MARYLAND DEPARTMENT OF TRANSPORTATION

MARYLAND AVIATION ADMINISTRATION

2025

Airport Noise Zone Update

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MARTIN STATE AIRPORT

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Draft

2025 Airport Noise Zone Update

Martin State Airport

December 2025

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HMMH Report No: 23-0070A.112.001

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Executive Summary

Introduction

Martin State Airport (MTN), located in Middle River, Maryland, is owned by the State of Maryland and operated by the Maryland Department of Transportation Maryland Aviation Administration (MAA). Maryland law (the Maryland Environmental Noise Act of 1974) requires the protection of citizens from the impact of transportation-related noise. MAA is required to develop and certify an Airport Noise Zone (ANZ), assess the noise environment, and assist in preventing incompatible development around the airport.

Maryland law also requires the MAA to regularly update the ANZ for MTN, in order to ensure it remains an accurate representation of noise conditions at the airport. Updating the ANZ is necessary because factors such as the number of aircraft, operations, aircraft types, and flight paths may change over time, potentially altering overall noise exposure. Updating the ANZ involves studying airport noise and developing noise contours for both existing and future conditions at MTN, which are necessary for local land use planning.

This ANZ update also includes a review of the MTN Noise Abatement Plan (NAP). If an incompatible land use area falls within the ANZ, MTN is required to implement an NAP. While no incompatible land uses currently exist within MTN's noise zone, the airport has adopted an NAP in the past and will continue to review and update the plan as needed. The NAP prescribes measures to monitor and reduce or eliminate incompatible land use to the extent feasible, while maintaining efficient airport operations.

This ANZ update provides the MAA and MTN stakeholders including Baltimore County and surrounding communities with improved understanding of current and future noise conditions at the airport. The ANZ provides a means for the MAA to identify, control, and prevent incompatible land development around the airport.

Public Engagement

The ANZ update process includes multiple public consultation efforts to ensure that MTN stakeholder input and review is reflected in the resulting ANZ contour and NAP documentation. This public involvement component included two major initiatives: (1) voluntarily forming and convening a Stakeholder Advisory Committee (SAC) and (2) conducting a public workshop and hearing.

The SAC convened representatives of stakeholder groups affected by airport activities to ensure that these groups were informed of the 2025 MTN ANZ update process and methodology. Members were invited to participate throughout the process by reviewing study inputs, assumptions, analyses, and documentation, and by providing input and guidance related to the NAP. They were also encouraged to share relevant information with the groups or individuals they represent. The SAC was composed of stakeholders representing all significant interests at MTN:

- Local government planning staff
- Community organizations
- MTN tenants and users
- Aviation trade associations

The SAC convened three times during the ANZ update process and served in an advisory role to the MAA solely for the duration of the MTN ANZ update process.

As required by Maryland law, a public workshop and hearing will be held concerning the 2025 MTN ANZ on March 18, 2026. The public workshop and hearing will afford all interested persons with an opportunity to comment on the proposed update to the MTN ANZ and NAP.

Airport Noise Zone

The ANZ is an area specified by noise level contours in terms of the Day-Night Average Sound Levels, abbreviated DNL or L_{dn}. The study process considered existing conditions in 2025 (also referred to as the base year) and forecast conditions in 2030 and 2035.

This 2025 MTN ANZ document includes the DNL noise contours for the following three conditions:

1. Base year 2025 conditions utilizing the current runway layout
2. Forecast conditions for year 2030, five years post certification, reflecting the updated runway layout as outlined in the MTN Airport Layout Plan (ALP)[1]
3. Forecast conditions for year 2035, ten years post certification, reflecting the updated runway layout as outlined in the MTN ALP

The ANZ, as shown in **Figure ES-1**, is a composite of the three contours described above. The 2025 ANZ represents the largest extent of the annual DNL contours for each of the three study years (2025, 2030 and 2035) and is defined to provide the largest area of the existing or future noise exposure contours for planning purposes. The noise contours are presented in 5-decibel increments, from 65 dB to 75 dB.

The 65 dB DNL contour for the 2025 ANZ is 286 acres in size and remains almost entirely on airport property (approximately 98 percent). This represents a 30 percent decrease from the 411 acres contained within the previous 2020 ANZ. This decrease is attributed in part to reduced military operations as well as refined and updated military procedures. The 2025 ANZ does not include any noise-sensitive land uses (such as residential or educational). The 2025 ANZ noise contour extends beyond airport property over compatible land uses in four areas:

- An area on the northeast side of the airport off of Runway 15 due to military maintenance run-ups of A-10C aircraft on the Maryland Air National Guard (MDANG) ramp area.
- An area on the southwest side of the airport off of Runway 15 due to helicopter activity at the Baltimore City Police helipad.
- An area on the northeast side of the airport off of Runway 33 due to military pre-flight run-ups of A-10C aircraft.
- An area to the southwest side of the airport off of Runway 33 due to fixed wing arrival operations but dominated by helicopter activity at the Maryland State Police helipad.

[1] Maryland Aviation Administration. (2022). *Notice of Availability of Final Environmental Assessment (EA) and Finding of No Significant Impact / Record of Decision (FONSI/ROD) for Phase I Improvements at Martin State Airport*. https://marylandaviation.com/environmental/environmental-planning/

The base year contour largely defines the extent of the 2025 ANZ contour due to the A-10C operational levels. However, since the MDANG will divest the A-10C aircraft in 2025, no A-10C operations are expected under future conditions.

Noise Abatement Plan

The MAA has a long history of noise abatement at MTN. The NAP is designed to minimize the noise of aircraft operations within the constraints of the Federal Air Traffic Control System and ensure aircraft safety. The NAP was developed with the cooperation of MDANG, airport users, the aviation industry, and local governments.[2]

The NAP is formulated to minimize noise disturbance to neighboring communities while maintaining safe and efficient MTN Airport operations. The NAP is comprised of two parts: (1) the efforts the MAA is taking to mitigate noise in the areas surrounding MTN, and (2) aircraft operating procedures.

The MAA Division of MTN Airport Operations is responsible for the overall administration of the MTN NAP. Per COMAR Section 11.03.02.10C(3)(b), the MDANG, the Maryland State Police, and local law enforcement agencies are exempt from the provisions of this regulation when operational necessity dictates noncompliance, or in the event of a State or national emergency. As part of this study, the NAP was reviewed to determine the continued applicability of existing measures. No new measures were added.

[2] The MTN NAP is established pursuant to the Maryland Environmental Noise Act of 1974 (Transportation Article, §§ 5-805, 5-806, and 5-819, Annotated Code of Maryland) and COMAR Section 11.03.02.10. http://mdrules.elaws.us/comar/11.03.02.10

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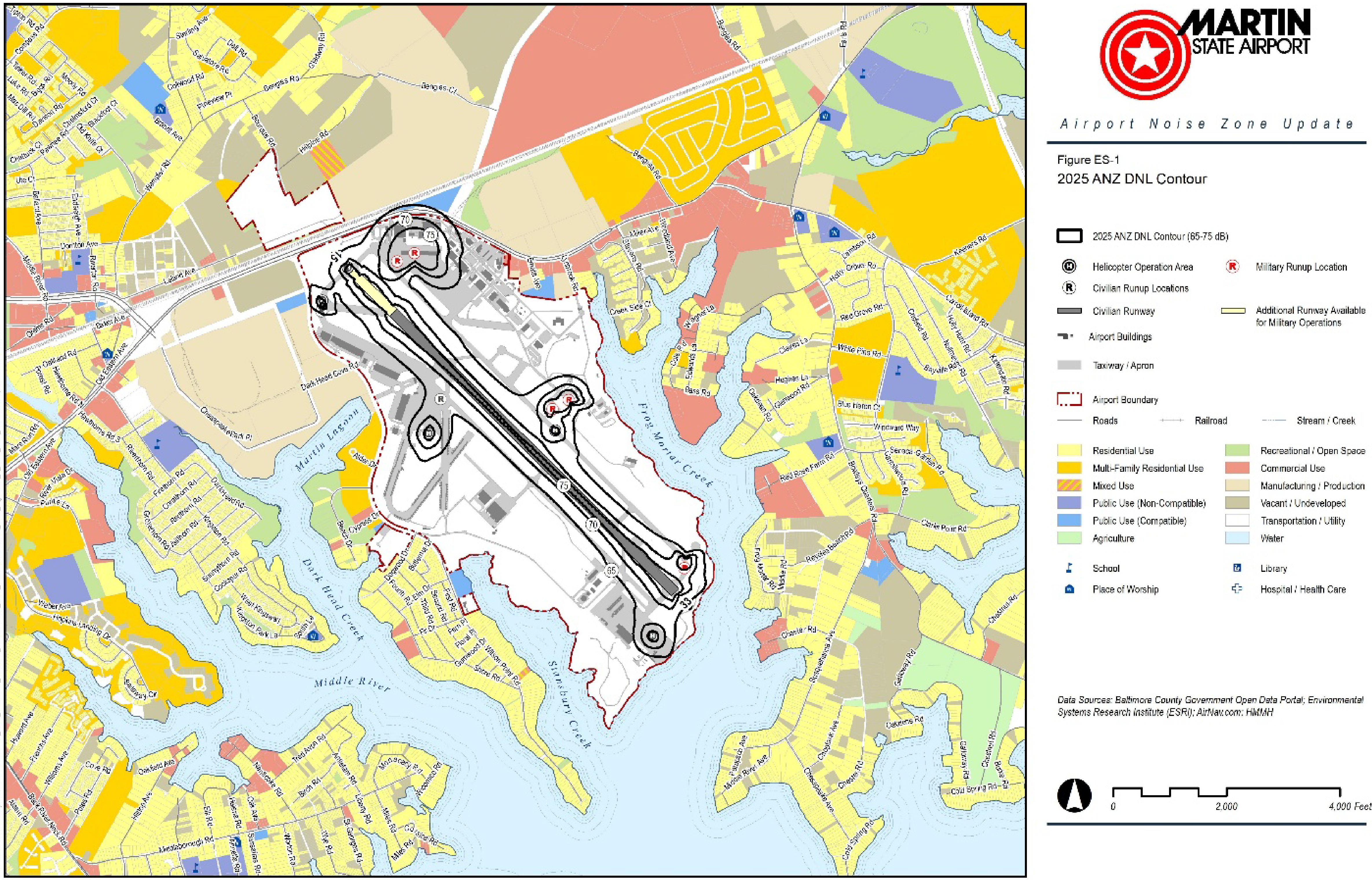
Figure ES-1. 2025 ANZ DNL Contour



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Acronyms

AAD	Average Annual Day
AEDT	Aviation Environmental Design Tool
AGL	Above Ground Level
ALP	Airport Layout Plan
ANOMS	Airport Noise and Operations Monitoring System
ANZ	Airport Noise Zone
ATADS	Air Traffic Activity Data System
ATC	Air Traffic Control
BAZA	Board of Airport Zoning Appeals
COMAR	Code of Maryland Regulations
dB	Decibel
dBA	A-Weighted Decibel
DNL/L_{dn}	Day-Night Average Sound Level
FAA	Federal Aviation Administration
GIS	Geographic Information System
HMMH	Harris Miller Miller & Hanson Inc.
IFR	Instrument Flight Rules
LOA	Letter of Agreement
MAA	Maryland Department of Transportation Maryland Aviation Administration
MDANG	Maryland Air National Guard
MTN	Martin State Airport
MSL	Mean Sea Level
NAD 83	North American Datum 1983
NAP	Noise Abatement Plan
nmi	Nautical Miles
SAC	Stakeholder Advisory Committee
SEL	Sound Exposure Level
TAF	Terminal Area Forecast
USGS	United States Geological Survey
VFR	Visual Flight Rules

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1. Introduction and Background

Maryland law requires the protection of citizens from the impact of transportation-related noise. To meet this requirement, the Maryland Department of Transportation Maryland Aviation Administration (MAA) must adopt an Airport Noise Zone (ANZ) that both minimizes the impact of aircraft noise on residents near Martin State Airport (MTN) and prevents incompatible land development around the airport.

The noise analysis conducted for the ANZ study provides the MAA, MTN stakeholders, and surrounding communities with a better understanding of current and future noise conditions at the airport. The ANZ serves as a tool for the MAA to identify, control, and prevent incompatible land development around the airport. It also guides the Noise Abatement Plan (NAP), which prescribes measures to monitor and reduce or eliminate impacted land use areas to the extent feasible, while maintaining efficient airport operations.

The State of Maryland uses the Day-Night Average Sound Level, abbreviated DNL or L_{dn}, as the measure of cumulative noise exposure required to develop an ANZ.[3] The ANZ, as defined by Maryland regulation, represents a composite of the 65, 70, and 75 DNL noise level contours for three study years: the base year, five-year, and ten-year forecast contours. The 2025 ANZ, as presented in this document, represents the largest extent of the annual DNL contours for all three years included in this study (2025, 2030, and 2035).

The resulting ANZ designates the greatest extent of the existing and/or future noise exposure contours overprinted on county tax maps, to be utilized for land-use planning purposes. Maryland law requires the MAA to regularly update the ANZ for MTN, in order to ensure it remains an accurate representation of noise conditions at the airport. The ANZ was last updated in 2020 and certified in 2021. Once certified, the ANZ represents composite noise contours at specified levels of exposure intended to control incompatible land development around MTN. Maryland law dictates that an applicant be denied approval if a proposed development is found to be incompatible with the ANZ. An applicant may petition the Board of Airport Zoning Appeals (BAZA) for a variance from the regulations. BAZA may issue conditions such as the addition of sound insulation components to buildings within the certified ANZ.

The MAA retained Harris Miller Miller & Hanson Inc. (HMMH) to support the Office of Environmental Compliance and Sustainability in preparing the 2025 MTN ANZ document. In coordination and collaboration with the MAA, HMMH designed and conducted the public participation program, developed the noise contours, compiled the composite ANZ contour, conducted a land-use inventory, reviewed and updated the NAP, and prepared ANZ documentation.

Section 2 of this report describes the methodology used in modeling the noise contours. Section 3 describes the inputs to the noise model in detail for the base year and forecast years. Section 4 presents DNL contours for the base year and forecast years, and finally the composite 2025 MTN ANZ contour and land use inventory. Section 5 presents the MTN NAP. Section 6 presents the public consultation efforts that the

[3] For the purposes of this document, Day-Night Average Sound Level is referred to as DNL. DNL describes 24-hour exposure, noise from 10 p.m. to 7 a.m. is considered nighttime, and is factored up by 10 dB, this “penalty” is equal to counting each nighttime event 10 times.

MAA took for this ANZ update to ensure that stakeholder input is reflected in the ANZ contour and NAP documentation.

The appendices of this document provide supplemental information. Appendix A includes an overview of aircraft noise terminology. Appendix B includes the ANZ overlaid on Baltimore County tax maps. Appendix C includes the MTN Stakeholder Advisory Committee (SAC) roster and materials from the April 2, 2025, June 26, 2025 and September 25, 2025 SAC Meetings, including the invitations, sign-in sheets, meeting minutes, and presentations. Appendix D includes Maryland Aviation Commission materials. Appendix E will include information related to the public workshop and hearing, including the invitations, documentation of public notices, attendance information, presentation materials, and hearing transcript. Appendix F will include documentation of public comments following the public hearing.

2. Noise Modeling Methodology

The State of Maryland uses DNL as the measure of cumulative noise exposure required to develop an ANZ. The DNL metric describes the total noise exposure produced by aircraft operations during a 24-hour period. The aircraft operations used to calculate DNL are those of an average day during a particular year. To account for the increased human sensitivity to nighttime noise, a 10-decibel (dB) penalty is applied to all aircraft operations between 10:00 p.m. and 7:00 a.m. when calculating DNL. In other words, DNL accounts for noise exposure in a 24-hour period, with the exception that it treats each aircraft operation occurring in the nighttime (between 10 p.m. and 7 a.m.) as equivalent to 10 operations during the daytime. Appendix A includes an overview of aircraft noise terminology.

The noise environment around an airport is described by contours of equal noise exposure, representing the noise that occurs during an average 24-hour day. The MTN ANZ is depicted by a series of lines (noise contours) surrounding the airport. These lines connect points of equal noise exposure and represent DNL 65 dB, 70 dB, and 75 dB noise contours. The ANZ contours represent the boundaries for determining incompatible activities or land uses with airport operations. The State uses the noise contours adopted in the ANZ to limit new development that would be incompatible with the cumulative noise exposure level acceptable for an area. The cumulative noise exposure limits are shown in **Table 2-1** below.

Table 2-1. State of Maryland Limits for Cumulative Noise Exposure

Land Use	Area of Compatibility (Noise Levels)
Residences, schools, hospitals, libraries, churches, auditoriums, rest homes, nursing homes, concert halls	Up to 65 dB DNL
Transient lodging, hotels, motels, sports arenas, outdoor spectator sports, playgrounds, neighborhood parks, noise sensitive manufacturing and communications	Up to 70 dB DNL
Golf courses, riding stables, water recreation, cemeteries, office buildings, retail and wholesale establishments, movie theaters, restaurants, industry, manufacturing, utilities, livestock farming, animal breeding	Up to 75 dB DNL
Agriculture (except livestock), mining, fishing, aviation related uses	All
Source: COMAR. 11.03.03.03, Limits for Cumulative Noise Exposure, http://mdrules.elaws.us/comar/11.03.03.03	

Maryland regulations require noise modeling as a prediction method to create ANZ noise contours.[4] As described above, noise modeling software creates computer-generated DNL estimates depicted as equal-exposure noise contours (much like topographic maps that indicate contours of equal elevation). DNL contours reflect average annual daily operating conditions, also referred to as an Average Annual Day (AAD) of operations, taking into account the type of aircraft, average number of flights each day, time of day, how often each runway is used throughout the year, and where, over the surrounding communities, the aircraft normally fly.

[4] COMAR 11.03.03.02, *Methods for Calculation and Measurement of Levels of Cumulative Noise Exposure,* http://mdrules.elaws.us/comar/11.03.03.02

This 2025 MTN ANZ document presents DNL noise contours for the following three conditions:

1. Base year conditions with the current runway layout
2. Five-year forecast 2030 conditions, with the updated runway layout as identified in the MTN Airport Layout Plan (ALP)[5]
3. Ten-year forecast 2035 conditions, with the updated runway layout as identified in the MTN ALP

[5] Maryland Aviation Administration. (2022). *Notice of Availability of Final Environmental Assessment (EA) and Finding of No Significant Impact / Record of Decision (FONSI/ROD) for Phase I Improvements at Martin State Airport*. https://marylandaviation.com/environmental/environmental-planning/

3. Noise Model Inputs

The 2025, 2030, and 2035 DNL contours were developed using the Federal Aviation Administration's (FAA) Aviation Environmental Design Tool (AEDT) version 3g and HMMH's AEDT Preprocessor software for AEDT™ in a manner consistent with Section 11.03.03 of COMAR.

AEDT requires noise model input data in three categories:

1. Airport physical inputs
   - Runway layout (including displaced landing or takeoff thresholds)
   - Flight track geometry and use
   - Terrain data
   - Meteorological conditions
2. Aircraft noise and performance data
   - Aircraft performance profiles
   - Noise level vs. distance curves
3. Aircraft operational inputs
   - Number of aircraft operations
   - Aircraft fleet mix
   - Day-night split of operations
   - Runway utilization
   - Flight track geometry and utilization

The AEDT inputs used in developing the base year and future year noise contours are presented in subsections 3.1 through 3.7.

3.1 Physical Description of the Airport Layout

There is one runway at MTN, Runway 15/33. **Figure 3-1** presents the existing MTN runway layout and notations for the airport property line, helicopter operational areas, as well as civilian and military aircraft run-up locations. Currently, civil aircraft are permitted to use 6,997 feet of the runway for arrival and departure operations; military aircraft are permitted to use 8,100 feet or the full extent of the runway, for all departures and for Runway 33 arrivals; Runway 15 military arrivals have a displaced landing threshold of 1,113 feet.

MTN has five helicopter operational areas at the airport, which serve corporate, law enforcement, and flight training organizations:

- The Baltimore City Police operate at Taxiway A adjacent to Runway 15.
- The Baltimore County Police and the majority of corporate helicopters operate from a helipad west of the midpoint of Runway 15.

- The Maryland State Police operate in an area south of the end of Runway 33.
- Transient military helicopters operate at the end of Runway 15 near the Maryland Air National Guard (MDANG) ramp.
- Flight training helicopters operate on the northeast side of the airport on the taxiway north of the midpoint of Runway 33.

MTN has five maintenance run-up locations and two military pre-flight locations at the airport, which serve MTN-based military and civilian aircraft maintenance operations:

- The MDANG conducts pre-flight checks for A-10C aircraft at:
  - Adjacent to the end of Runway 15.
  - Adjacent to the end of Runway 33.
- The MDANG conducts maintenance run-ups for A-10C aircraft at:
  - The MDANG ramp near the end of Runway 15.
  - A trim pad and test cell located northeast of Runway 15/33.
- MTN based civilian operators conduct maintenance run-ups at:
  - The apron adjacent to the abandoned runway near the end of Runway 15.
  - The main apron area south of Runway 15/33.

Table 3-1 presents the latitude and longitude inputs and configurations for each runway, helicopter operational area, and run-up location used for modeling in AEDT.

Figure 3-1. Base Year (2025) Airport Layout

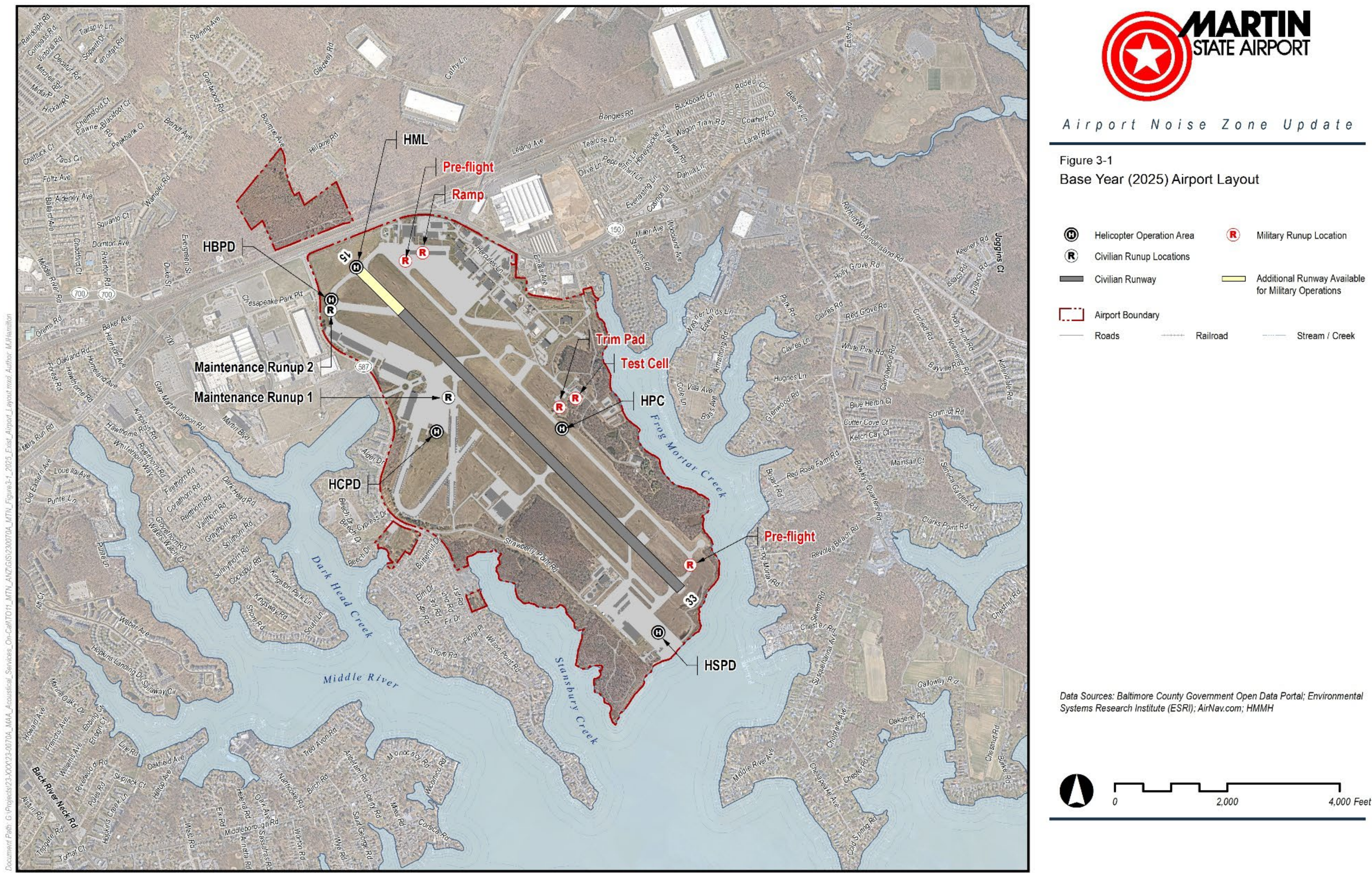

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Table 3-1. Base Year (2025) MTN Runway and Helipad Data

Runway	Latitude (deg)	Longitude (deg)	Length (feet)	Modeled Elevation (feet)	Displaced Landing Threshold (feet)	Approach Slope (degrees)	Threshold Crossing Height (feet)
Fixed-Wing Runways							
15	39.332474	-76.422483	6,997	21.3	0	4.01	37
33	39.318849	-76.405047	6,997	9.2	0	2.91	48
15 (Military)	39.334642	-76.425272	8,100	23.5	1,113	3.1	55
33 (Military)	39.318849	-76.405047	8,100	9.2	0	2.91	48
Helicopter Operations Areas							
Baltimore City Police (HBPD)	39.332839	-76.426898	N/A	21.5	N/A	N/A	N/A
Baltimore County Police (HCPD)	39.326586	-76.420273	N/A	21.5	N/A	N/A	N/A
Maryland State Police (HSPD)	39.316714	-76.406410	N/A	21.5	N/A	N/A	N/A
Practice Pad (HPC)	39.326683	-76.412404	N/A	21.5	N/A	N/A	N/A
Military Helipad (HML)	39.334642	-76.425272	N/A	23.5	N/A	N/A	N/A
Run-up Locations							
Ramp	39.335324	-76.421102	N/A	21.5	N/A	N/A	N/A
Trim pad	39.327734	-76.412556	N/A	21.5	N/A	N/A	N/A
Test cell	39.328166	-76.411542	N/A	21.5	N/A	N/A	N/A
Maintenance Run-up 1	39.328256	-76.419532	N/A	21.5	N/A	N/A	N/A
Maintenance Run-up 2	39.332839	-76.426898	N/A	21.5	N/A	N/A	N/A
Pre-flight (Runway 15)	39.334944	-76.422169	N/A	21.5	N/A	N/A	N/A
Pre-flight (Runway 33)	39.320333	-76.404389	N/A	9.2	N/A	N/A	N/A

Notes:
Latitude and Longitude coordinates reference to North American Datum 1983 (NAD 83)
Elevations referenced to Mean Sea Level (MSL)
Sources:
Runway coordinates: FAA, MAA, 2025
Helicopter Operations Areas: MTN staff and HMMH
Run-up Areas: MTN staff, MDANG, HMMH, and MTN Operators

The five-year and ten-year forecast airport layout configurations include proposed improvements to the airfield as identified in the MTN ALP. The MTN ALP identifies Phase I improvements that include changes needed to meet FAA standards and to accommodate anticipated general aviation demand. In the MTN ALP, the Runway 15 end for civilian aircraft would be relocated approximately 291 feet from the existing runway end with a displaced threshold of 225 feet. The Runway 33 end would be relocated approximately 380 feet from the existing runway end with a displaced threshold of 390 feet. Military aircraft would be able to utilize the full 8,100 feet of runway, which is the same as used for the base year configuration. **Table 3-2** presents the latitude and longitude inputs and configurations for each runway for the five-year and ten-year forecast configurations. Helicopter operational areas and run-up locations are the same as for the base year as detailed above.

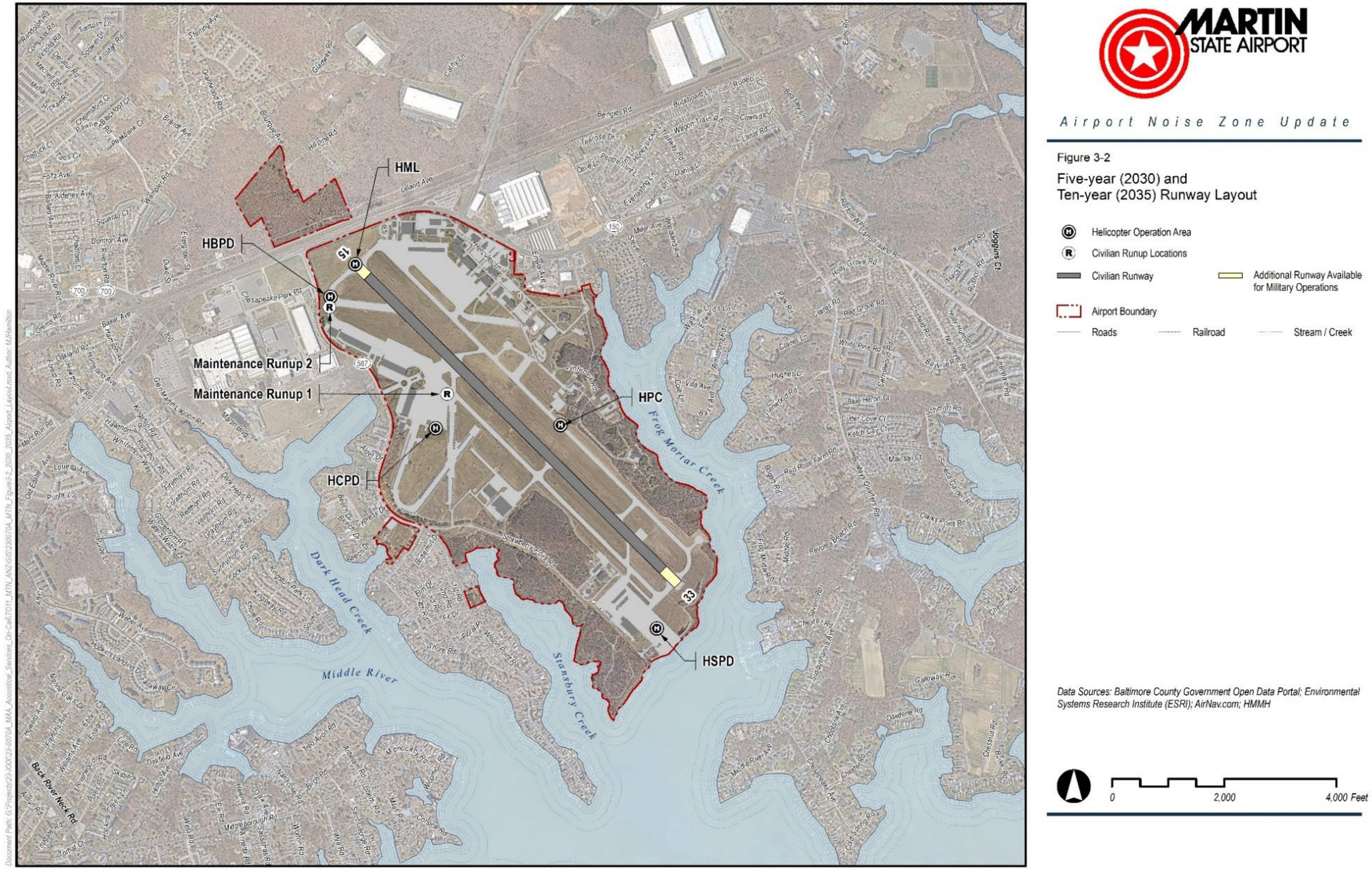
Figure 3-2 depicts the MTN runway layout that was used to develop the five-year and ten-year forecast contours. It includes notations for the airport property line, helicopter operational areas, as well as civilian and military aircraft run-up locations.

Table 3-2. Five-Year (2030) and Ten-Year (2035) Forecast Condition Runway, Helipad, and Run-up Inputs

Runway	Latitude (deg)	Longitude (deg)	Length (feet)	Modeled Elevation (feet)	Displaced Landing Threshold (feet)	Approach Slope (degrees)	Threshold Crossing Height (feet)
Fixed-Wing Runways							
15	39.334050	-76.424500	7,430	22.8	225	4.01	37
33	39.319583	-76.405986	7,430	9.2	390	2.91	48
15 (Military)	39.334642	-76.425272	8,100	23.5	516	3.1	55
33 (Military)	39.318849	-76.405047	8,100	9.2	770	2.91	48

Notes:
Latitude and Longitude coordinates reference to North American Datum 1983 (NAD 83).
Elevations referenced to Mean Sea Level (MSL).
Source: MAA, 2025

Figure 3-2. Five-Year (2030) and Ten-Year (2035) Forecast Condition Airport Layout



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3.2 Aircraft Operations and Run-ups

To create the noise contours, AEDT requires details related to AAD operations as well as aircraft maintenance run-ups be included as inputs. AAD operations and run-up estimates were developed for the base year and future years.

Operations for 2025 were determined using 12 months of 2024 flight data and the 2024 edition of the FAA's Terminal Area Forecast (TAF), issued in January 2025. The FAA TAF reports operations in terms of the federal fiscal year, which runs from October 1 to September 30, whereas the calendar year runs from January 1 to December 31. HMMH analyzed historical monthly data from the FAA Air Traffic Activity Data System (ATADS) for calendar year 2024, and this analysis indicated that adjusting the TAF federal fiscal year to a 2025 calendar year estimate would result in an overall decrease of about 1.4 percent of the total operations. Therefore, the TAF issued in 2025 was used without adjustment.

The detailed breakdown of operations by aircraft type for fixed-wing and helicopter civil aircraft at MTN was determined using the 12 months of 2024 flight data obtained from the MAA Airport Noise and Operations Management System (ANOMS). The flight data provided the primary aircraft fleet mix distributions for civilian aircraft, along with distributions over daytime (7 a.m. to 10 p.m.) and nighttime (10 p.m. to 7 a.m.). Calendar year 2024 FAA Traffic Flow Management System Counts were downloaded and used to check the aircraft types within the flight data and to provide the fleet mix for military aircraft. The data collected for 2024 were scaled to the 2025 operational totals shown in **Table 3-3**.

For the 2030 forecast, total overall operations increased by 4 percent over the base year. Air carrier passenger operations remain the same from the base year. Air taxi operations increased by 16 percent and general aviation operations increased by 6 percent. Military operations are reduced from the base year due to the A-10C aircraft being divested in 2025.

In 2035, total overall operations increased by 7 percent from the base year. Military operations are reduced from the base year due to the A-10C aircraft being divested in 2025. Air carrier passenger operations will remain the same from the base year. Air taxi operations increased 31 percent and general aviation operations increased 8 percent compared to the base year.

Table 3-3. Anticipated 2025, 2030 and 2035 Forecast Operations Levels

Case	Itinerant Operations				Local Operations		Total
	Air Carrier	Air Taxi	General Aviation	Military	General Aviation	Military	
2025	5	2,772	40,005	1,283	44,934	490	89,489
2030	5	3,202	42,505	459	46,617	0	92,788
2035	5	3,632	43,242	459	48,362	0	95,700
Source: FAA TAF issued January 2025; MAA ANOMS; HMMH 2025							

The modeled AAD operations are reported in **Table 3-4** through **Table 3-6**, for the base year, 2030 five-year, and 2035 ten-year forecasts, respectively. The fleet mix distributions are reported by aircraft category and their associated arrivals and departures separated by both day and night activity.

Table 3-4. Base Year (2025) Modeled Average Daily Aircraft Operations

Aircraft Category	Engine	AEDT Type	Arrivals		Departures		Circuits[1]		Total
			Day	Night	Day	Night	Day	Night	
Air Carrier	**Jet**	EMB175	<0.01	0.00	<0.01	0.00	0.00	0.00	0.01
Air Carrier Total			**<0.01**	**0.00**	**<0.01**	**0.00**	**0.00**	**0.00**	**0.01**
Air Taxi	**Jet**	CNA55B	0.59	0.04	0.57	0.06	0.00	0.00	1.25
		CNA560XL	0.54	<0.01	0.55	0.00	0.00	0.00	1.10
		CNA680	0.66	0.00	0.66	0.00	0.00	0.00	1.32
		LEAR35	0.60	0.00	0.60	0.00	0.00	0.00	1.20
	Turbo Prop	CNA208	0.40	<0.01	0.39	0.02	0.00	0.00	0.82
	Piston Prop	GASEPV	0.18	0.00	0.18	0.00	0.00	0.00	0.37
	Helicopter	SA330J	0.69	0.08	0.69	0.09	0.00	0.00	1.55
Air Taxi Total			**3.67**	**0.13**	**3.63**	**0.17**	**0.00**	**0.00**	**7.59**
General Aviation	**Jet**	CL601	0.87	0.08	0.85	0.11	0.00	0.00	1.91
		CNA525C	0.78	0.00	0.77	0.01	0.00	0.00	1.56
		CNA55B	3.28	0.16	3.27	0.17	0.00	0.00	6.88
		CNA560XL	0.29	<0.01	0.30	0.00	0.00	0.00	0.59
		CNA680	0.68	0.03	0.67	0.05	0.00	0.00	1.43
	Turbo Prop	CNA208	0.58	<0.01	0.56	0.03	0.00	0.00	1.17
		DHC6	1.14	0.03	1.16	0.00	0.00	0.00	2.32
	Piston Prop	BEC58P	0.69	0.00	0.69	0.00	0.23	0.00	1.91
		CNA172	20.29	0.19	20.37	0.11	74.75	0.42	116.14
		CNA182	1.13	0.09	1.21	0.01	0.38	0.00	4.51
		COMSEP	3.27	0.04	3.29	0.01	0.75	0.00	11.12
		GASEPF	7.00	0.09	6.79	0.31	6.29	0.44	42.53
		GASEPV	1.50	0.02	1.50	0.02	0.15	0.03	4.09
		PA30	0.35	0.00	0.35	0.00	0.11	0.00	1.36
	Helicopter	EC130	1.42	0.50	1.55	0.37	0.00	0.00	3.84
		R22	0.00	0.00	0.00	0.00	1.99	0.00	3.63
		SA330J	1.28	0.28	1.36	0.20	0.80	0.07	5.50
		SA350D	6.72	2.01	7.53	1.20	2.09	0.32	22.22
General Aviation Total			**51.27**	**3.53**	**52.21**	**2.59**	**120.61**	**2.5**	**232.71**
Military	**Jet**	A10A[2]	1.71	0.00	1.71	0.00	0.18	0.00	3.60
		C17	0.19	0.00	0.19	0.00	0.00	0.00	0.38
	Turbo Prop	DHC6	0.13	0.00	0.13	0.00	0.00	0.00	0.26
	Helicopter	S70	0.31	0.00	0.31	0.00	0.00	0.00	0.62
Military Total			**2.34**	**0.00**	**2.34**	**0.00**	**0.18**	**0.00**	**4.86**
Grand Total			**57.28**	**3.66**	**58.18**	**2.77**	**120.78**	**2.50**	**245.18**

Notes:
Totals may not match exactly due to rounding.
[1] Circuits are counted as two operations.
[2] A10A is the aircraft designated in AEDT, used as a surrogate for the A-10C.

Table 3-5. Five-Year (2030) Forecast Modeled Average Daily Aircraft Operations

Aircraft Category	Engine	AEDT Type	Arrivals		Departures		Circuits		Total
			Day	Night	Day	Night	Day	Night	
Air Carrier	**Jet**	EMB175	<0.01	0.00	<0.01	0.00	0.00	0.00	0.01
Air Carrier Total			**<0.01**	**0.00**	**<0.01**	**0.00**	**0.00**	**0.00**	**0.01**
Air Taxi	**Jet**	CNA55B	0.80	0.05	0.77	0.09	0.00	0.00	1.72
		CNA560XL	0.74	0.01	0.75	0.00	0.00	0.00	1.50
		CNA680	0.90	0.00	0.90	0.00	0.00	0.00	1.81
		LEAR35	0.35	0.00	0.35	0.00	0.00	0.00	0.71
	Turbo Prop	CNA208	0.55	0.01	0.53	0.03	0.00	0.00	1.12
	Piston Prop	GASEPV	0.18	0.00	0.18	0.00	0.00	0.00	0.37
	Helicopter	SA330J	0.69	0.08	0.68	0.09	0.00	0.00	1.55
Air Taxi Total			**4.23**	**0.16**	**4.17**	**0.21**	**0.00**	**0.00**	**8.77**
General Aviation	**Jet**	CL601	0.90	0.09	0.87	0.11	0.00	0.00	1.97
		CNA525C	0.46	0.00	0.45	<0.01	0.00	0.00	0.92
		CNA55B	3.38	0.18	3.37	0.18	0.00	0.00	7.10
		CNA560XL	0.30	<0.01	0.31	0.00	0.00	0.00	0.61
		CNA680	0.53	0.03	0.52	0.04	0.00	0.00	1.11
	Turbo Prop	CNA208	0.60	<0.01	0.58	0.03	0.00	0.00	1.21
		DHC6	1.14	0.03	1.16	0.00	0.00	0.00	2.32
	Piston Prop	BEC58P	0.69	0.00	0.69	0.00	0.54	0.00	1.91
		CNA172	23.96	0.23	24.06	0.14	80.05	0.52	128.95
		CNA182	1.32	0.11	1.41	0.01	2.01	0.03	4.89
		COMSEP	4.51	0.05	4.54	0.01	7.88	0.00	16.99
		GASEPF	6.05	0.09	5.85	0.29	23.12	1.13	36.53
		GASEPV	0.95	0.02	0.95	0.02	0.92	0.13	2.99
		PA30	0.42	0.00	0.42	0.00	0.64	0.00	1.47
	Helicopter	EC130	1.39	0.53	1.53	0.39	0.00	0.00	3.84
		R22	0.00	0.00	0.00	0.00	3.63	0.00	3.63
		SA330J	1.27	0.30	1.35	0.21	2.03	0.34	5.50
		SA350D	6.62	2.12	7.47	1.26	4.25	0.50	22.22
General Aviation Total			**54.47**	**3.76**	**55.53**	**2.7**	**125.07**	**2.65**	**244.17**
Military	**Jet**	C17	0.19	0.00	0.19	0.00	0.00	0.00	0.38
	Turbo Prop	DHC6	0.13	0.00	0.13	0.00	0.00	0.00	0.26
	Helicopter	S70	0.31	0.00	0.31	0.00	0.00	0.00	0.62
Military Total			**0.63**	**0.00**	**0.63**	**0.00**	**0.00**	**0.00**	**1.26**
Grand Total			**59.33**	**3.92**	**60.34**	**2.91**	**125.07**	**2.65**	**254.21**

Notes:
Totals may not match exactly due to rounding.
Circuits are counted as two operations.

Table 3-6. Ten-Year (2035) Forecast Modeled Average Daily Aircraft Operations

Aircraft Category	Engine	AEDT Type	Arrivals		Departures		Circuits		Total
			Day	Night	Day	Night	Day	Night	
Air Carrier	**Jet**	EMB175	<0.01	0.00	<0.01	0.00	0.00	0.00	0.01
Air Carrier Total			**<0.01**	**0.00**	**<0.01**	**0.00**	**0.00**	**0.00**	**0.01**
Air Taxi	**Jet**	CNA55B	1.05	0.07	1.01	0.12	0.00	0.00	2.24
		CNA560XL	0.97	0.01	0.98	0.00	0.00	0.00	1.97
		CNA680	1.18	0.00	1.18	0.00	0.00	0.00	2.36
		LEAR35	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Turbo Prop	CNA208	0.72	0.02	0.69	0.05	0.00	0.00	1.47
	Piston Prop	GASEPV	0.18	0.00	0.18	0.00	0.00	0.00	0.37
	Helicopter	SA330J	0.69	0.09	0.68	0.1	0.00	0.00	1.55
Air Taxi Total			**4.78**	**0.19**	**4.71**	**0.26**	**0.00**	**0.00**	**9.95**
General Aviation	**Jet**	CL601	0.97	0.10	0.93	0.13	0.00	0.00	2.13
		CNA525C	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		CNA55B	3.64	0.20	3.63	0.20	0.00	0.00	7.67
		CNA560XL	0.32	<0.01	0.33	0.00	0.00	0.00	0.66
		CNA680	0.41	0.02	0.40	0.03	0.00	0.00	0.86
	Turbo Prop	CNA208	0.64	0.01	0.62	0.03	0.00	0.00	1.31
		DHC6	1.13	0.03	1.16	0.00	0.00	0.00	2.32
	Piston Prop	BEC58P	0.69	0.00	0.69	0.00	0.54	0.00	1.91
		CNA172	24.42	0.25	24.52	0.15	81.99	0.58	131.91
		CNA182	1.44	0.12	1.55	0.01	2.27	0.03	5.43
		COMSEP	5.25	0.06	5.29	0.01	9.72	0.00	20.32
		GASEPF	6.21	0.09	5.99	0.31	23.56	1.27	37.43
		GASEPV	0.55	0.02	0.56	<0.01	0.91	0.15	2.19
		PA30	0.46	0.00	0.46	0.00	0.72	0.00	1.64
	Helicopter	EC130	1.37	0.55	1.51	0.41	0.00	0.00	3.84
		R22	0.00	0.00	0.00	0.00	3.63	0.00	3.63
		SA330J	1.25	0.31	1.34	0.22	1.99	0.38	5.50
		SA350D	6.51	2.22	7.41	1.32	4.20	0.55	22.22
General Aviation Total			**55.25**	**3.98**	**56.39**	**2.84**	**129.54**	**2.96**	**250.97**
Military	**Jet**	C17	0.19	0.00	0.19	0.00	0.00	0.00	0.38
	Turbo Prop	DHC6	0.13	0.00	0.13	0.00	0.00	0.00	0.26
	Helicopter	S70	0.31	0.00	0.31	0.00	0.00	0.00	0.62
Military Total			**0.63**	**0.00**	**0.63**	**0.00**	**0.00**	**0.00**	**1.26**
Grand Total			**60.67**	**4.18**	**61.74**	**3.10**	**129.54**	**2.96**	**262.19**

Notes:
Totals may not match exactly due to rounding.
Circuits are counted as two operations.

In addition to aircraft flight operations, aircraft maintenance and pre-flight run-ups occur at MTN. To calculate DNL, AEDT requires details related to aircraft maintenance run-ups to be included as inputs. Required run-up information includes the location, direction, aircraft type, power settings, and frequency of maintenance run-ups. As shown in **Table 3-7**, the detailed breakdown of maintenance run-ups for civilian operators at MTN was determined based on input from MTN operators. Military run-up estimates are based on data recently validated by the MDANG. Modeled MTN civilian and military run-up activity is projected for 2025 and future forecast years. However, A-10C run-ups are excluded from the 2030 and 2035 models due to the aircraft's divestment in 2025.

Table 3-7. Base Five-Year (2030) and Ten-Year (2035) Modeled Average Daily Aircraft Run-ups

AEDT Aircraft Type	Site Name	Latitude (degrees)	Longitude (degrees)	Magnetic Heading (degrees)	Number of Run-ups	Duration per Run-up (sec.)	Approximate Power Setting (% of Takeoff Thrust/RPM)
A10A[1,2]	Ramp	39.335324	-76.421102	360º	2.90	150	85%
	Trim pad	39.327734	-76.412556	330º	0.05	300	94%
	Test cell	39.328166	-76.411542	330º	0.02	900	100%
	Pre-flight (Runway 15)	39.334944	-76.422169	315º	0.75	30	64%
	Pre-flight (Runway 33)	39.320333	-76.404389	190º	0.96	30	64%
CNA172	Maintenance Run-up 1	39.328256	-76.419532	015º	0.14	60	80%
CNA172	Maintenance Run-up 2	39.328256	-76.426898	205º	0.14	60	80%

Notes:
64% is the idle power within the military modeling noise data.
[1] A10A is the aircraft designated in AEDT, used as a surrogate for the A-10C.
[2] A10A will be excluded in the modeled future years due to their divestment in 2025.
Sources: MDANG and MTN Operators

3.3 Aircraft Noise and Performance Characteristics

AEDT includes a database of specific noise and performance data for most aircraft types operating at MTN. Aircraft not included in the database are assigned an FAA-approved representative aircraft type. Noise data are included in the form of Sound Exposure Level (SEL) at a range of distances (from 200 feet to 25,000 feet) from a particular aircraft with engines at a specific thrust level. SEL is a measure of the total "noisiness" of an event, that takes duration of the event into account. Performance data includes thrust, speed, and altitude data for takeoff and landing operations often referred to as aircraft profiles. The AEDT database contains standard noise and performance data for over 300 different aircraft types, which includes both civilian and military aircraft. AEDT automatically accesses the noise and performance data for takeoff, landing, and touch-and-go or circuit operations by aircraft included in the database. For the MTN ANZ update, the standard aircraft noise and performance data contained within the AEDT database were utilized.

Within the AEDT database, aircraft takeoff or departure profiles are usually defined by a range of trip distances identified as "stage lengths." A longer trip distance or higher stage length is associated with a heavier aircraft due to the increase in fuel requirements for the flight. For example, a departure aircraft with a trip distance less than 500 nautical miles (nmi) would be assigned a stage length value of one, where a departure aircraft with a trip distance of 3,000 nmi would be assigned a stage length value of five. For civilian aircraft, stage length determinations were obtained from aircraft departure data obtained from the MAA ANOMS. Military aircraft were assigned a stage length value of one, as there was insufficient data to determine trip distances for military operations. Those operations were not included in data obtained from the MAA NOMS. **Table 3-8** provides the stage length classifications by their associated trip distances.

Table 3-8. Stage Lengths by Trip Distance

Stage Length	Trip Distance (nmi)
1	0-500
2	501-1,000
3	1,001-1,500
4	1,501-2,500
5	2,501-3,500
6	3,501-4,500
7	4,501-5,500
8	5,501-6,500
9	6,501+

Table 3-9 presents the anticipated modeled stage length use percentages for departures for the base year as well as the five-year (2030) and ten-year (2035) scenarios.

Table 3-9. Modeled Departure Stage Length Usage by Aircraft Type

AEDT Type	Stage Length									
	Day					Night				
	1	2	3	4	5	1	2	3	4	5
A10C	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
BEC58P	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
CL601	66.7%	27.1%	6.2%	0.0%	0.0%	83.2%	16.8%	0.0%	0.0%	0.0%
CNA172	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
CNA182	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
CNA208	84.0%	16.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
CNA525C	66.7%	19.8%	0.0%	0.0%	13.5%	100.0%	0.0%	0.0%	0.0%	0.0%
CNA55B	74.3%	25.4%	0.3%	0.0%	0.0%	80.8%	19.2%	0.0%	0.0%	0.0%
CNA560XL	69.1%	30.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
CNA680	57.3%	24.3%	10.9%	7.5%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
COMSEP	98.4%	1.6%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
DHC6	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
EMB175	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
GASEPF	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
GASEPV	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
LEAR35	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
PA30	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Source: HMMH 2025										

3.4 Runway Utilization

Runway usage at MTN is categorized by operation types; arrival, departure, or circuit; and by time of day, day or night. The primary factor affecting runway use at airports is weather, specifically wind direction and wind speed. **Table 3-10** and **Table 3-11** present the runway utilization rates used to model the DNL contours for base year operations. These rates reflect ongoing military operations tracked by the MDANG and civilian operations monitored through the MAA ANOMS system.

Table 3-10. Fixed-Wing Overall Runway Utilization Percentages for All Years

Aircraft Category	Operation Mode	Runway	
		15	33
Air Carrier and Air Taxi	Arrivals	44.3%	55.7%
	Departures	42.3%	57.7%
General Aviation	Arrivals	45.8%	54.2%
	Departures	43.7%	56.3%
	Circuits	48.4%	51.6%
Military	Arrivals	45.7%	54.3%
	Departures	43.6%	56.4%
	Circuits	48.4%	51.6%

Table 3-11. Helipad Utilization Percentages for All Years

Aircraft Category	Operation Mode	Helipad				
		HBPD	HCPD	HSPD	HPC	HML
Air Taxi and General Aviation	Arrivals	22.8%	59.3%	17.9%	0.0%	0.0%
	Departures	22.8%	59.3%	17.9%	0.0%	0.0%
	Circuits	0.0%	0.0%	0.0%	100.0%	0.0%
Military	All	0.0%	0.0%	0.0%	0.0%	100.0%

3.5 Flight Track Geometry and Use

Flight tracks were developed using multiple methods based on the data available for various aircraft types and the entity operating the aircraft. This section summarizes the methodology for developing flight track geometry and use.

The methodology includes the use of proprietary AEDT Preprocessor software for AEDT. This software converts flight tracks to AEDT tracks and has been used for a variety of FAA-funded and reviewed projects including Noise Exposure Map projects at a number of airports**. Figure 3-4** and **Figure 3-5** depict the flight tracks and operations to be used to develop the 2025 ANZ contours by providing density plots of all anticipated modeled fixed-wing arrival and departure flight tracks.

AEDT Preprocessor software for AEDT is a preprocessor developed by HMMH that models each and every operation as an AEDT flight track. These tracks are then input into the model to produce results using the DNL noise metric. AEDT Preprocessor software for AEDT uses individual flight tracks taken directly from radar systems rather than relying on consolidated, representative flight track data. This provides the advantage of modeling each aircraft operation on the specific runway it used and at the actual time of day of the arrival or departure. AEDT Preprocessor software for AEDT then sets up an AEDT study using the AEDT standard data. These operations are then modeled in AEDT to produce an AAD DNL contour. The AEDT Preprocessor software for AEDT approach essentially eliminates the approximation associated with the use of a limited set of prototypical modeling tracks by applying the AEDT's modeling capabilities on a flight-by-flight basis. This level of detail is especially important at MTN due to the nature of the airport as a busy general aviation facility, where operations are highly variable in terms of aircraft type, flight path use, and time of day. The use of actual flight tracks ensures that this operational variability is accurately captured in the noise modeling.

Flight track density plots provided in **Figure 3-3** and **Figure 3-4** illustrate where the majority of aircraft typically fly when arriving or departing MTN. Flight track density plots permit presentation of comparative information for longer time frames using thousands of actual aircraft flight tracks. Rather than presenting every individual track, the plots use color gradations to depict the frequency of aircraft operations over an extended time period. The figures summarize the flight track geometry, dispersion, and the frequency of aircraft operations by using a uniform color gradient scheme based on the relative density of the traffic. The "warmer" red colors indicate areas where the most aircraft operations occurred, and the "cooler" blue colors indicate the areas where the fewest aircraft operations occurred given the sets of flight track data described above.

For all helicopter and fixed-wing circuit operations at MTN, model tracks were developed using a standard method which entailed analyzing all calendar year 2024 flight data from the MAA ANOMS for MTN and splitting the flight tracks into similar and manageable groups. This was done due to inconsistency in the track data close to the airport at low altitudes. Model tracks were first created by separating flight tracks by phase of flight (e.g., arrival or departure) and then by runway end. Following this, the flights were separated by destination direction, such as northeast, south, or west. Finally, flight tracks were analyzed and split into groups according to their degree of similar geometry. Model tracks were developed for each geometrically similar group. For example, Baltimore City Police helipad departures with a west destination were split into three geometrically similar groups, and backbone tracks were developed.

For military operations at MTN, model tracks are being estimated using information validated by the MDANG, based on data referenced in prior ANZ updates and confirmed as part of the current review**.** **Figure 3-3** through **Figure 3-11** show the developed model tracks layered over the airport base map for fixed-wing low approach, all helicopter, and all military operations, respectively. Additionally, **Figure 3-9** also presents the model tracks developed to represent military A-10C overhead break arrival operations.

Table 3-12 and **Table 3-13** present the utilization rates for each of the developed model tracks. The relative ratio of flight track usage was preserved according to those ratios in the entire flight track dataset for fixed-wing circuit and helicopter operations. For military operations, track utilization is derived from data validated in coordination with the MDANG as part of the current ANZ update.

Figure 3-3. Modeled Fixed-Wing Arrival Flight Track Density

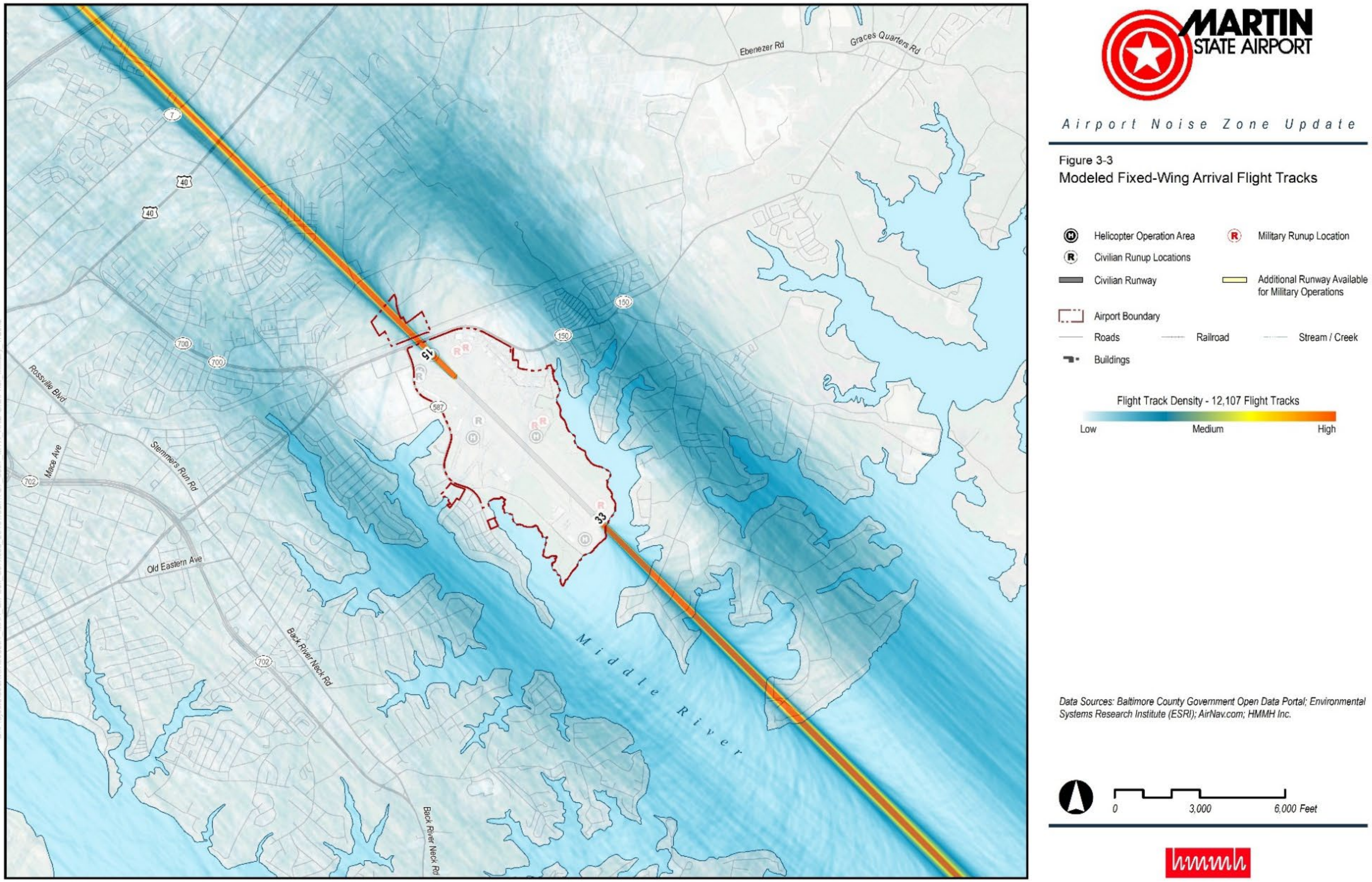

Figure 3-4. Modeled Fixed-Wing Departure Flight Track Density

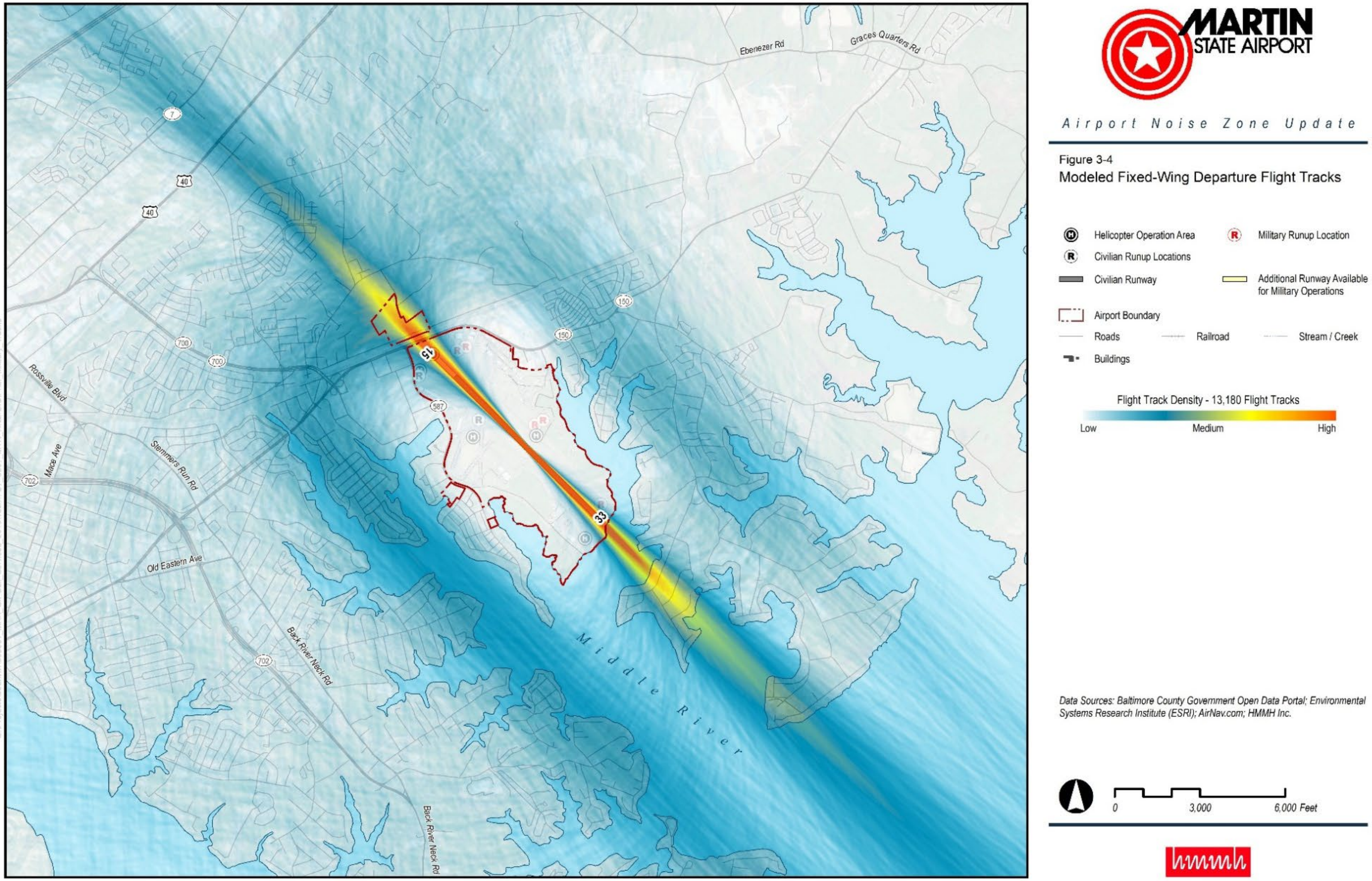

Figure 3-5. Fixed-Wing Circuit/Touch-and-Go Model Flight Tracks

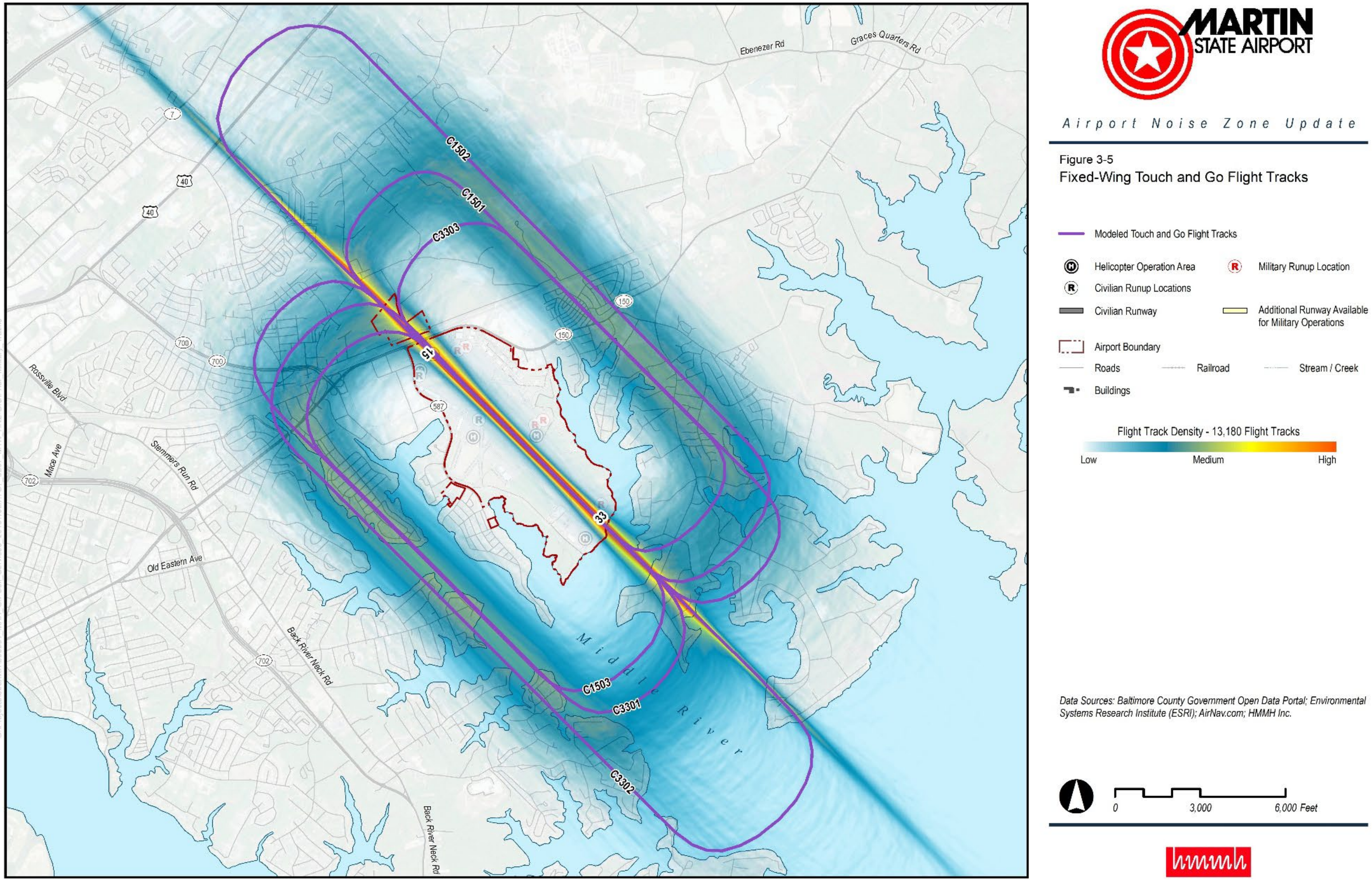

Figure 3-6. Helicopter Arrival Model Flight Tracks

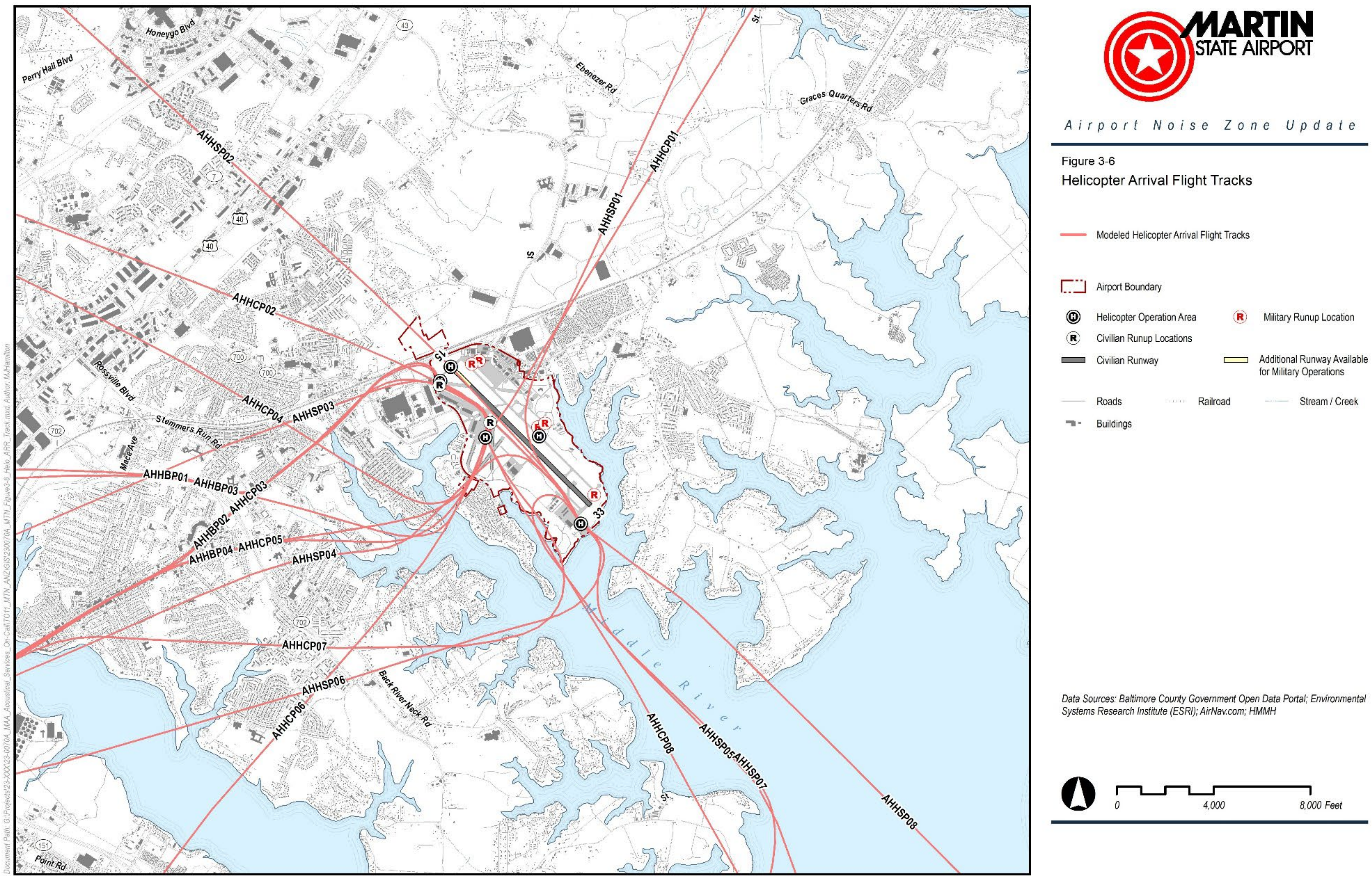

Figure 3-7. Helicopter Departure Model Flight Tracks

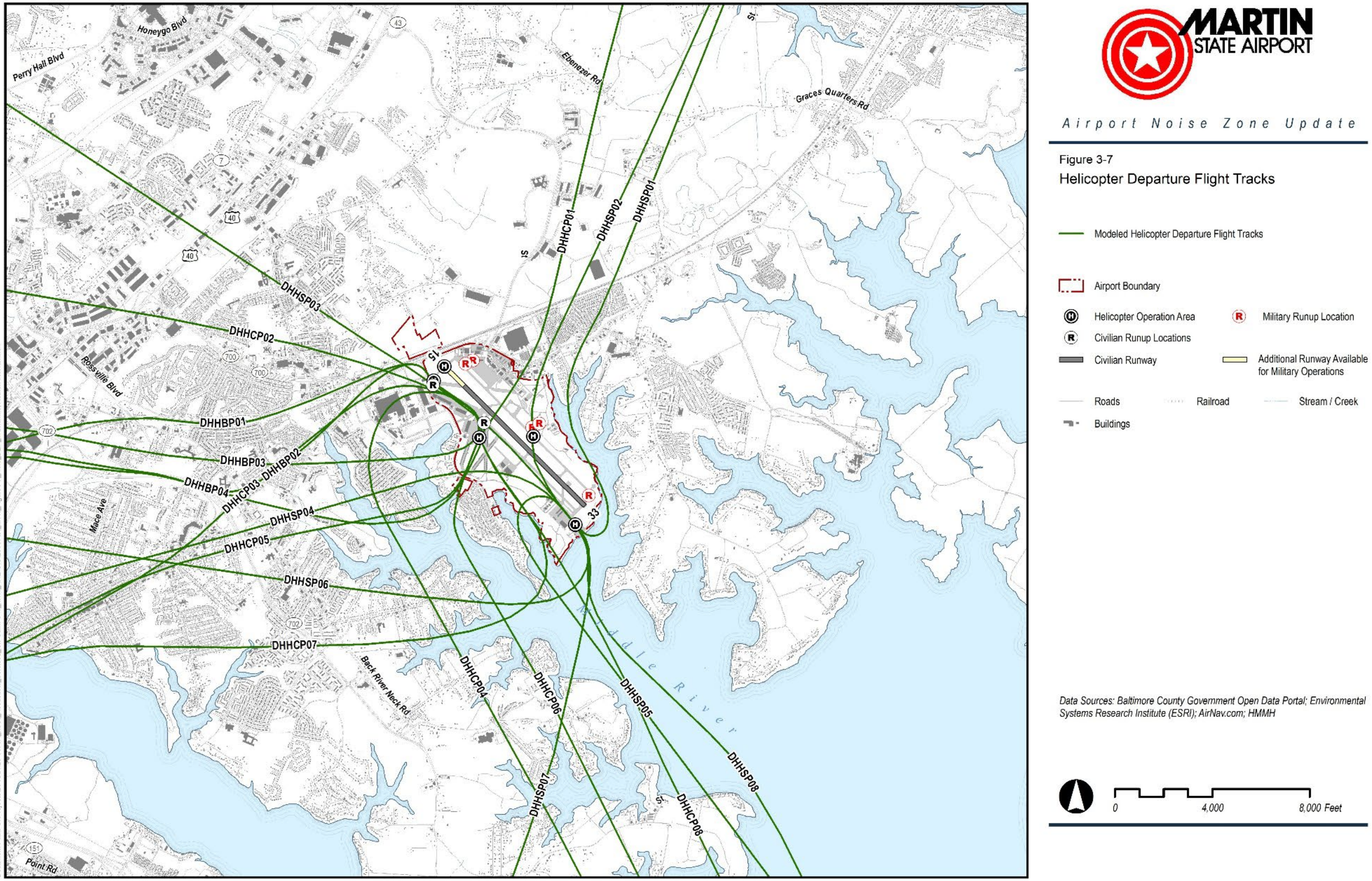

Figure 3-8. Helicopter Circuit/Touch-and-Go Model Flight Tracks

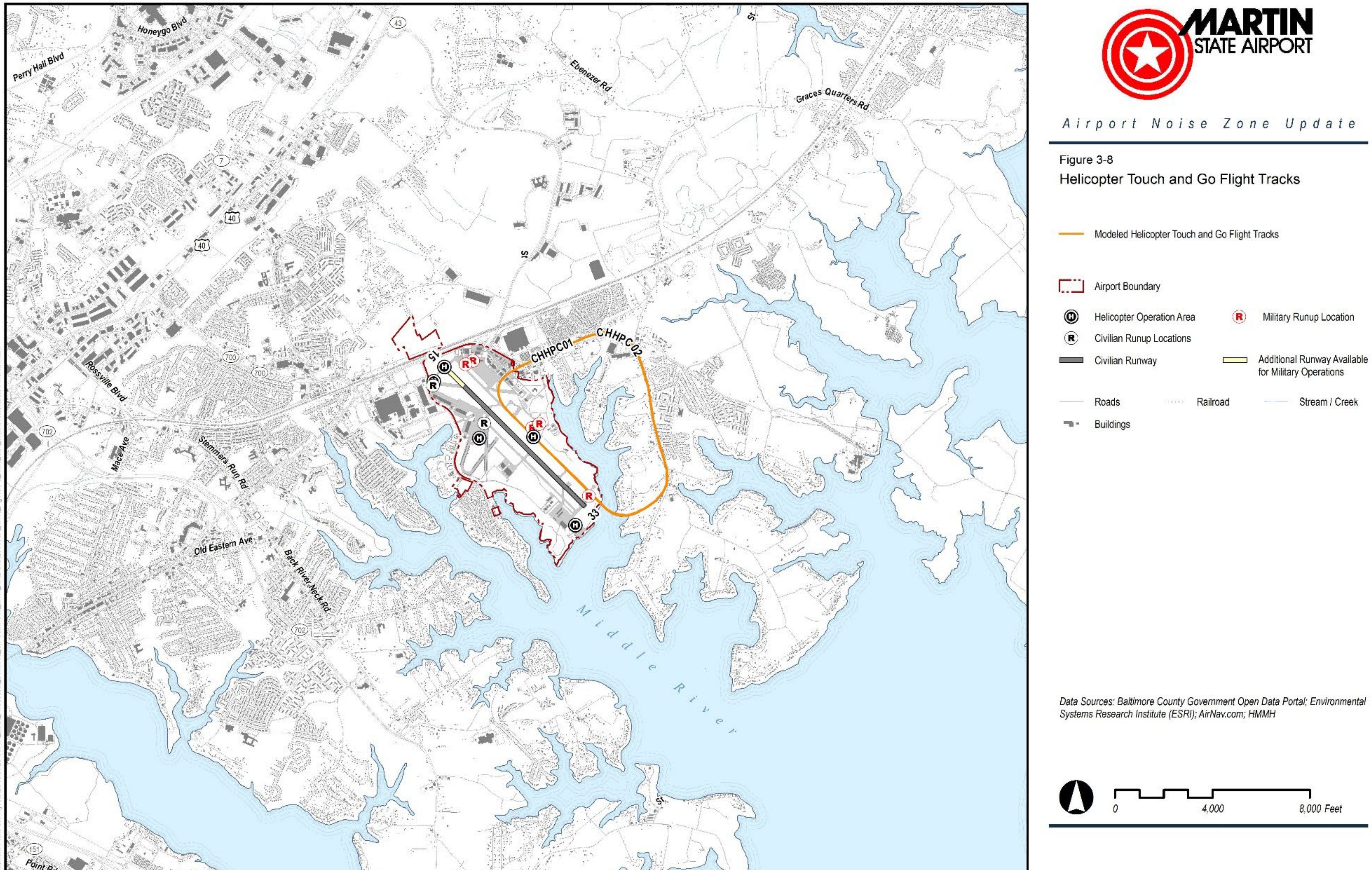

Figure 3-9. Military Arrival Model Flight Tracks

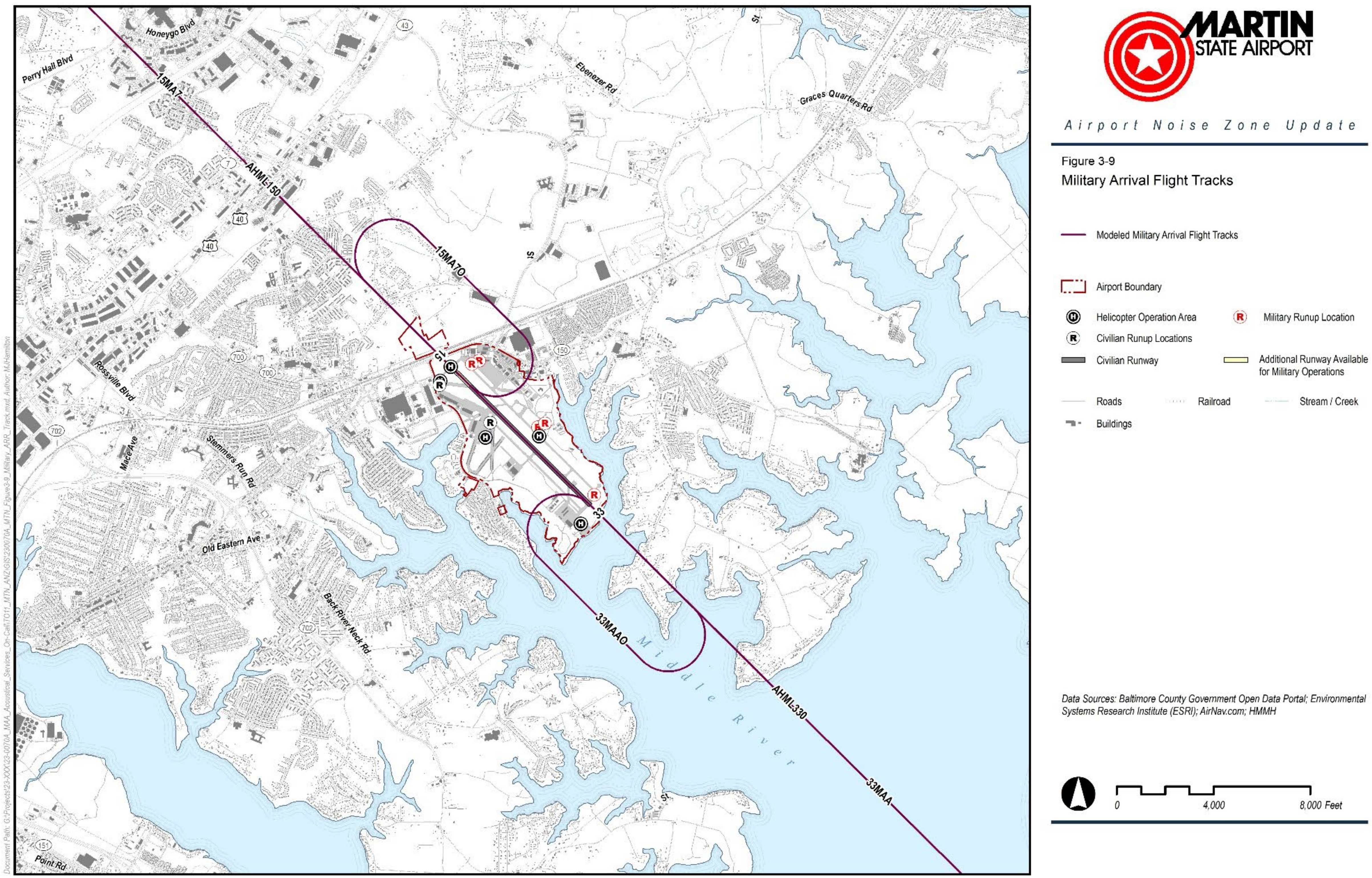

Figure 3-10. Military Departure Model Flight Tracks

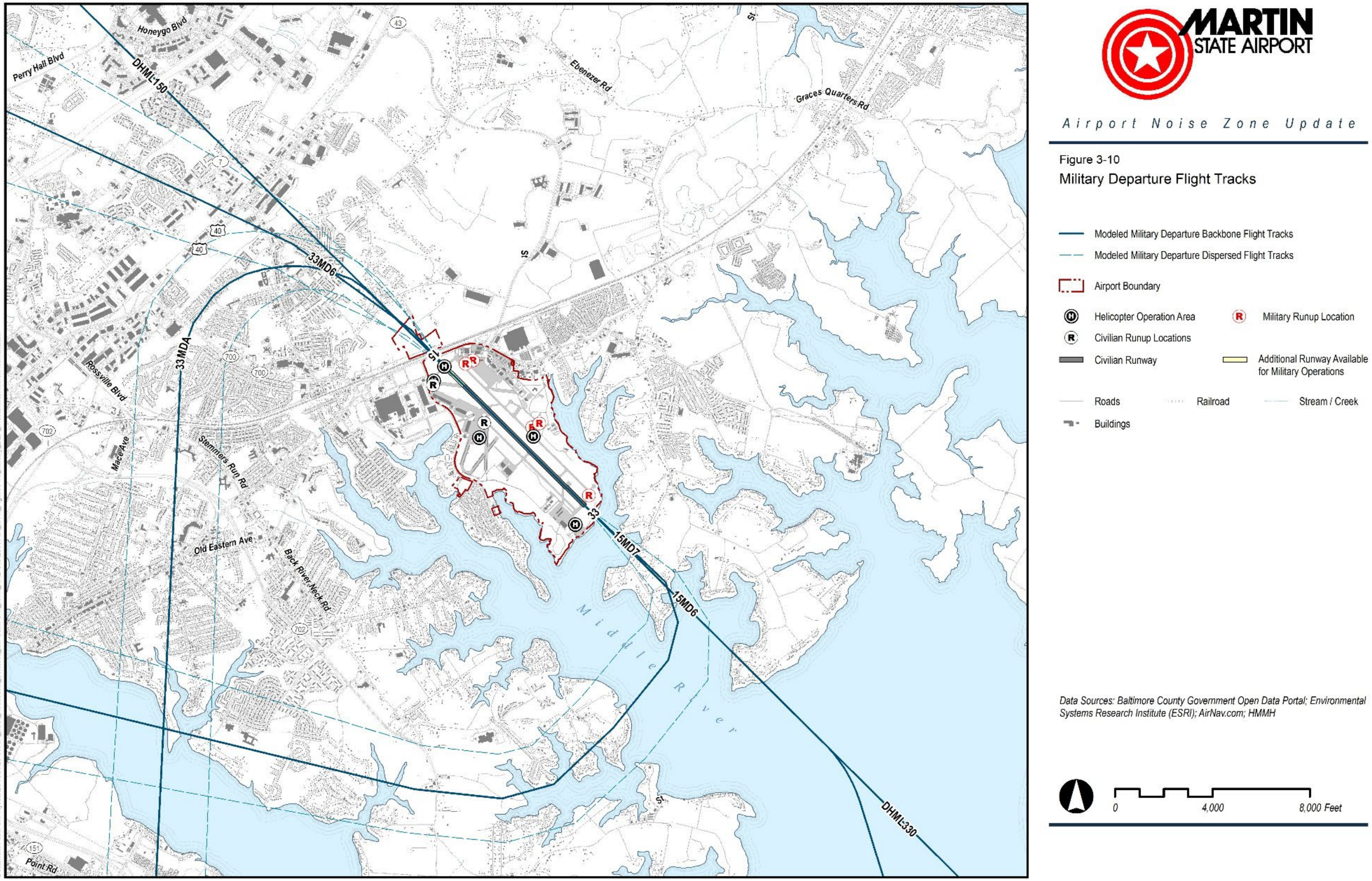

Figure 3-11. Military Low Approach Model Flight Track

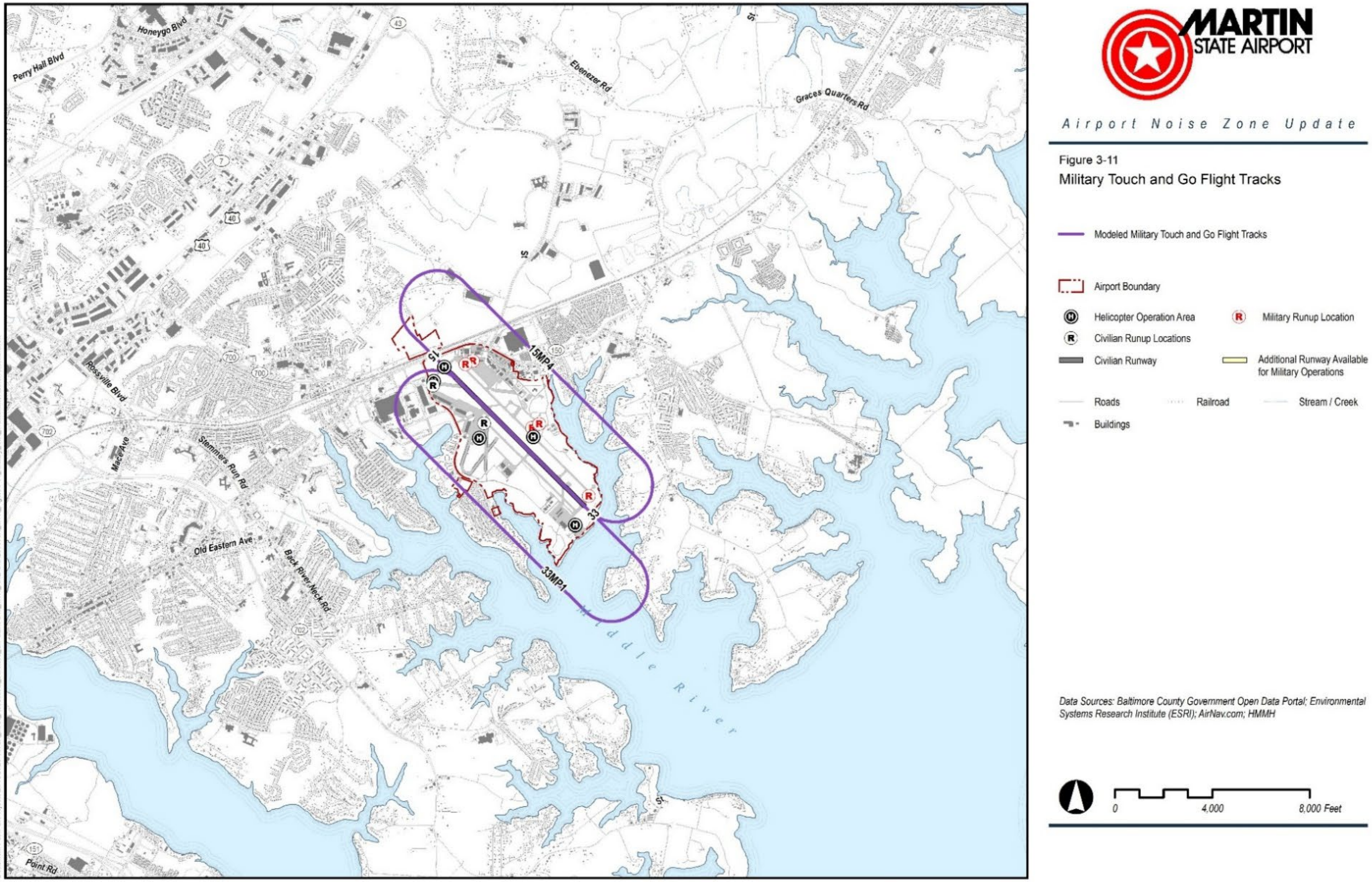

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Table 3-12. Fixed-Wing Model Track Utilization Percentages for All Years

Aircraft Category	Runway	Arrivals		Departures		Circuits	
		Track ID	Percent	Track ID	Percent	Track ID	Percent
General Aviation	15					C1501	80.1%
						C1502	12.8%
						C1503	7.1%
						Total	**100.0%**
	33					C3301	76.0%
						C3302	16.8%
						C3303	7.2%
						Total	**100.0%**
Military	15	15MA7	100.0%	15MD6	90.9%	15MP4	100.0%
				15MD7	9.1%		
		Total	**100.0%**	**Total**	**100.0%**	**Total**	**100.0%**
	33	33MAA	100.0%	33MD6	65.0%	33MP1	100.0%
				33MDA	35.0%		
		Total	**100.0%**	**Total**	**100.0%**	**Total**	**100.0%**

Table 3-13. Base Year (2025) and Five-Year Forecast (2030) Helicopter Model Track Utilization Percentages

Aircraft Category	Helipad	Arrivals		Departures		Circuits	
		Track ID	Percent	Track ID	Percent	Track ID	Percent
Air Taxi and General Aviation	HBP	AHHBP01	43.7%	DHHBP01	17.8%		
		AHHBP02	30.8%	DHHBP02	37.6%		
		AHHBP03	15.3%	DHHBP03	13.3%		
		AHHBP04	10.2%	DHHBP04	31.3%		
		Total	**100.0%**	**Total**	**100.0%**		
	HCP	AHHCP01	3.3%	DHHCP01	6.4%		
		AHHCP02	10.9%	DHHCP02	25.0%		
		AHHCP03	33.4%	DHHCP03	17.4%		
		AHHCP04	7.0%	DHHCP04	3.4%		
		AHHCP05	33.0%	DHHCP05	31.8%		
		AHHCP06	5.6%	DHHCP06	7.0%		
		AHHCP07	3.5%	DHHCP07	2.9%		
		AHHCP08	3.5%	DHHCP08	6.1%		
		Total	**100.0%**	**Total**	**100.0%**		
	HSP	AHHSP01	6.4%	DHHSP01	9.9%		
		AHHSP02	5.2%	DHHSP02	11.9%		
		AHHSP03	7.1%	DHHSP03	6.7%		
		AHHSP04	16.1%	DHHSP04	7.2%		
		AHHSP05	7.3%	DHHSP05	12.6%		
		AHHSP06	28.5%	DHHSP06	14.6%		
		AHHSP07	19.8%	DHHSP07	10.2%		
		AHHSP08	9.7%	DHHSP08	26.9%		
		Total	**100.0%**	**Total**	**100.0%**		
	HPC					CHHPC01	51.8%
						CHHPC02	48.2%
						Total	**100.0%**
Military	HML	AHML330	50.0%	DHML150	50.0%		
		AHML150	50.0%	DHML330	50.0%		
		Total	**100.0%**	**Total**	**100.0%**		

3.6 Meteorological Conditions

AEDT has several settings that affect aircraft performance profiles and sound propagation based on meteorological data. Meteorological settings include average annual temperature, barometric pressure, and relative humidity at the airport. AEDT utilizes the following values for annual average weather conditions at MTN which are based on a 10-year average from 2014-2023:

- Temperature: 55.47° F
- Pressure: 1017.21 millibars
- Relative Humidity 75.08%
- Dew Point: 47.7° F
- Wind Speed: 4.4 knots

The AEDT annual average weather condition values detailed above were used in AEDT for generating the base year and 2030 and 2035 forecast noise contours for the MTN ANZ update.

3.7 Terrain Data

Terrain data describes the elevation of the ground surrounding the airport and on airport property. AEDT uses terrain data to set the ground level under the flight paths. The terrain data does not affect the aircraft's performance or noise levels, but it does affect the vertical distance between the aircraft and a noise "receiver" on the ground. This in turn affects noise propagation assumptions about how noise propagates over ground. The terrain data were obtained from the United States Geological Survey (USGS) National Map Data Download Application on May 8, 2025. Elevation Dataset with one-third arc second (approximately 33 feet) resolution was selected. Terrain data was utilized in conjunction with the terrain feature of AEDT to generate the base, five-year, and ten-year noise contours for the MTN ANZ update.

4. Study Results

4.1 2025 Base Year Contours

Figure 4-1 presents the MTN 65, 70, and 75 dB DNL contours for the base year.

The 65 dB DNL contour remains mostly on airport property with four exceptions:

- An area on the northeast side of the airport off of Runway 15 due to military maintenance run-ups of A-10C aircraft on the MDANG ramp area.
- An area on the southwest side of the airport off of Runway 15 due to helicopter activity at the Baltimore City Police helipad.
- An area on the northeast side of the airport off of Runway 33 due to military pre-flight run-ups of A-10C aircraft.
- An area to the southwest side of the airport off of Runway 33 due to fixed-wing arrival operations but dominated by helicopter activity at the Maryland State Police helipad.

The base year contour exposes approximately 283 acres, 278 (98 percent) of which are on airport property, as presented in **Table 4-1**.

Table 4-1. Households, Population, and Acreage within the 2025 Base Year Contour

DNL Contour Interval	Estimated Residential Population	Estimated Residential Housing Units	Area (acres)	On Airport (acres)	On Airport (%)	Off Airport (acres)	Off Airport (%)
65-70 dB	0	0	159	154	97%	5	3%
70-75 dB	0	0	80	80	100%	0	0%
>75 dB	0	0	44	44	100%	0	0%
Total	**0**	**0**	283	278	98%	**5**	2%
Sources: HMMH 2025; 2020 US Census							

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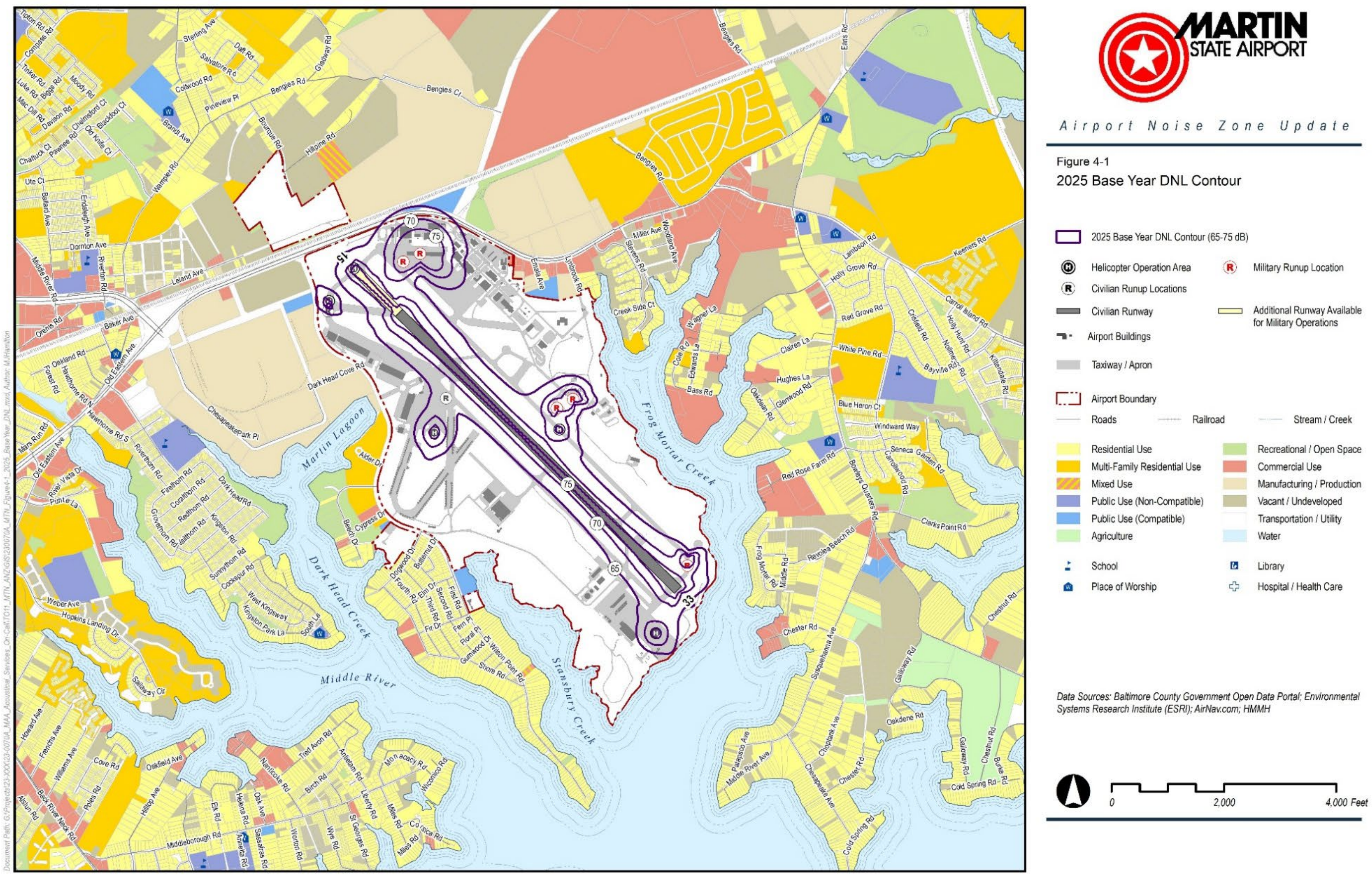
Figure 4-1. 2025 Base Year DNL Contours



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4.2 2030 Five-Year Forecast Contours

Figure 4-2 displays the 2030 five-year 65, 70, and 75 dB DNL contours for MTN. The land use data used to create the base map was derived from various sources, including aerial photography, airport layout and property boundaries, and information on undeveloped land acquired by the MAA.

The 2030 five-year forecast contours are noticeably smaller than those for the base year. The primary reason for this reduction is the MDANG's divestment of A-10C aircraft in 2025. As a result, the 2030 65 dB DNL contour is largely contained within airport property, with the exception of a northwest area off Runway 15, which is related to Baltimore City Police helicopter operations.

Overall, the 2030 five-year forecast contours are approximately 39 percent smaller in area compared to the base year, reflecting the anticipated changes in fleet mix during the 2030 forecast period. These contours cover approximately 172 acres, with 99 percent of that area located on airport property, as presented in **Table 4-2**.

Table 4-2. Households, Population, and Acreage within 2030 Five-Year Forecast DNL Contours

DNL Contour Interval	Estimated Residential Population	Estimated Residential Housing Units	Area (acres)	On Airport (acres)	On Airport (%)	Off Airport (acres)	Off Airport (%)
65-70 dB	0	0	113	113	99%	>1	>1%
70-75 dB	0	0	41	41	100%	0	0%
>75 dB	0	0	18	18	100%	0	0%
Total	**0**	**0**	**172**	**172**	**99%**	**>1**	**>1%**
Sources: HMMH 2025; 2020 US Census							

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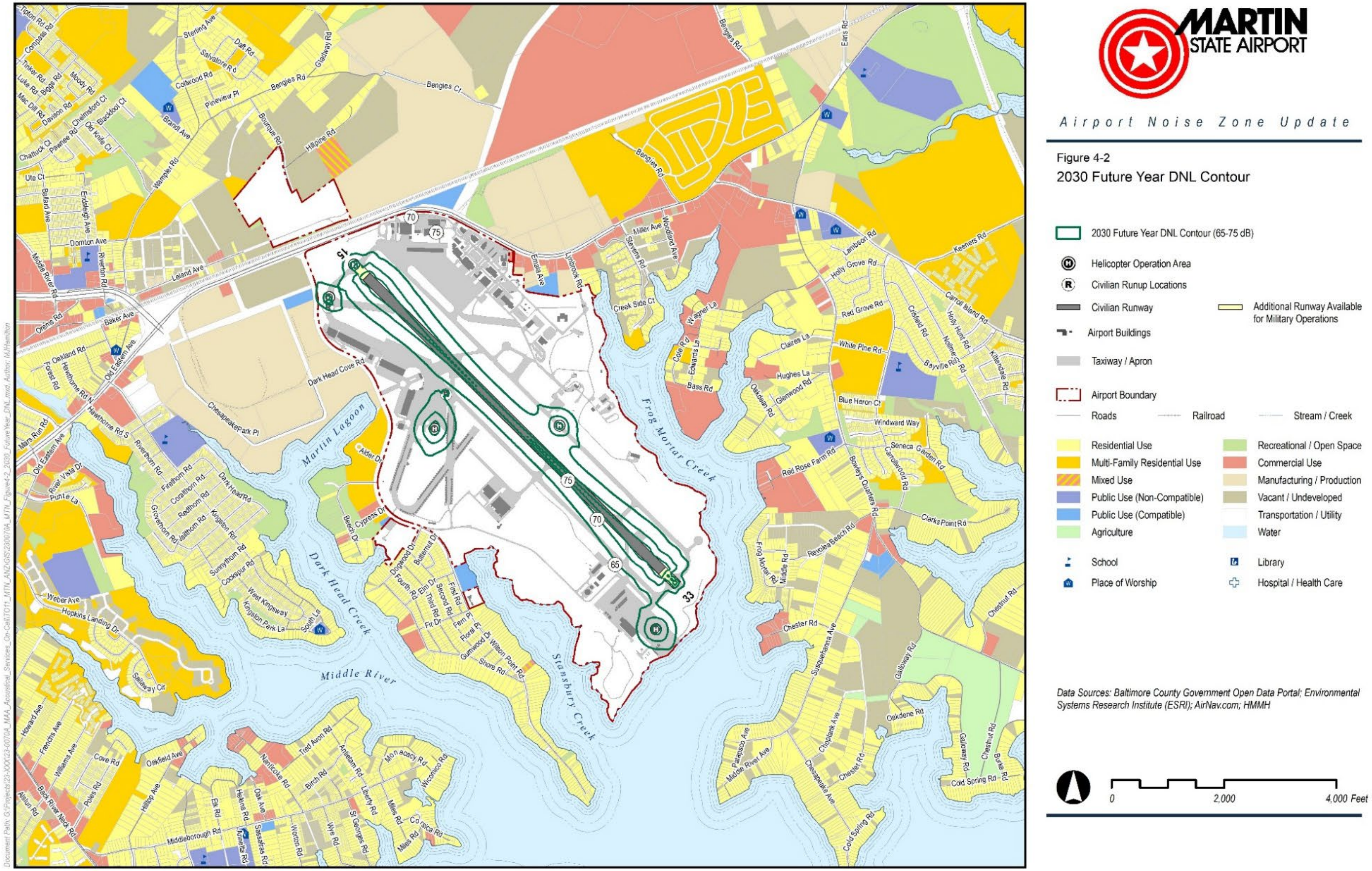
Figure 4-2. 2030 Five-Year Forecast DNL Contours



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4.3 2035 Ten-Year Forecast Contours

Figure 4-3 displays the 2035 ten-year 65, 70, and 75 dB DNL contours for MTN. The land use data used to create the base map was derived from various sources, including aerial photography, airport layout and property boundaries, and information on undeveloped land acquired by the MAA.

The 2035 ten-year forecast contours are noticeably smaller than those for the base year. The primary reason for this reduction is the MDANG's divestment of A-10C aircraft in 2025. As a result, the 2035 65 dB DNL contour is largely contained within airport property, with the exception of a northwest area off Runway 15, which is related to Baltimore City Police helicopter operations.

Overall, the 2035 ten-year forecast contours are approximately 38 percent smaller in area compared to the base year, reflecting the anticipated changes in fleet mix during the 2035 forecast period. These contours cover approximately 174 acres, with 99 percent of that area located on airport property, as presented in **Table 4-3**.

Table 4-3. Households, Population, and Acreage within 2035 Ten-Year Forecast DNL Contours

DNL Contour Interval	Estimated Residential Population	Estimated Residential Housing Units	Area (acres)	On Airport (acres)	On Airport (%)	Off Airport (acres)	Off Airport (%)
65-70 dB	0	0	116	116	99%	>1	>1%
70-75 dB	0	0	41	41	100%	0	0%
>75 dB	0	0	17	17	100%	0	0%
Total	**0**	**0**	**174**	**174**	**99%**	**>1**	**>1%**
Sources: HMMH 2025; 2020 US Census							

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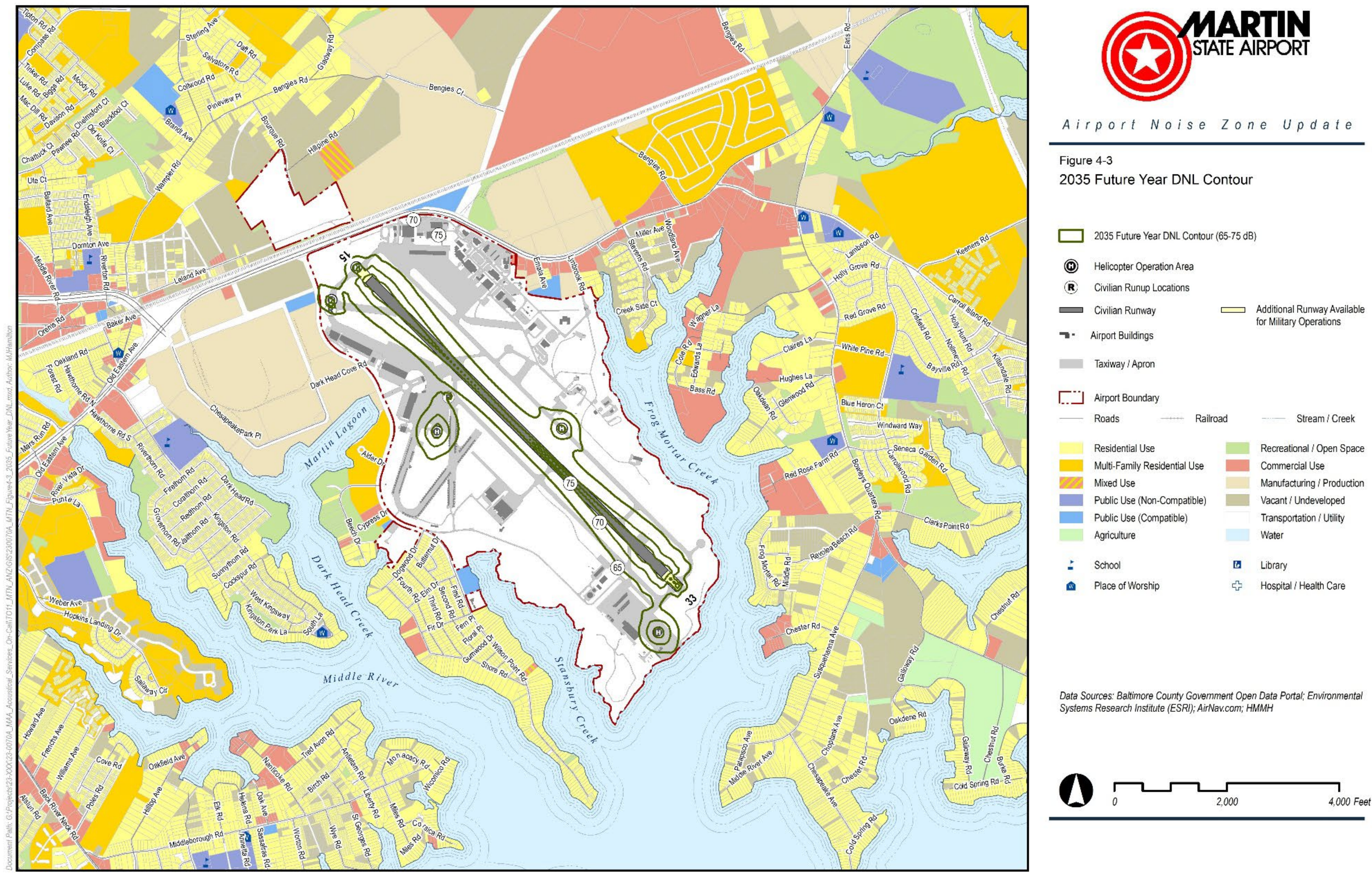
Figure 4-3. 2035 Ten-Year Forecast DNL Contours



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4.4 2025 ANZ Contours and Land Use Inventory

The 2025 MTN ANZ represents a composite of the 65, 70, and 75 dB DNL noise contours for three study years: the base year (2025) and two forecast years (2030 and 2035). The ANZ represents the outermost extent of the annual DNL contours for each of the three study years. As described in Section 1, the ANZ defines the largest area of the existing or future noise exposure contours for planning purposes.

The 2025 ANZ update process included an inventory of the latest land use within the ANZ DNL contour boundary as well as in the vicinity of MTN. An inventory of the land use within the contour boundary and in the vicinity of MTN was conducted in July 2025 and included in the development of the 2025 ANZ DNL contour.

Figure 4-4 presents the 65, 70, and 75 dB DNL contours for the 2025 ANZ in relation to land use surrounding MTN. The shape of the 2025 ANZ composite contours is primarily driven by the 2025 Base Year contours, which include MDANG A-10C operations. The 2030 and 2035 Forecast Year contours reflect forecasted fleet mix changes between 2025 and 2035, including the divestment of A-10C aircraft in 2025. The 2025 ANZ exposes approximately 286 acres to noise levels greater than 65 dB DNL, as presented in **Table 4-4**.

Table 4-4. Households, Population, and Acreage within the 2025 Full Build ANZ

DNL Contour Interval	Estimated Residential Population	Estimated Residential Housing Units	Area (acres)	On Airport (acres)	On Airport (%)	Off Airport (acres)	Off Airport (%)
65-70 dB	0	0	157	152	97%	5	3%
70-75 dB	0	0	82	82	100%	0	0%
>75 dB	0	0	47	47	100%	0	0%
Total	**0**	**0**	**286**	**281**	**98%**	**5**	**2%**
Sources: HMMH 2025; 2020 US Census							

Figure 4-5 presents the 2025 ANZ contours compared to the 2020 ANZ. The 2020 ANZ included a base year of 2020 and forecast years of 2025 and 2030. **Table 4-5** presents a comparison of acreage, estimated population, and estimated housing unit counts for the 2025 ANZ and the previous 2020 ANZ.

Table 4-5. Households, Population, and Acreage within the 2025 Full Build ANZ Compared to the 2020 ANZ

ANZ	Estimated Residential Population	Estimated Residential Housing Units	Area (acres)	On Airport (acres)	On Airport (%)	Off Airport (acres)	Off Airport (%)
2025 ANZ	0	0	286	281	98%	5	2%
2020 ANZ	0	0	411	392	95%	19	5%
Sources: HMMH 2025; 2020 US Census							

As shown in **Figure 4-5**, the 2025 ANZ covers a smaller area than the 2020 ANZ—286 acres compared to 411 acres—representing a 30 percent reduction in land exposed to noise levels above 65 dB DNL. This change reflects differences in the noise exposure patterns displayed in **Figures 4-4** and **4-5**. The reduction in ANZ size is primarily driven by change in military operations between the two analyses, including:

- Fewer A-10C operations conducted by the MDANG in the 2025 Base Year scenario.
- Updated A-10C arrival procedures implemented for 2025, which resulted in lower noise exposure.
- Reduced A-10C activity in future years of the 2025 ANZ compared to the busier 2030 Future Year scenario that influenced the 2020 ANZ.
- Increases in non-military operations in both analyses that were not large enough to offset the noise reduction from decreased A-10C activity.

Together these factors resulted in a more compact 2025 ANZ contour compared to the broader 2020 ANZ.

Figure 4-4. MTN 2025 ANZ Contours

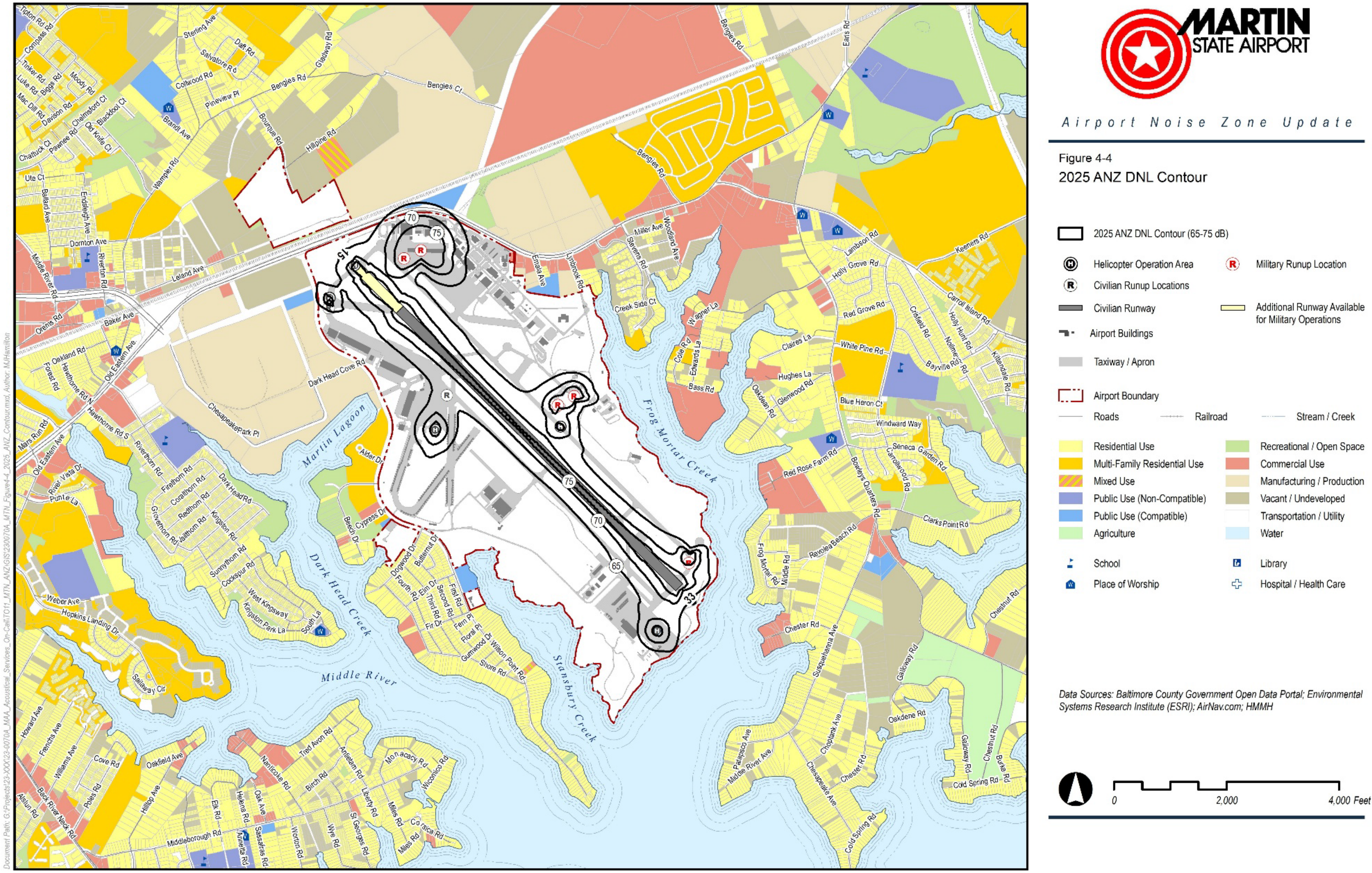
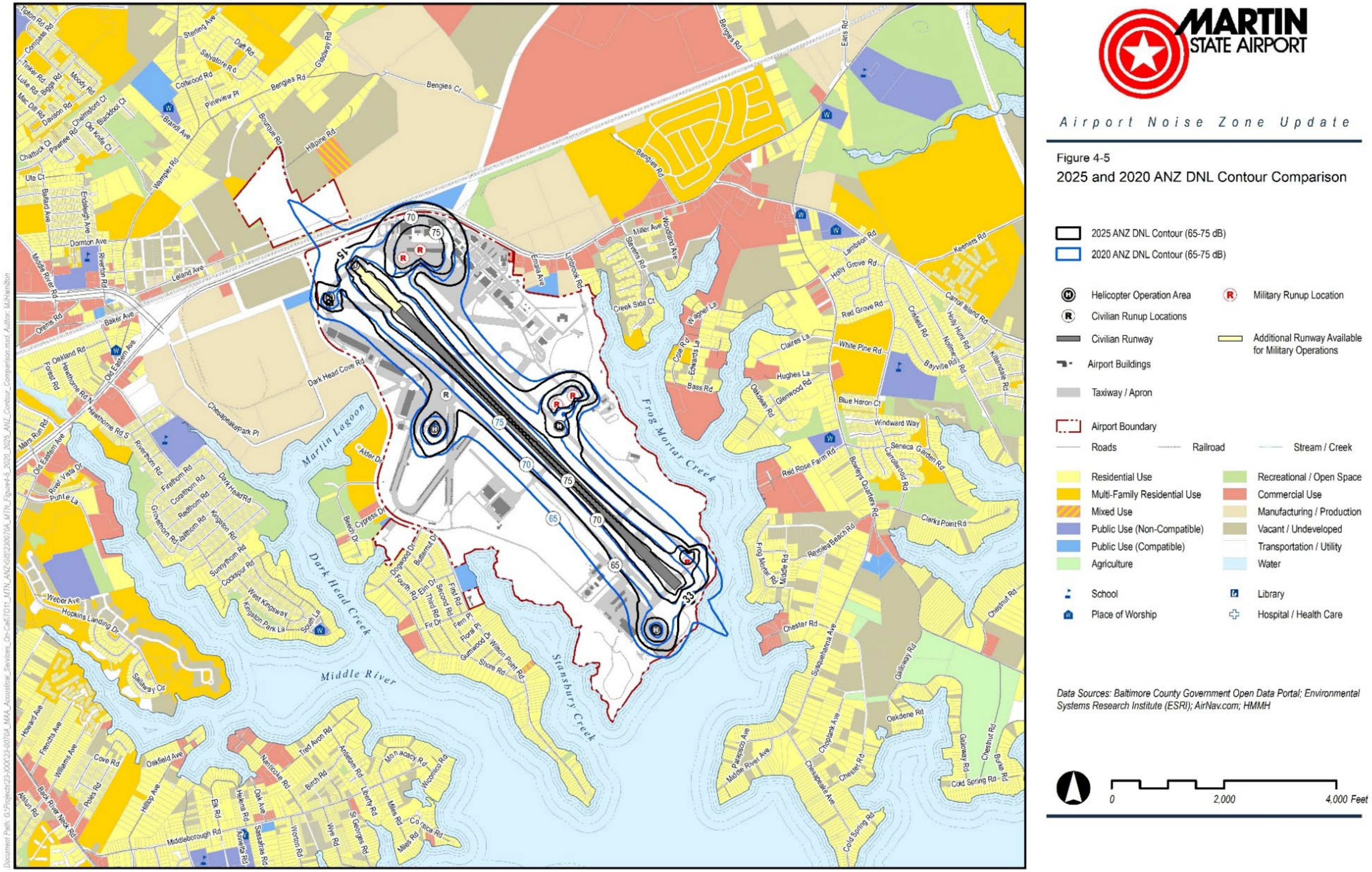


Figure 4-5. 2025 ANZ Compared to 2020 ANZ



5. Noise Abatement Plan

Martin State Airport (MTN) is owned by the State of Maryland and operated by the Maryland Department of Transportation Maryland Aviation Administration (MAA). Regulations regarding the Airport Noise Zone (ANZ) process indicate that if a noncompatible land use area exists within a noise zone, the airport operator shall develop a noise abatement plan (NAP) to reduce the size of or eliminate the impacted land use area by altering the coverage of the noise zone through the application of the best available technology, at a reasonable cost and without impairing safety of flight.[6] The MTN NAP is established pursuant to the Maryland Environmental Noise Act of 1974 (Transportation Article, §§ 5-805, 5-806, and 5-819, Annotated Code of Maryland) and COMAR Section 11.03.02.10.

In 1984, MTN adopted an NAP designed to minimize the noise of aircraft operations within the constraints of the Federal Air Traffic Control System and aircraft safety. The NAP was developed with the cooperation of the MDANG, airport users, the aviation industry, and local governments. It was updated in 2020 to reflect operating conditions at MTN. It was reviewed with no recommended changes as part of the 2025 MTN ANZ update

The NAP is formulated to minimize noise disturbance to neighboring communities while maintaining safe and efficient MTN airport operations. The MAA Division of MTN Airport Operations is responsible for the overall administration of the MTN NAP, and the noise abatement procedures are reproduced on the Martin State Airport Noise Abatement webpage[7] and in Martin State Airport Tenant Directive 501.1, which is distributed to all MTN tenants.[8]

Per COMAR Section 11.03.02.10C(3)(b), the MDANG, the Maryland State Police, and local law enforcement agencies are exempt from the provisions of this regulation when operational necessity dictates noncompliance, or in the event of a State or national emergency.

The NAP is comprised of two parts; (1) the efforts the MAA is taking to mitigate noise in the areas surrounding MTN, and (2) aircraft operating procedures.

5.1 Noise Mitigation Efforts

A. Airport Noise Zone (ANZ)

Maryland law requires the protection of citizens from the impact of transportation related noise. The MAA is required to adopt an ANZ that minimizes the impact of aircraft noise on people living near MTN and prevents incompatible land development around the airport.

[6] Code of Maryland Regulations (COMAR) Title 11 Sections 03.03.04 and 03.01.10 and Sections 5-805, 5-806, and 5¬819 of the Transportation Article, Annotated Code of Maryland.

[7] MAA, *Noise Abatement*, https://martinstateairport.com/noise-abatement/

[8] MAA, *Tenant Information and Directives*, https://martinstateairport.com/tenant-information-directives/

The MTN ANZ is depicted by noise contours surrounding MTN. These lines connect points of equal noise exposure and represent DNL 65 dB, 70 dB, and 75 dB noise contours. These contours represent the boundaries for determining incompatible activities or land uses under Maryland law. The State uses the noise contours adopted in the MTN ANZ to restrict new development that would be incompatible with the cumulative noise exposure level acceptable for an area.

B. Control of Incompatible Development

The State of Maryland regulates land use within the MTN ANZ. Anyone desiring to construct or modify a structure or land use is required to obtain an Airport Zoning Permit. An application can be obtained from the Baltimore County Office of Planning and Zoning or the MAA Office of Planning.[9] The MAA is required by law to approve or deny zoning permits based on the location relative to the MTN ANZ and the compatibility standards listed in the chart below.

NOISE COMPATIBILITY STANDARDS	
Land Use	**Areas of Compatibility (Noise Levels)**
Residences, schools, hospitals, libraries, churches, auditoriums, rest homes, nursing homes, concert halls.	Up to 65 DNL
Transient lodging, hotels, motels, sports arenas, outdoor spectator sports, playgrounds, neighborhood parks, noise sensitive manufacturing.	Up to 70 DNL
Golf courses, riding stables, water recreation, cemeteries, office buildings, retail and wholesale establishments, movie theaters, restaurants, industry, manufacturing, utilities, livestock farming, animal breeding.	Up to 75 DNL
Agriculture (except livestock), mining, fishing, aviation related uses.	All
Source: COMAR 11.03.03.03, *Limits for Cumulative Noise Exposure,* http://mdrules.elaws.us/comar/11.03.03.03	

For example, a person may wish to build a new housing development within the DNL 65 dB noise contour (i.e. within the ANZ). As the maximum limit for new residential land use is DNL 65 dB, the applicant would be denied a permit by the MAA. In the event a permit application is denied by the MAA, the applicant may appeal to the Board of Airport Zoning Appeals (BAZA) for a variance. The BAZA may deny an appeal or grant a variance requiring construction standards designed to reduce noise exposure to future occupants. The BAZA was created in 1974 by the Maryland General Assembly and is composed of 10 citizen members appointed by the Governor.

Under the current procedures, a house built within the ANZ would require a variance from BAZA. If the Board approves a variance, the applicant is typically required to meet the following conditions:

- Provide a report from an acoustical engineer demonstrating that the proposed construction will provide adequate sound insulation and achieve an interior noise level of 45 dB.
- Agree to complete a post construction noise test to demonstrate that the house meets the required interior noise level of 45 dB.

[9] MAA, *Permits & Forms*, https://www.marylandaviation.com/content/permitsandforms/constructionzoning/index.html

- Agree not to apply for a Use and Occupancy Permit until BAZA approves the results of the post construction test.
- Agree to grant an avigation easement to the MAA that includes a provision relinquishing any right to receive remuneration or any other compensation or benefit under any program designed to allay, abate, or compensate for the effects of aircraft noise and emissions in connection with the operation of MTN Airport.

C. Noise Concerns

MTN maintains telephone service to enable citizens to register noise-related complaints at any time 24 hours per day, 7 days a week. The telephone number is 410-682-8802. Complaints are investigated if appropriate and the complainant is provided with any relevant information.

Additionally, citizens can monitor MTN aircraft operations and register complaints utilizing MAA's WebTrak system (https://webtrak.emsbk.com/bwi3). WebTrak provides an interactive portal for the viewing of aircraft in the vicinity of MTN as well as BWI Marshall and provides the opportunity to file noise complaints directly to the MAA. WebTrak users can geolocate a place of interest (home, work, etc.) and view either current (20-minute delayed) or historical aircraft overflights. WebTrak includes an aircraft's type, altitude, origin and destination airports, and flight identification. Inquiries and complaints about aircraft flights at MTN submitted through WebTrak are passed to MTN Operations and Maintenance staff for review and follow-up. Note: WebTrak does not include data on military aircraft flights or operations due to reasons of national security.

D. Maryland Air National Guard (MDANG) Noise Barriers:

In 1989, MDANG erected noise barriers to provide reductions in noise impacts from engine maintenance activity for areas east and northeast of MTN.

E. Aircraft Maintenance Engine Run-up Areas

Aircraft maintenance engine run-ups are to be accomplished only in areas designated by the Chief, MTN Operations & Maintenance in accordance with MTN Tenant Directive 200.2.

5.2 MTN Noise Abatement Procedures

A. Visual Flight Rules (VFR) and Instrument Flight Rules (IFR) Departures

1. VFR Piston-engine Aircraft:
   Runway 15/33 – Unless otherwise instructed by Air Traffic Control (ATC), aircraft fly runway heading to 1,000 feet Mean Sea Level (MSL) prior to turning to the ATC approved on-course heading or crosswind leg of the traffic pattern.
2. VFR Turbine Powered Aircraft:
   Runway 15/33 – Unless otherwise instructed by ATC, aircraft shall fly runway heading to 1,500 feet MSL prior to turning to the ATC approved, on-course heading or crosswind leg of the traffic pattern.

3. VFR Helicopter Departures:
   Unless operating under a Letter of Agreement (LOA) with MTN ATC specifying otherwise, helicopters shall climb to 500 feet above ground level (AGL) on initial departure heading before turning on-course.
4. All IFR Departures:
   IFR departures shall be accomplished in accordance with ATC direction or clearance.

B. VFR and IFR Arrivals and Traffic Patterns

VFR and IFR aircraft approach should, to the maximum extent feasible, maintain the highest practical altitude, commensurate with flight and ATC procedures in order to minimize aircraft noise exposure to communities underlying the final approach courses.

C. Closed Traffic Patterns

A left-hand traffic pattern shall be used at MTN unless otherwise directed by ATC. Piston fixed-wing aircraft should fly runway heading until reaching 1,000 feet MSL prior to turning to the crosswind leg of the traffic pattern. Turbine aircraft should fly runway heading until reaching 1,500 feet MSL prior to turning to the crosswind leg of the traffic pattern.

Traffic pattern altitudes are:

Fixed Wing	Piston engine	1,000’ MSL
	Civil turbine and military turboprop	1,500’ MSL
	Military Jet	2,000’ MSL
Rotary Wing		500’ MSL

D. **Touch-and-Go or Practice Approaches**

1. No touch-and-go and/or practice approaches or practice landings are permitted between 10:00 p.m. to 6:00 a.m. daily unless approved by MTN Operations and Maintenance staff.
2. Between 6:00 a.m. – 10:00 p.m. daily:

FAA Weight Class	Description	Weight	Limitation
Small	Small Single Engine/Twin Engine Aircraft, Helicopters, and Transient Military (e.g. Cessna 172, Piper Cherokee)	12,500 lbs. or less	No restrictions
Medium	Medium Aircraft and Transient Military* (e.g. military fighter jets, Learjet 35, Bombardier CRJ-200LR)	Between 12,500 and 41,000 lbs.	Limit of two practice approaches
Large	Large Jet/Large Commuter/757/Heavy Aircraft	More than 41,000 lbs.	Practice approaches and landings are not authorized without prior permission from MTN Operations and Maintenance staff.

* Military aircraft shall be limited to two practice landings/take-offs or approaches unless additional operations are approved by MTN Operations and Maintenance staff.
Source: FAA, https://aspmhelp.faa.gov/index.php/Weight_Class

6. Public Consultation

The ANZ update process included multiple public consultation efforts to ensure that MTN stakeholder input is reflected in the resulting ANZ contour and NAP documentation. This public involvement component included two major initiatives: (1) voluntarily forming and convening a Stakeholder Advisory Committee (SAC) and (2) conducting a public workshop and hearing.

6.1 Stakeholder Advisory Committee (SAC)

The SAC was formed to include representatives of community and industry stakeholder groups with an interest in airport activities, ensuring they remained informed of the 2025 MTN ANZ update process and methodology. SAC members were invited to participate throughout the MTN ANZ update process by attending meetings and providing input on the process. SAC members were expected to share pertinent MTN ANZ update information with the groups or any interested citizens that they represent.

The SAC served in an advisory role to the MAA solely for purposes of the MTN ANZ update process. The SAC is composed of stakeholders representing all significant interests at MTN, including representatives from:

- Local government planning staff
- Community organizations
- MTN tenants and users
- Aviation trade associations

The MAA encouraged SAC members to review study inputs, assumptions, analyses, and documentation. They were also encouraged to provide input, advice, and guidance related to the ANZ and NAP. SAC members were asked to review the land use inventory and planning considerations.

The SAC was convened three times during the ANZ update process. All meetings were held in Hangar 4 at MTN. The first meeting was held on April 2, 2025. During the first meeting the MAA presented the purpose and objectives of the update process, along with preliminary planning parameters. At the second meeting, held on June 26, 2025, noise modeling inputs and additional background information was presented to the SAC. At the third meeting, held on September 25, 2025, the presentation covered the resulting contours and land use inventory, as well as a review of the NAP. Prior to the third meeting, ANZ noise contours and the related land-use inventory, along with the NAP, were shared with all SAC members for review. All meeting materials, including the SAC committee roster, meeting invitations, sign-in sheets, meeting minutes, and presentations are included in Appendix C.

6.2 Public Workshop and Hearing

As required by Maryland law, a public workshop and hearing will be held concerning the 2025 MTN ANZ, which will offer all interested persons an opportunity to comment on proposed revisions to the MTN ANZ and NAP.

The public workshop and hearing will be held on March 18, 2026 from 6:00 p.m. to 8:00 p.m. at Hangar 4, 701 Wilson Point Road, Middle River, Maryland. During the workshop, MAA and HMMH staff will be available to discuss the MTN ANZ update process and outcomes. Public comments on the MAA's 2025 MTN ANZ and NAP will be accepted during the hearing via a court reporter. Additional public comments will be accepted via email or postal mail throughout the comment period. Information concerning the public workshop and hearing are available at the MAA's Aviation Noise website: https://marylandaviation.com/environmental/airport-noise/martin-state-airport-noise-zone/.

Public Hearing and Workshop Information		
Date: March 18, 2026	Time: 6:00 p.m. – 8:00 p.m. EDT	Location: 701 Wilson Point Rd, Middle River, MD 21220

The MAA will consider all oral and written comments received during the public comment period. Notification in the Maryland Register formally adopts the 2025 ANZ and NAP into Maryland law. The MAA will then certify and submit the adopted ANZ to the Baltimore County Land Record Officer for use in land-use planning and development. The public workshop materials will be provided in Appendix E, including invitations, documentation of public notices, attendance information, presentation materials, and the hearing transcript. Appendix F will contain documentation of public comments.