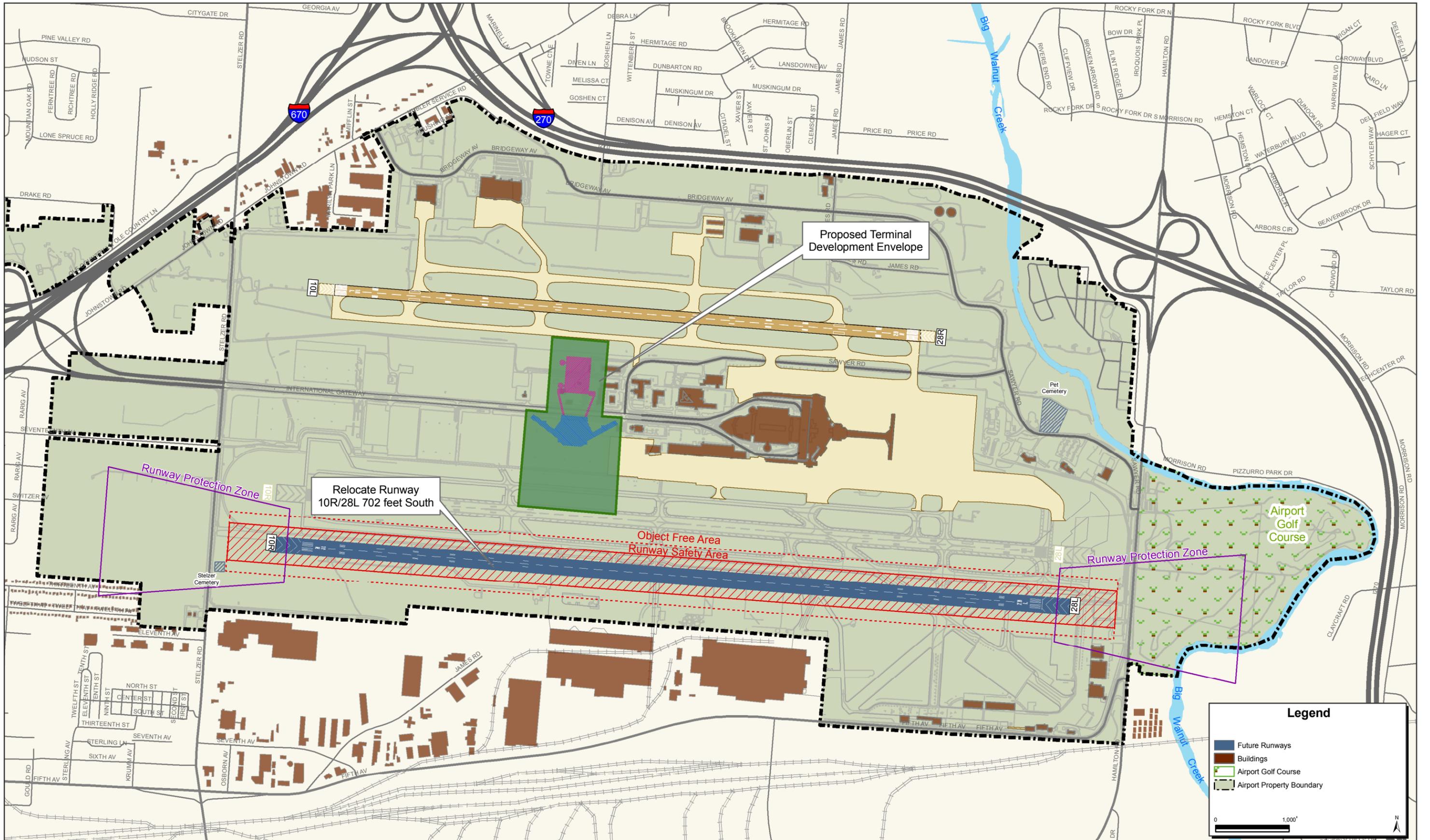
Flight Tracks: The flight track locations discussed for the 2012 Alternative C3a would not change for the 2018 Alternative C3a. However, since runway use would change, the flight track utilization percentages would also change. Exhibits depicting the individual flight tracks modeled for the 2018 alternatives and the corresponding tables providing the proportion of operations assigned to each of the flight tracks are included in Appendix D.

Aircraft Weight and Trip Length: The departure trip length distribution discussed for the 2018 Alternative A and shown in Table 5.1-15, would remain the same for the 2018 Alternative C3a.

Ground Run-up Noise: The number, type, and duration of engine run-ups discussed for the 2012 Alternative A, and shown in Table 5.1-5 and graphically depicted on Exhibit 5.1-2, would remain the same for the 2018 Alternative C3a.

Noise Exposure Contour: The 2018 Alternative C3a noise exposure contour for 60, 65, 70, and 75 DNL levels is graphically depicted on **Exhibit 5.1-15, 2018 Alternative C3a Noise Exposure Contour**.

The 2018 Alternative C3a noise contour is larger than the 2018 No Action noise contour due to the proposed relocation of Runway 10R/28L. The proposed relocated runway would shift aircraft operations farther south. The flight paths that aircraft would use when arriving to and departing from the proposed relocated runway would shift south by 702 feet. Current arrival and departure procedures would remain the same for the proposed relocated runway. However, because the location of the flight paths shift, new areas would be included in the 65+ DNL noise contour. **Table 5.1-22** provides a comparison of the areas within the 2018 Alternative A and the 2018 Alternative C3a noise contours.



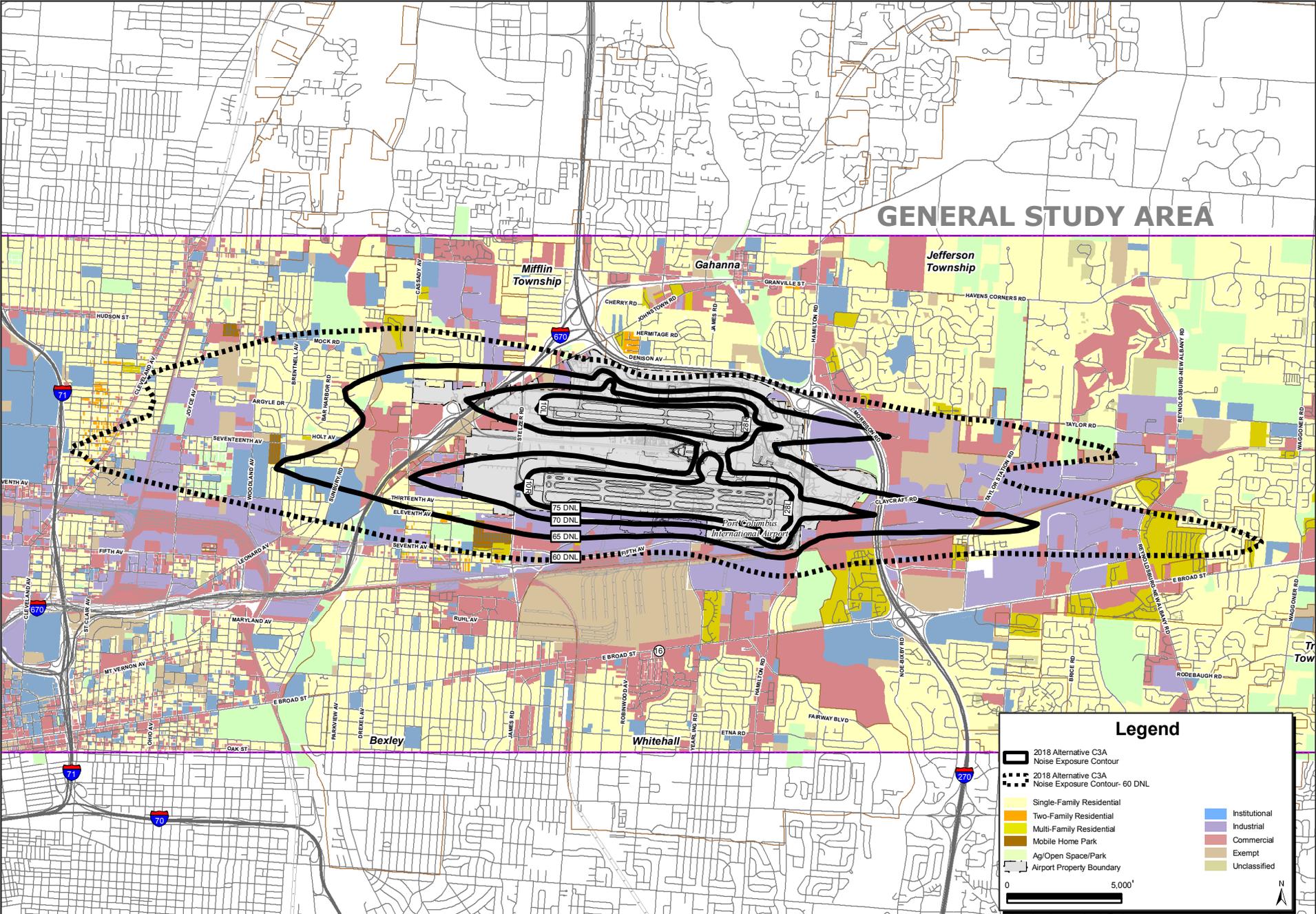
Legend

- Future Runways
- Buildings
- Airport Golf Course
- Airport Property Boundary

0 1,000'

N

GENERAL STUDY AREA



Legend

- 2018 Alternative C3a Noise Exposure Contour
- 2018 Alternative C3a Noise Exposure Contour: 60 DNL
- Single-Family Residential
- Two-Family Residential
- Multi-Family Residential
- Mobile Home Park
- Ag/Open Space/Park
- Airport Property Boundary
- Institutional
- Industrial
- Commercial
- Exempt
- Unclassified

0 5,000'

N

**Table 5.1-22
COMPARISON OF AREAS WITHIN THE 2018 ALTERNATIVE A AND THE 2018 ALTERNATIVE C3a NOISE EXPOSURE CONTOURS (IN SQUARE MILES)
Port Columbus International Airport**

CONTOUR RANGE	2018 ALTERNATIVE A	2018 ALTERNATIVE C3a	DIFFERENCE
60-65 DNL	6.1	6.2	0.1
65-70 DNL	2.8	3.1	0.3
70-75 DNL	1.4	1.2	-0.2
75 + DNL	1.1	1.1	0.0
65 + DNL	5.3	5.5	0.2

Note: Difference between areas may not equal subtracted value due to rounding.

Contours: 2018_NA / 2018_C3a_rev2

Source: Landrum & Brown, 2007.

Grid Point Assessment: Regularly spaced grid points and specific noise-sensitive facility grid points were located throughout the Airport environs for supplemental analysis. Exhibits depicting the grid point locations and tables comparing the grid point results of all of the conditions assessed in this EIS are provided in Appendix D.

Land Use Impact Assessment: The 65 DNL noise contour for the 2018 Alternative C3a encompasses 5.5 square miles of land, an increase of 0.2 square miles compared to the 65 DNL of the 2018 Alternative A noise contour. Additional discussion of land use impacts, including the number of housing units and noise-sensitive facilities within the noise contours, are included in Section 5.2, *Compatible Land Use*.

Mitigation Commitments: Mitigation for this alternative includes offering sound insulation to homes affected by significant noise levels. Section 5.2, *Compatible Land Use*, discusses the specific areas impacted and the proposed sound insulation boundary.

5.1.2.5 Alternative C3b: 2018 Relocate Runway 10R/28L 702 feet to the South – Noise Abatement Scenario B (Sponsor’s Proposed Project)

This section provides a summary of the INM input data, the resulting noise exposure pattern, and the disclosure of the potential noise impacts resulting from the operation of the Airport under Alternative C3b in 2018.

Runway Definition: The runway layout discussed for the 2012 Alternative C3b, including the relocation of Runway 10L/28R (10X/28X) 702 feet to the south, and graphically depicted on Exhibit 5.1-7, would remain the same for the 2018 Alternative C3b. However, the first phase of the new terminal is expected to be completed by 2018.

Activity Levels and Fleet Mix: The operating levels and fleet mix discussed for the 2018 Alternative C2a and shown on Tables 5-13 and 5-14, would remain the same for Alternative C3b.

Runway End Utilization: The runway end utilization discussed for the 2018 Alternative C2b and shown on Table 5.1-19, would remain the same for the 2018 Alternative C3b.

Flight Tracks: 2018 Alternative C3b includes the NCP measures recommended by the 2007 Part 150 Study as discussed for the 2012 Alternative C3b. Exhibits depicting the individual flight tracks modeled for the 2018 alternatives and the corresponding tables providing the proportion of operations assigned to each of the flight tracks are included in Appendix D.

Aircraft Weight and Trip Length: The departure trip length distribution discussed for the 2018 Alternative A would remain the same for the 2018 Alternative C3b.

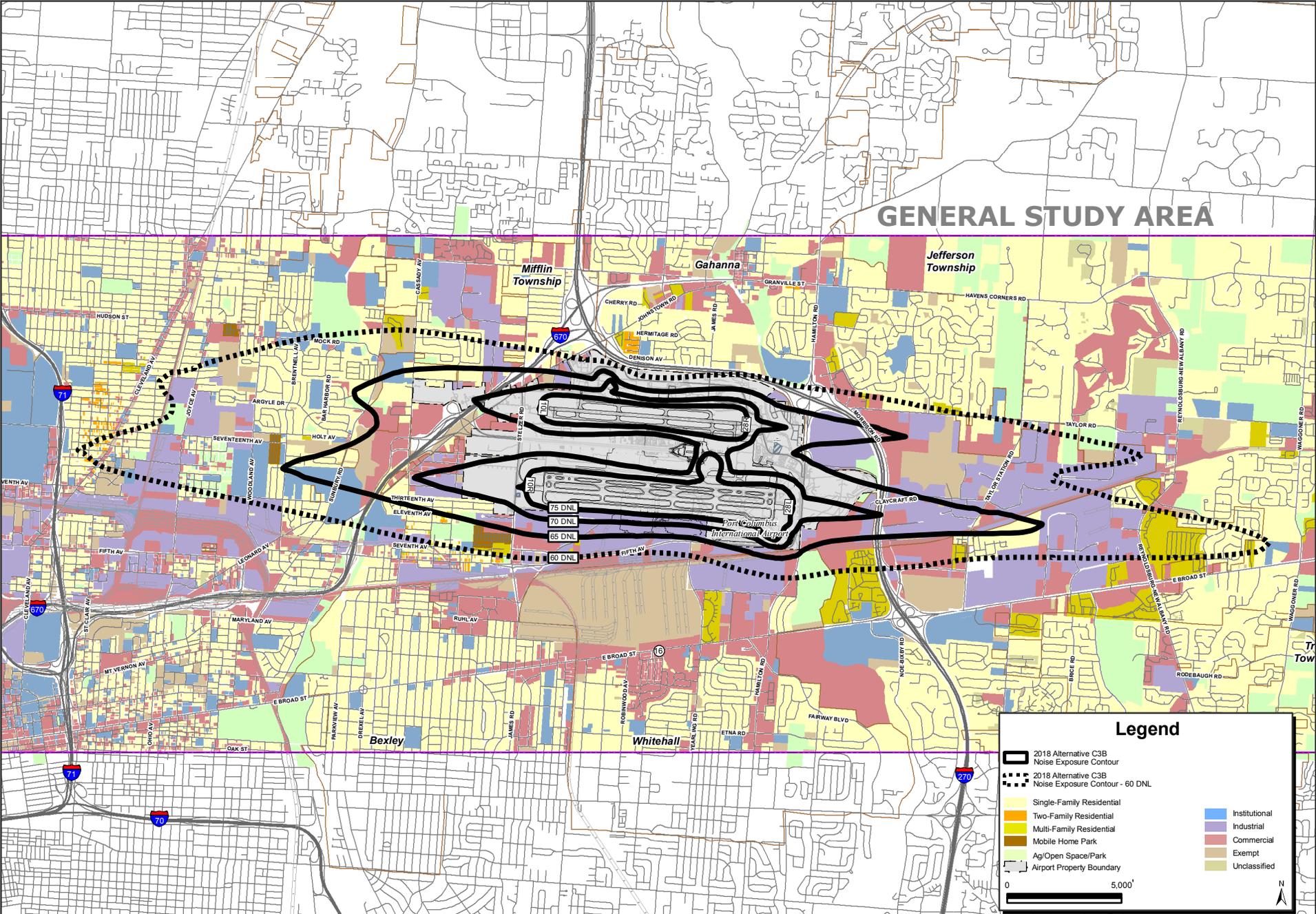
Ground Run-up Noise: The number, type, and duration of engine run-ups discussed for the 2018 Alternative A would remain the same for the 2018 Alternative C3b.

Noise Exposure Contour: The 2018 Alternative C3b noise exposure contour for 60, 65, 70, and 75 DNL levels is graphically depicted on **Exhibit 5.1-16, 2018 Alternative C3b Noise Exposure Contour.**

The 2018 Alternative C3b noise contour is larger than the 2018 Alternative A noise contour due to the proposed relocation of Runway 10R/28L. The proposed relocated runway would shift aircraft operations farther south. The flight paths that aircraft would use when arriving to and departing from the proposed relocated runway would shift south by 702 feet. Current arrival and departure procedures would remain the same for the proposed relocated runway. However, because the location of the flight paths shift, new areas would be included in the 65+ DNL noise contour.

The implementation of the 2007 NCP also affects the noise contour compared to the 2012 Alternative A noise contour. Due to the recommendation to maximize east flow, the noise contour increases in size to the east while decreasing in size to the west. **Table 5.1-23** provides a comparison of the areas within the 2018 Alternative A and the 2018 Alternative C3b noise contours.

GENERAL STUDY AREA



Legend

- 2018 Alternative C3b Noise Exposure Contour
- 2018 Alternative C3b Noise Exposure Contour - 60 DNL
- Single-Family Residential
- Two-Family Residential
- Multi-Family Residential
- Mobile Home Park
- Ag/Open Space/Park
- Airport Property Boundary
- Institutional
- Industrial
- Commercial
- Exempt
- Unclassified

0 5,000'

N

**Table 5.1-23
COMPARISON OF AREAS WITHIN THE 2018 ALTERNATIVE A AND THE 2018
ALTERNATIVE C3b NOISE EXPOSURE CONTOURS
(IN SQUARE MILES)
Port Columbus International Airport**

CONTOUR RANGE	2018 ALTERNATIVE A	2018 ALTERNATIVE C3b	DIFFERENCE
60-65 DNL	6.1	6.3	0.2
65-70 DNL	2.8	3.2	0.4
70-75 DNL	1.4	1.1	-0.3
75 + DNL	1.1	1.1	0.0
65 + DNL	5.3	5.4	0.1

Note: Difference between areas may not equal subtracted value due to rounding.

Contours: 2018_NA/ 2018_C3b_rev2

Source: Landrum & Brown, 2007.

Land Use Impact Assessment: The 65 DNL noise contour for the 2018 Alternative C3b encompasses 5.4 square miles of land, an increase of 0.1 square miles compared to the 65 DNL of the 2018 Alternative A noise contour. Additional discussion of land use impacts, including the number of housing units and noise-sensitive facilities within the noise contours, are included in Section 5.2, *Compatible Land Use*.

Grid Point Assessment: Regularly spaced grid points and specific noise-sensitive facility grid points were located throughout the Airport environs for supplemental analysis. Exhibits depicting the grid point locations and tables comparing the grid point results of all of the conditions assessed in this EIS are provided in Appendix D.

Mitigation Commitments: Mitigation for this alternative includes offering sound insulation to homes affected by significant noise levels. Section 5.2, *Compatible Land Use*, discusses the specific areas impacted and the proposed sound insulation boundary.

5.1.3 SIGNIFICANT NOISE ANALYSIS

A significant noise impact would occur if analysis shows that an action would result in noise-sensitive areas to experience an increase in noise of DNL 1.5 dB or more, at or above DNL 65 dB noise exposure when compared to the No Action alternative for the same timeframe. For example, an increase in noise exposure over a noise-sensitive land use from 65 DNL to 66.5 DNL is considered a significant impact. Similarly, if a noise-sensitive area that receives less than 65 DNL under the No Action alternative would receive noise exposure of 65 DNL as a result of the action, then those areas are also considered significantly impacted.

All of the alternatives were analyzed against Alternative A: No Action for their respective years (2012 or 2018). The analysis concluded that a 1.5 dB increase would occur within the 65 DNL or greater noise contour for all four of the alternatives in both analysis years. In addition, for all four of the alternatives,

residential land uses that would receive noise exposure at levels less than 65 DNL under the No Action would be exposed to noise levels of at least 65 DNL for their respective years.

5.1.3.1 Noise Impacts Between the 60 and 65 DNL Noise Exposure Contours

To assess the potential noise impacts to housing units and the population located between the 60 and 65 DNL noise exposure contours, analysis was conducted using the recommendations of the Federal Interagency Committee on Noise (FICON), which the FAA has incorporated into FAA Order 1050.1E.

The FICON was formed to review and make recommendations on Federal policies that govern the assessment of airport noise impacts. Under one of its policy recommendations, FICON concluded that it is prudent to provide for a systematic analysis of noise levels below 65 DNL in National Environmental Policy Act (NEPA) documents using the following screening procedures:

1. Determine if a 1.5 dB increase occurs at noise-sensitive sites within the 65 DNL or greater noise contour. If a 1.5 dB increase does not occur, then it is likely that a 3 dB increase would not be found within the 60 to 65 DNL noise contour, and no further screening would be necessary.
2. If a 1.5 dB increase does occur at noise-sensitive sites within the 65 DNL or greater noise contour, then determine the areas where a 3 dB increase occurs within the 60 to 65 DNL noise contour.

According to the policy recommendations of the FICON, when areas of a 3 dB increase in noise exposure within the 60 to 65 DNL noise contour are identified in a NEPA analysis, the consideration of appropriate mitigation should include the potential for mitigating noise in these areas. The same range of currently approved mitigation options that are potentially available at 65 DNL or greater should be considered, including eligibility for Federal funding. The FICON further acknowledges that there is no commitment by either the FAA or the airport sponsor for funding potential land use mitigation within a 60 to 65 DNL noise contour, because it is generally expected that Federal priority would be given to mitigating noise at higher levels.

The initial FICON screening analysis was prepared for each airfield alternative. All of the alternatives were analyzed against Alternative A: No Action for their respective years (2012 or 2018). The analysis concluded that a 1.5 dB increase would occur within the 65 DNL or greater noise contour for all four of the alternatives in both analysis years. Therefore, the second step of the FICON screening procedures was performed to identify if there were areas where a 3 dB increase in noise would occur within the 60 to 65 DNL noise contour. **Table 5.1-24** provides a summary of the impacts for the 1.5 dB and 3 dB increase areas for the 2012 alternatives.

**Table 5.1-24
NOISE IMPACTS BETWEEN THE 60 AND 65 DNL NOISE EXPOSURE
CONTOURS – 2012 AND 2018 ALTERNATIVES
Port Columbus International Airport**

1.5 dB Increase in 65+ DNL	3 dB Increase in 60-65 DNL					
	Status	Single-Family Housing Units	Multi-Family Housing Units	Mobile Home	Total	Population
2012 Alternative C2a						
Yes	Sound Insulated	6	0	0	6	15
	Easement	3	145	0	148	365
	Not Insulated	510	283	271	1,064	2,628
	<i>Total</i>	<i>519</i>	<i>428</i>	<i>271</i>	<i>1,218</i>	<i>3,008</i>
2018 Alternative C2a						
Yes	Sound Insulated	6	0	0	6	15
	Easement	5	381	0	386	953
	Not Insulated	577	457	259	1,293	3,194
	<i>Total</i>	<i>588</i>	<i>838</i>	<i>259</i>	<i>1,685</i>	<i>4,162</i>
2012 Alternative C2b						
Yes	Sound Insulated	6	0	0	6	15
	Easement	0	296	0	296	731
	Not Insulated	377	160	155	692	1,709
	<i>Total</i>	<i>383</i>	<i>456</i>	<i>155</i>	<i>994</i>	<i>2,455</i>
2018 Alternative C2b						
Yes	Sound Insulated	6	0	0	6	15
	Easement	0	449	0	449	1,109
	Not Insulated	481	467	272	1,220	3,013
	<i>Total</i>	<i>487</i>	<i>916</i>	<i>272</i>	<i>1,675</i>	<i>4,137</i>
2012 Alternative C3a						
Yes	Sound Insulated	6	0	0	6	15
	Easement	0	56	0	56	138
	Not Insulated	400	72	117	589	1,455
	<i>Total</i>	<i>406</i>	<i>128</i>	<i>117</i>	<i>651</i>	<i>1,608</i>
2018 Alternative C3a						
Yes	Sound Insulated	6	0	0	6	15
	Easement	4	351	0	355	877
	Not Insulated	446	373	272	1,091	2,695
	<i>Total</i>	<i>456</i>	<i>724</i>	<i>272</i>	<i>1,452</i>	<i>3,586</i>
2012 Alternative C3b						
Yes	Sound Insulated	6	0	0	6	15
	Easement	0	203	0	203	501
	Not Insulated	338	120	7	465	1,149
	<i>Total</i>	<i>344</i>	<i>323</i>	<i>7</i>	<i>674</i>	<i>1,665</i>
2018 Alternative C3b						
Yes	Sound Insulated	6	0	0	6	15
	Easement	0	428	0	428	1,057
	Not Insulated	418	270	156	844	2,085
	<i>Total</i>	<i>424</i>	<i>698</i>	<i>156</i>	<i>1,278</i>	<i>3,157</i>

- Noise contours were generated using the FAA's Integrated Noise Model, Version 6.2 computer model.
- Housing counts are based on field verification.
- Population numbers are approximate based on the housing counts multiplied by the 2000 Census housing to population ratio.

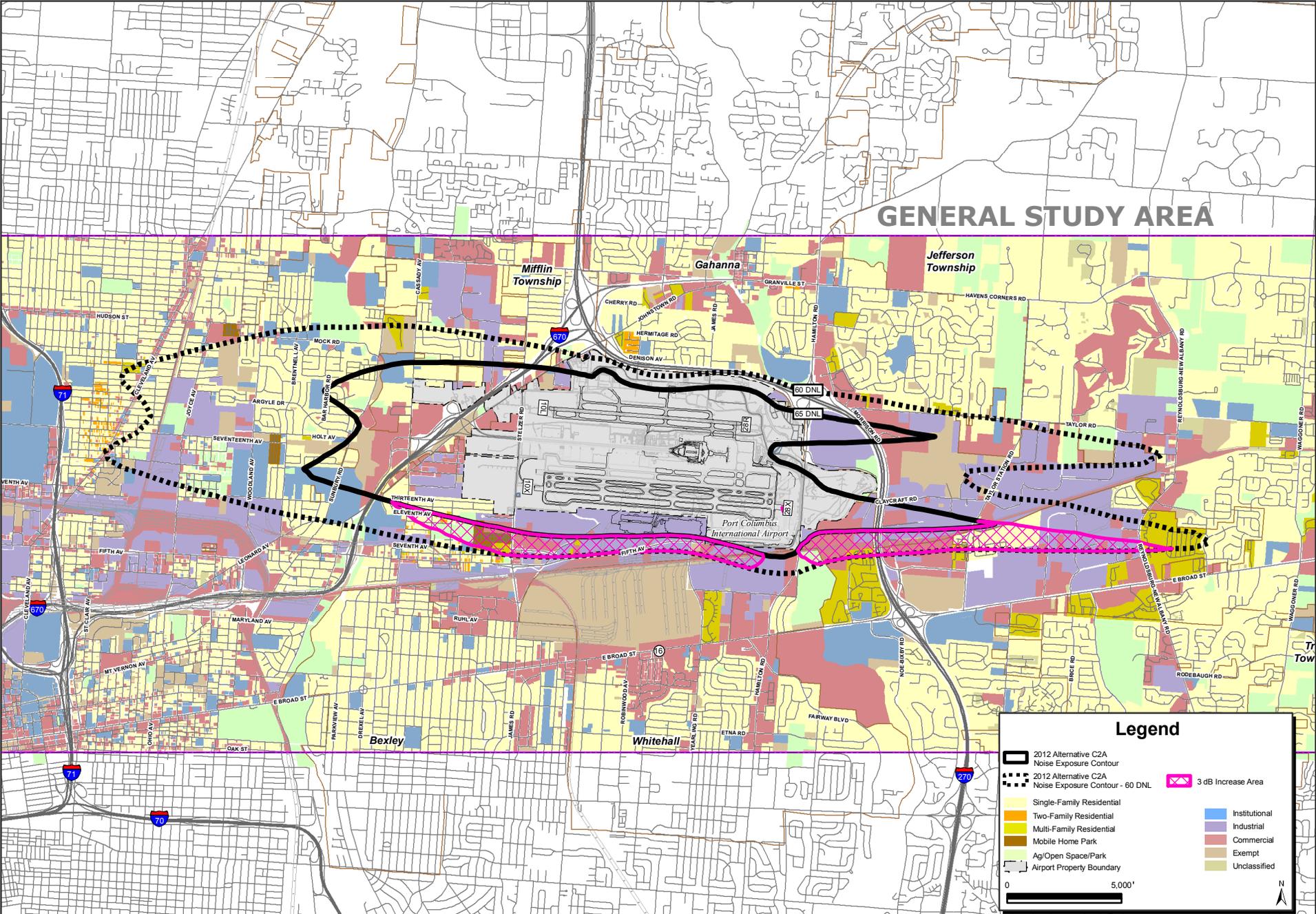
Source: Landrum & Brown, 2007.

2012 Alternative C2a: A screening analysis was prepared which determined that a 1.5 dB increase would occur within the 65 DNL or greater noise contour over noise-sensitive land uses for the 2012 Alternative C2a. The second step of the FICON screening procedures identified the areas where a 3 dB increase in noise would occur within the 60 to 65 DNL noise contour. **Exhibit 5.1-17, Area of 3 dB Increase Within the 60 - 65 DNL, 2012 Alternative C2a**, graphically depicts the areas of 3 dB increases resulting from the relocation of Runway 10R/28L in 2012. There are 1,218 housing units and approximately 3,008 residents located within this area. Similarly, for 2018 Alternative C2a, a 1.5 dB increase would occur over noise-sensitive land uses. An assessment of the area where a 3 dB increase would occur for the 2018 Alternative C2a found that there would be 1,685 housing units and approximately 4,162 residents located within this area. There are no noise-sensitive facilities located within the area of 3 dB increase for the 2012 Alternative C2a. There is one noise-sensitive facility (East Columbus Elementary School) located within the area of 3 dB increase for the 2018 Alternative C2a. **Exhibit 5.1-18, Area of 3 dB Increase Within the 60 - 65 DNL, 2018 Alternative C2a**, graphically depicts the areas of 3 dB increases resulting from the relocation of Runway 10R/28L in 2018.

2012 Alternative C2b: A screening analysis was prepared which determined that a 1.5 dB increase would occur within the 65 DNL or greater noise contour over noise-sensitive land uses for the 2012 Alternative C2b. The second step of the FICON screening procedures identified the areas where a 3 dB increase in noise would occur within the 60 to 65 DNL noise contour. **Exhibit 5.1-19, Area of 3 dB Increase Within the 60 - 65 DNL, 2012 Alternative C2b**, graphically depicts the areas of 3 dB increases resulting from the relocation of Runway 10R/28L in 2012. There are 994 housing units and approximately 2,455 residents located within this area. Similarly, for 2018 Alternative C2b, a 1.5 dB increase would occur over noise-sensitive land uses. An assessment of the area where a 3 dB increase would occur for the 2018 Alternative C2b found that there would be 1,675 housing units and approximately 4,137 residents located within this area. There are no noise-sensitive facilities located within the area of 3 dB increase for the 2012 or 2018 Alternative C2b. **Exhibit 5.1-20, Area of 3 dB Increase Within the 60 - 65 DNL, 2018 Alternative C2b**, graphically depicts the areas of 3 dB increases resulting from the relocation of Runway 10R/28L in 2018.

2012 Alternative C3a: A screening analysis was prepared which determined that a 1.5 dB increase would occur within the 65 DNL or greater noise contour over noise-sensitive land uses for the 2012 Alternative C3a. The second step of the FICON screening procedures identified the areas where a 3 dB increase in noise would occur within the 60 to 65 DNL noise contour. **Exhibit 5.1-21, Area of 3 dB Increase Within the 60 - 65 DNL, 2012 Alternative C3a**, graphically depicts the areas of 3 dB increases resulting from the relocation of Runway 10R/28L in 2012. There are 651 housing units and approximately 1,608 residents located within this area. Similarly, for 2018 Alternative C3a, a 1.5 dB increase would occur over noise-sensitive land uses. An assessment of the area where a 3 dB increase would occur for the 2018 Alternative C3a found that there would be 1,452 housing units and approximately 3,586 residents located within this area.

GENERAL STUDY AREA



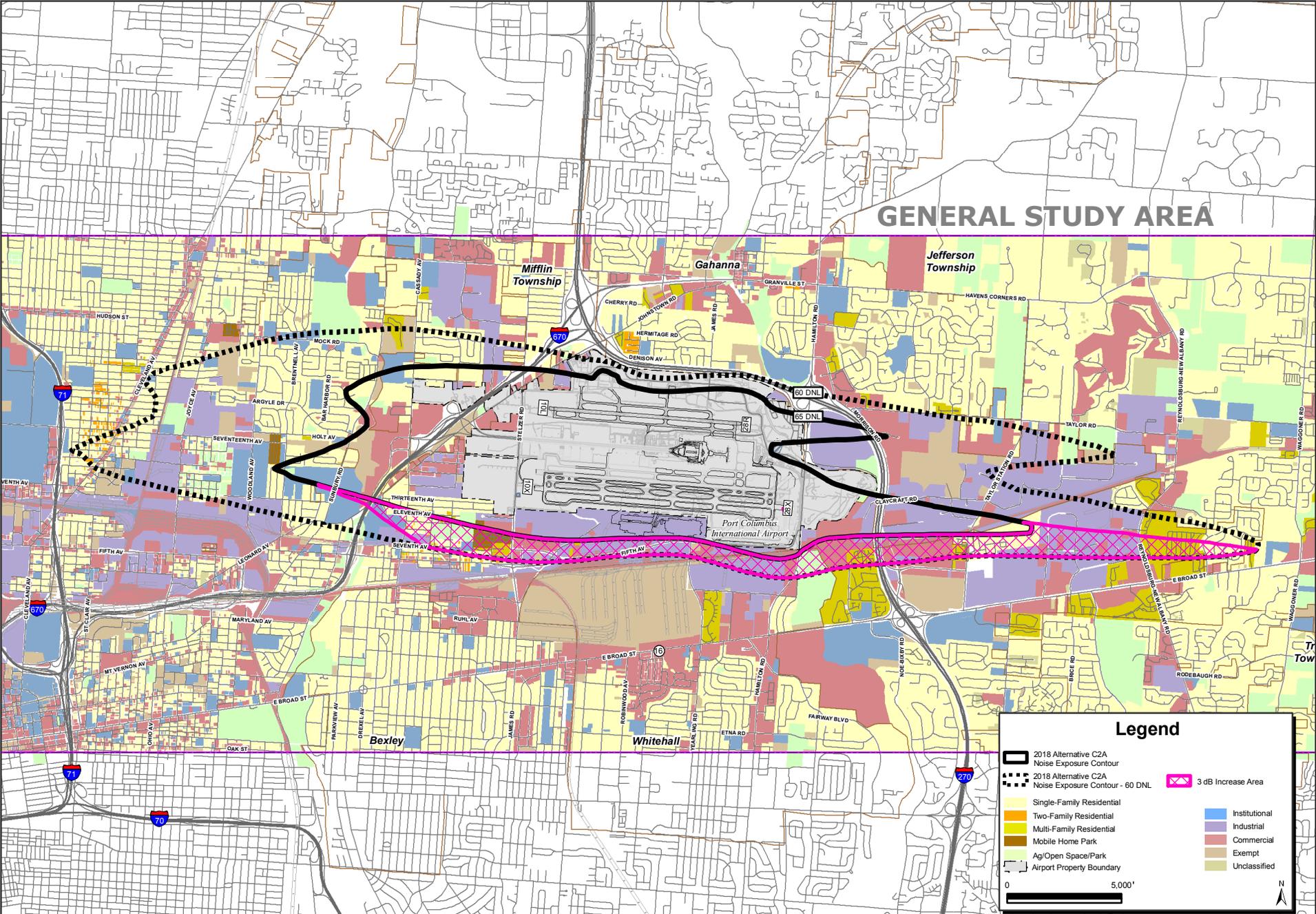
Legend

- 2012 Alternative C2a Noise Exposure Contour
- 2012 Alternative C2a Noise Exposure Contour - 60 DNL
- 3 dB Increase Area
- Single-Family Residential
- Two-Family Residential
- Multi-Family Residential
- Mobile Home Park
- Ag/Open Space/Park
- Airport Property Boundary
- Institutional
- Industrial
- Commercial
- Exempt
- Unclassified

0 5,000'

N

GENERAL STUDY AREA



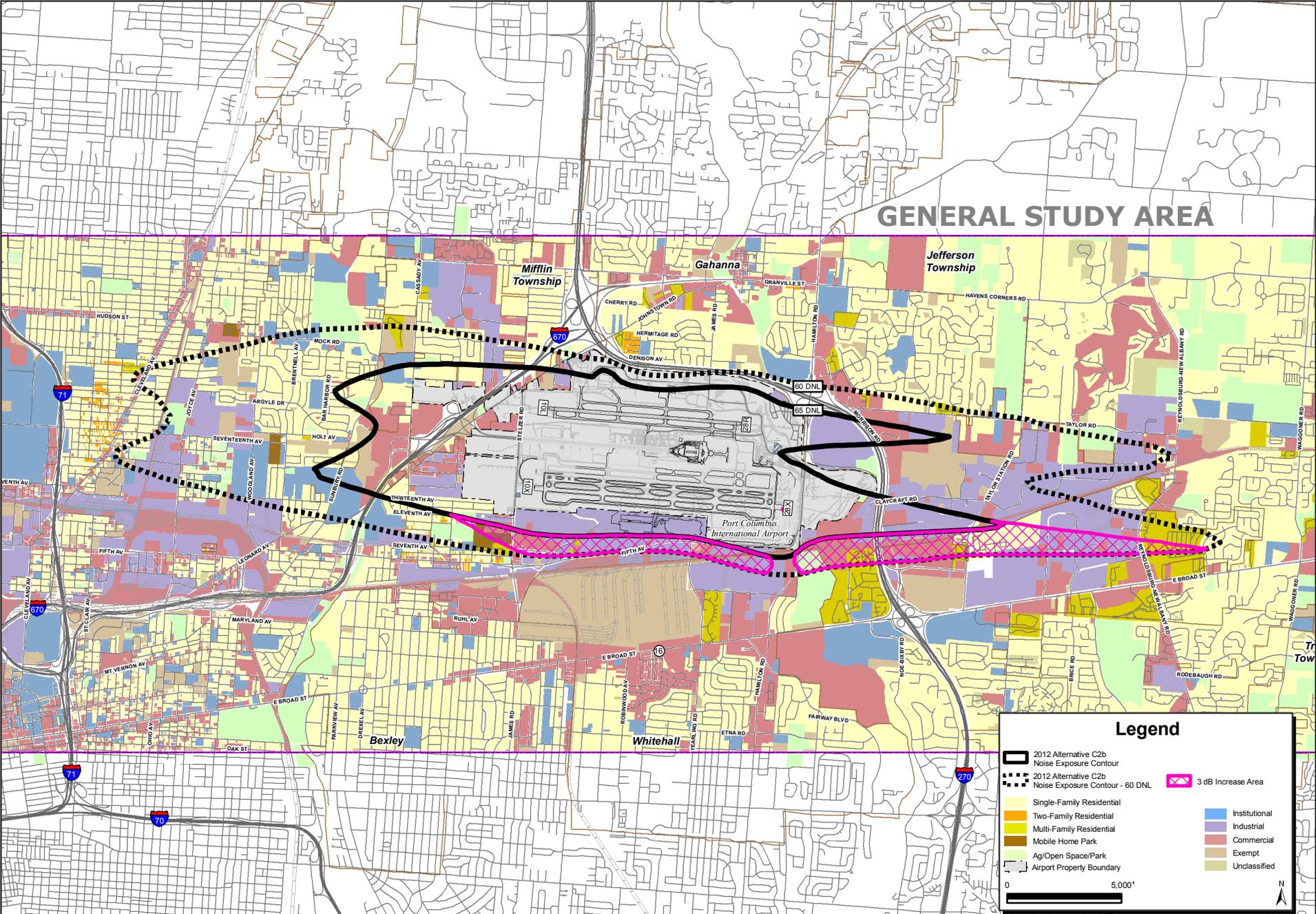
Legend

- 2018 Alternative C2a Noise Exposure Contour
- 2018 Alternative C2a Noise Exposure Contour - 60 DNL
- 3 dB Increase Area
- Single-Family Residential
- Two-Family Residential
- Multi-Family Residential
- Mobile Home Park
- Ag/Open Space/Park
- Airport Property Boundary
- Institutional
- Industrial
- Commercial
- Exempt
- Unclassified

0 5,000'

N

GENERAL STUDY AREA



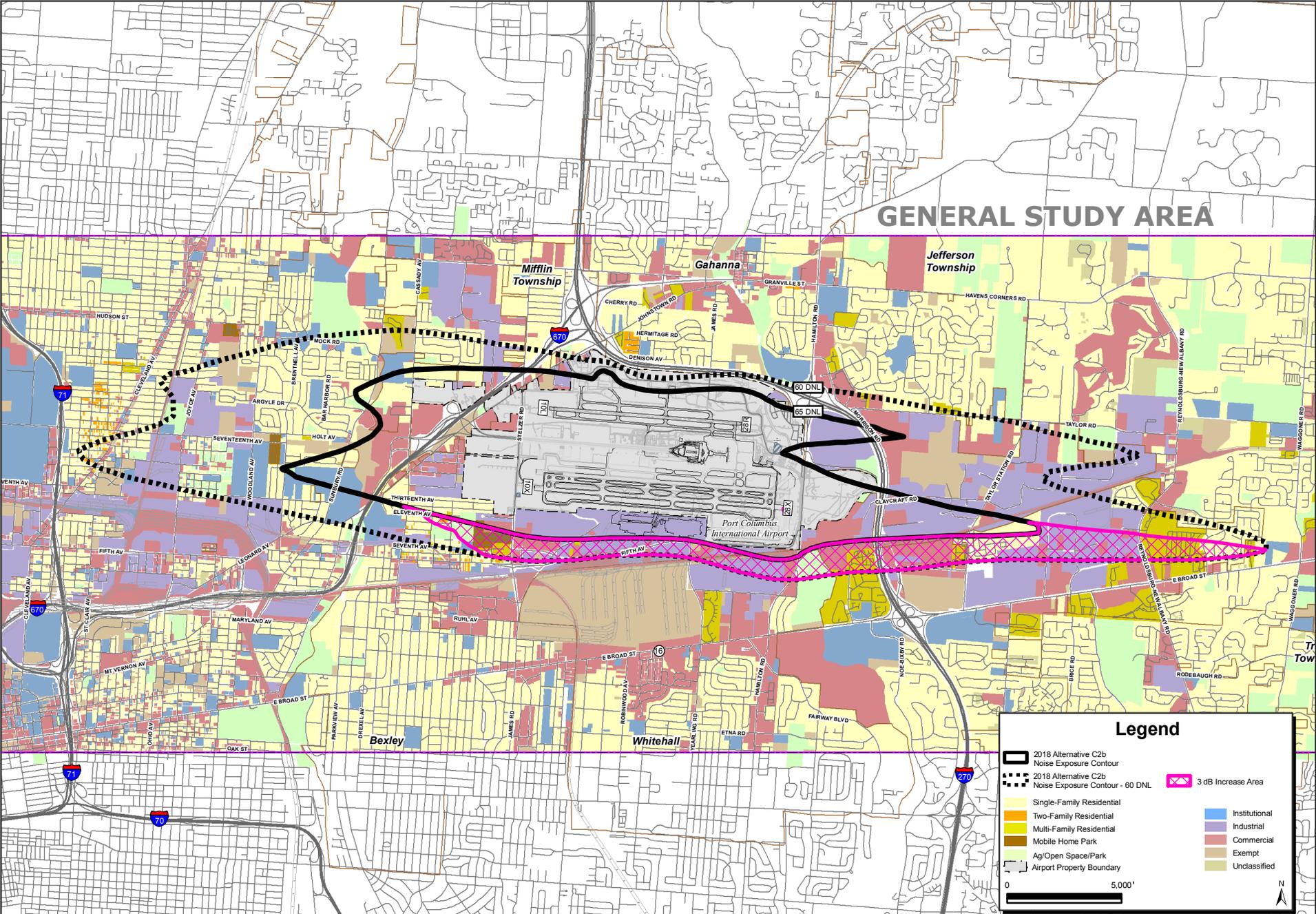
Legend

- 2012 Alternative C2b Noise Exposure Contour
- 2012 Alternative C2b Noise Exposure Contour - 60 DNL
- 3 dB Increase Area
- Single-Family Residential
- Two-Family Residential
- Multi-Family Residential
- Mobile Home Park
- Ag/Open Space/Park
- Airport Property Boundary
- Institutional
- Industrial
- Commercial
- Exempt
- Unclassified

0 5,000'

N

GENERAL STUDY AREA



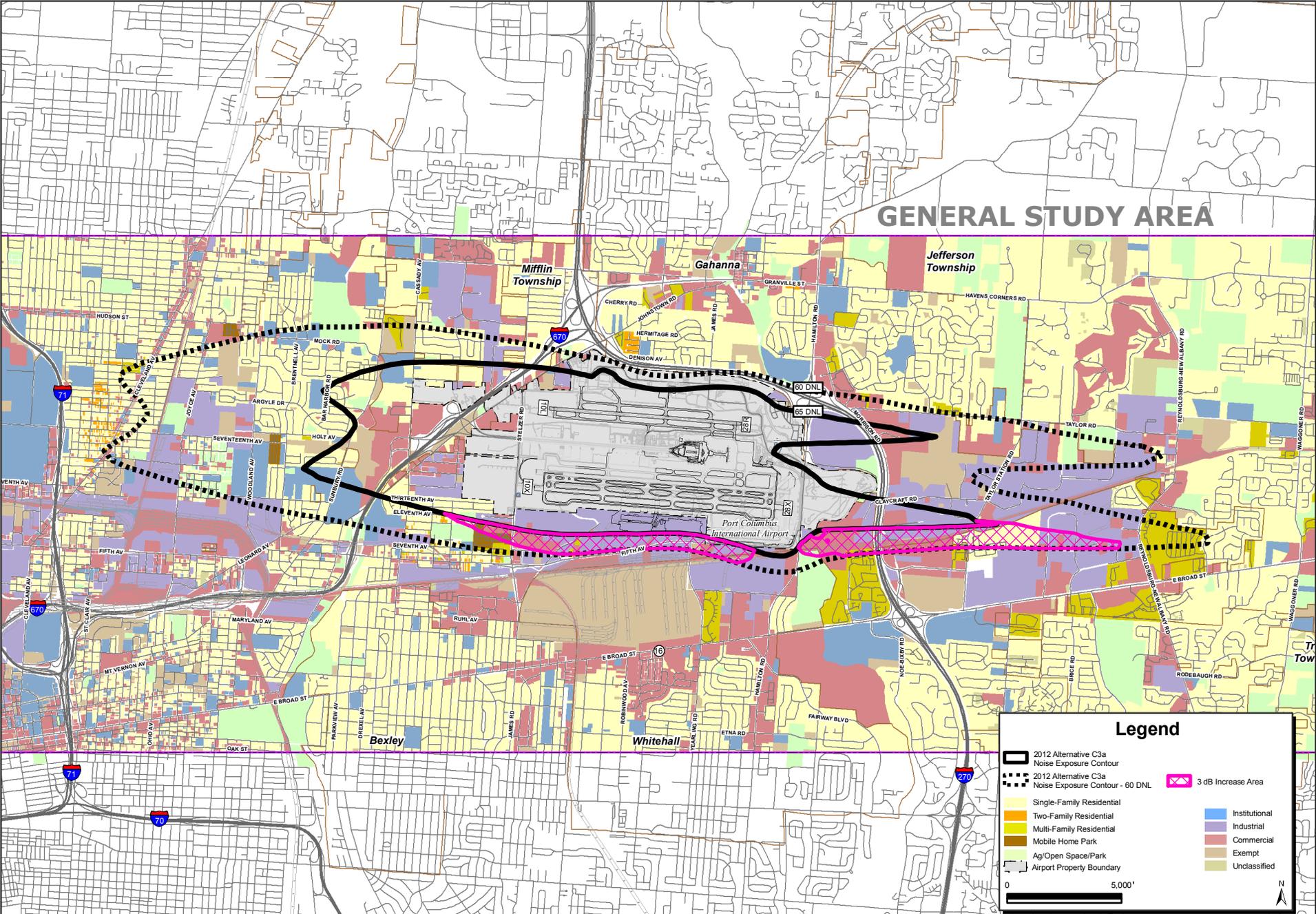
Legend

- 2018 Alternative C2b Noise Exposure Contour
- 2018 Alternative C2b Noise Exposure Contour - 60 DNL
- 3 dB Increase Area
- Single-Family Residential
- Two-Family Residential
- Multi-Family Residential
- Mobile Home Park
- Ag/Open Space/Park
- Institutional
- Industrial
- Commercial
- Exempt
- Unclassified
- Airport Property Boundary

0 5,000'

N

GENERAL STUDY AREA



Legend

- 2012 Alternative C3a Noise Exposure Contour
- 2012 Alternative C3a Noise Exposure Contour - 60 DNL
- 3 dB Increase Area
- Single-Family Residential
- Two-Family Residential
- Multi-Family Residential
- Mobile Home Park
- Ag/Open Space/Park
- Airport Property Boundary
- Institutional
- Industrial
- Commercial
- Exempt
- Unclassified

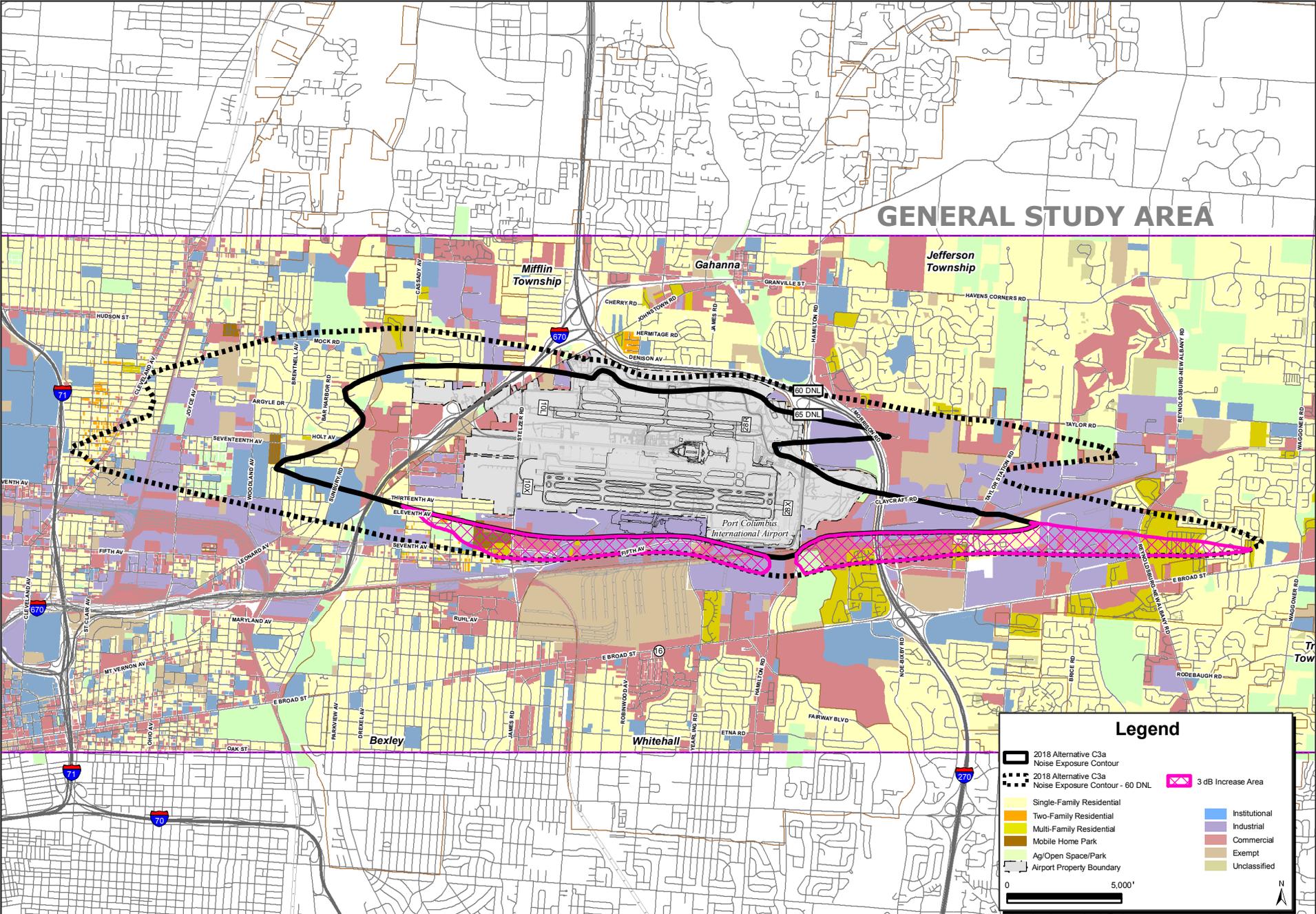
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N

There are no noise-sensitive facilities located within the area of 3 dB increase for the 2012 or 2018 Alternative C3a. **Exhibit 5.1-22, Area of 3 dB Increase Within the 60 - 65 DNL, 2018 Alternative C3a**, graphically depicts the areas of 3 dB increases resulting from the relocation of Runway 10R/28L in 2018.

2012 Alternative C3b: A screening analysis was prepared which determined that a 1.5 dB increase would occur within the 65 DNL or greater noise contour over noise-sensitive land uses for the 2012 Alternative C3b. The second step of the FICON screening procedures identified the areas where a 3 dB increase in noise would occur within the 60 to 65 DNL noise contour. **Exhibit 5.1-23, Area of 3 dB Increase Within the 60 - 65 DNL, 2012 Alternative C3b**, graphically depicts the areas of 3 dB increases resulting from the relocation of Runway 10R/28L in 2012. There are 674 housing units and approximately 1,665 residents located within this area. Similarly, for 2018 Alternative C3b, a 1.5 dB increase would occur over noise-sensitive land uses. An assessment of the area where a 3 dB increase would occur for the 2018 Alternative C3b found that there would be 1,278 housing units and approximately 3,157 residents located within this area. There are no noise-sensitive facilities located within the area of 3 dB increase for the 2012 or 2018 Alternative C3b. **Exhibit 5.1-24, Area of 3 dB Increase Within the 60 - 65 DNL, 2018 Alternative C3b**, graphically depicts the areas of 3 dB increases resulting from the relocation of Runway 10R/28L in 2018.

GENERAL STUDY AREA



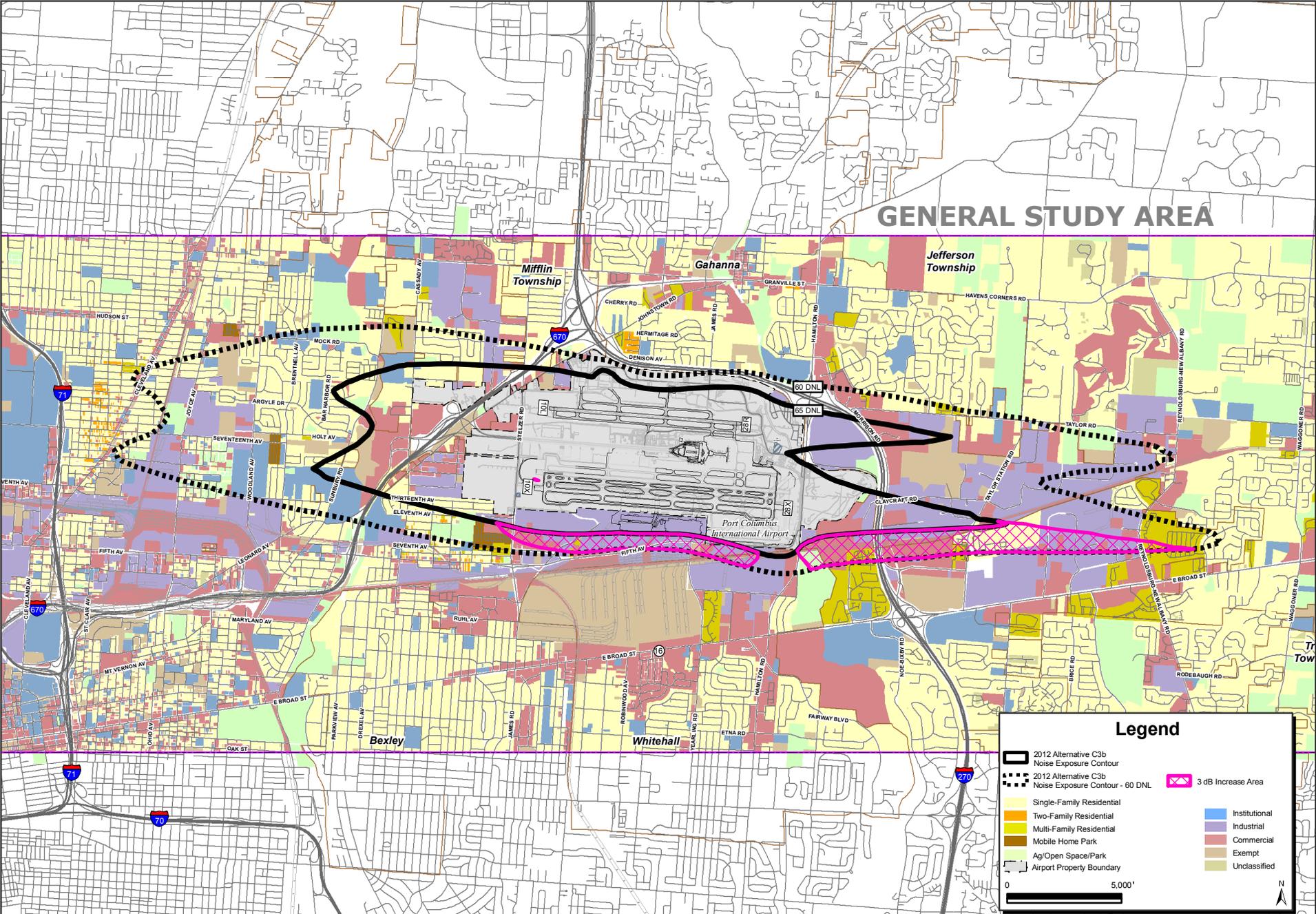
Legend

- 2018 Alternative C3a Noise Exposure Contour
- 2018 Alternative C3a Noise Exposure Contour - 60 DNL
- 3 dB Increase Area
- Single-Family Residential
- Two-Family Residential
- Multi-Family Residential
- Mobile Home Park
- Ag/Open Space/Park
- Airport Property Boundary
- Institutional
- Industrial
- Commercial
- Exempt
- Unclassified

0 5,000'

N

GENERAL STUDY AREA



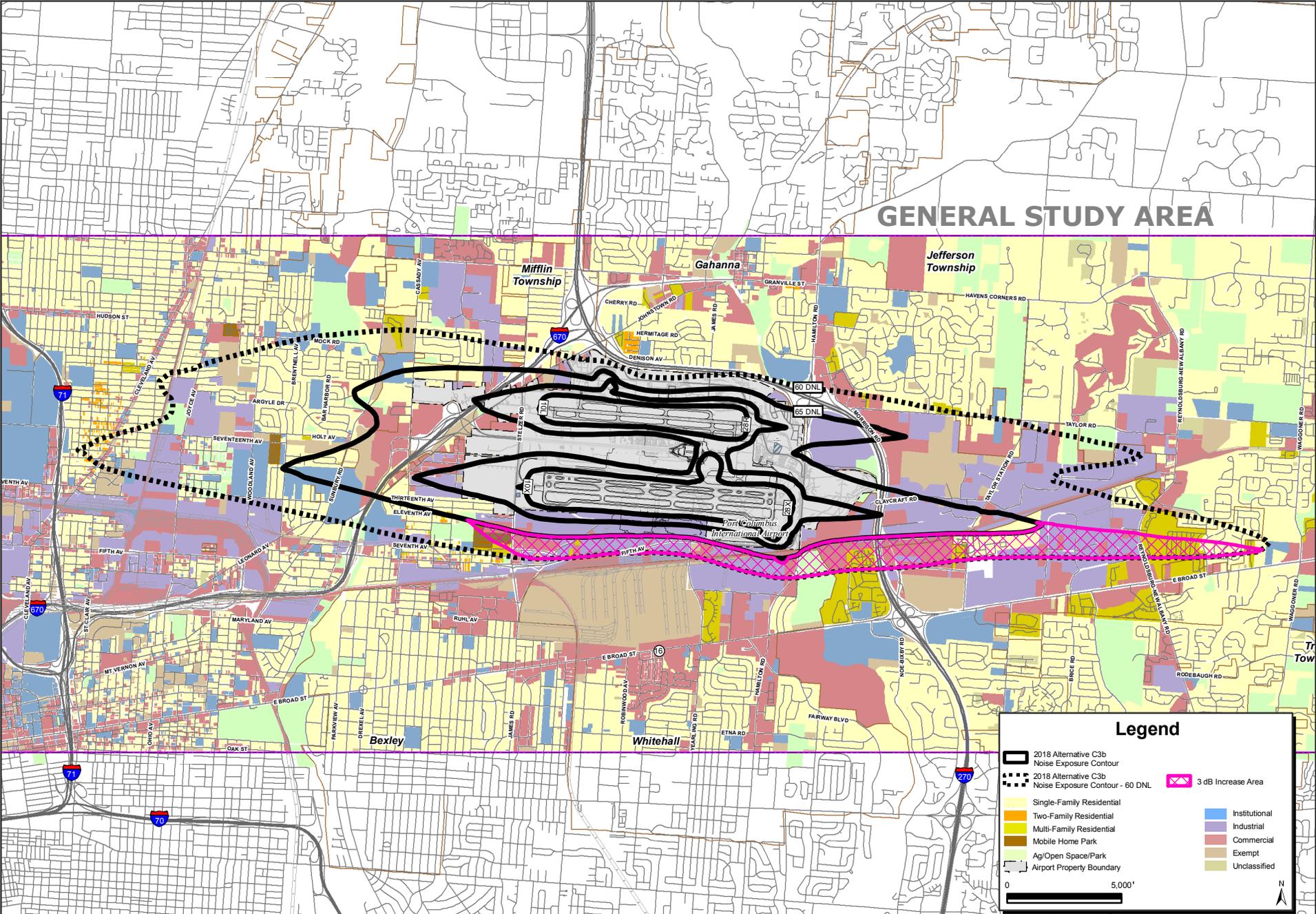
Legend

- 2012 Alternative C3b Noise Exposure Contour
- 2012 Alternative C3b Noise Exposure Contour - 60 DNL
- 3 dB Increase Area
- Single-Family Residential
- Two-Family Residential
- Multi-Family Residential
- Mobile Home Park
- Ag/Open Space/Park
- Institutional
- Industrial
- Commercial
- Exempt
- Unclassified
- Airport Property Boundary

0 5,000'

N

GENERAL STUDY AREA



Legend

- 2018 Alternative C3b Noise Exposure Contour
- 2018 Alternative C3b Noise Exposure Contour - 60 DNL
- 3 dB Increase Area
- Single-Family Residential
- Two-Family Residential
- Multi-Family Residential
- Mobile Home Park
- Ag/Open Space/Park
- Airport Property Boundary
- Institutional
- Industrial
- Commercial
- Exempt
- Unclassified

0 5,000'

N