

FAR PART 150 NOISE COMPATIBILITY STUDY

MILWAUKEE COUNTY'S



G E N E R A L
MITCHELL
INTERNATIONAL AIRPORT



I. ISSUES/ACTIONS AND
RECOMMENDATIONS

Issues/Actions and Recommendations

Introduction

This Section presents the recommended noise abatement plan, which includes the Issues to be addressed, the Actions/Recommendations to be taken to address those Issues, the responsible parties involved for implementing those Actions and Recommendations, the Airport action to be taken, the time frame for implementation and the effectiveness of each. The Issues and Actions will become the recommended Noise Compatibility Program. This Section also recommends which Noise Exposure Map should be used for the basis of the Noise Compatibility Program. In addition, the Future Noise Exposure Map is presented, along with the population exposed to noise in the future.

Future Noise Exposure Map

The Future Noise Exposure Map (2009) reflects the aircraft operations forecast with no new noise abatement procedures. The aircraft operational Recommendations contained on the following pages would not significantly change the size of the contour; however, they would reduce the single event fly over activity that produces aircraft noise intrusion. Further, because there is no guarantee that all the operational Recommendations can or will be implemented, the Future Noise Exposure Map does not reflect those Recommendations. Therefore, the Future Base Case Noise contour will serve as the Future Noise Exposure Map. However, it is the policy of Milwaukee County to utilize the largest noise contour to define the boundaries for all programs recommended in this Study, which is the Existing Noise Exposure Map.

Subsequent to the development of the operational alternatives presented in the Alternatives Chapter, the FAA introduced an updated version of the Integrated Noise Model (INM) Version 6.2. In an effort to utilize the most recent technology available, it was determined that the final Existing and Future Noise Exposure Maps, and the Combined Alternatives Map, would utilize the newer version of the INM. Therefore, the population and housing counts may not exactly be the same as presented in the Alternatives Chapter for the Future Base Case conditions, as the older version of the INM was used to generate those maps and was used as the basis for the population and housing units analysis found in that chapter.

The following table presents the number of acres of different land use types that would be found within the Future Noise Exposure Map contours, based upon the existing land use and the Recommendations *not* implemented.

The Future Noise Exposure Map is illustrated on Figure I1, *FUTURE NOISE EXPOSURE MAP WITH EXISTING LAND USE, 2009*. The specific noise abatement recommendations are contained on the pages following the Future Noise Exposure Map. They are labeled as Continued/Amended Actions and New Actions for each specific noise abatement recommendation. The Continued/Amended Actions are those Actions which the Airport currently has in place but are recommended for some changes, and the New Actions are those which would be implemented for the first time. Some are administrative in nature while others are land use or operational in nature. In addition, they are categorized as Noise Abatement Elements, Land Use Management Elements, and Program Management and Administrative Elements.

Future Combined Recommendation Map

The Recommended Combined Alternatives, 2009 Map is based on the future aircraft operations and reflects the implementation of the operational and facility recommendations that follow. For this Study, *the following operational Alternatives presented earlier were combined to form the Recommended Combined Alternatives, 2009 Map: Alternative 4, Develop FMS departure procedures for Runway 25L utilizing the I-94 corridor; Alternative 5, Evaluate altitudes of turbo-prop departures; Alternative 6, Develop procedures to reduce early turns on approach for turbo-prop aircraft; Alternative 9, Develop ground-based noise alternatives; Alternative 10, Provide additional high-speed taxiways to reduce use of reverse thrust; and Alternative 11, Increase altitude for all jet aircraft to 2,500 feet MSL prior to turning.* In addition, several on-airport sound barriers are also recommended for implementation, along with other administrative and land use recommendations.

Development of Recommendations

The Recommendations were derived from the alternatives evaluated in the previous chapters as they were presented to the Advisory Committee. After discussion and comparison by the Advisory Committee, certain alternatives were selected to be presented to the County for implementation. These have been identified as the study Recommendations. The alternatives were presented during several different Advisory Committee meetings through several working papers. At the request of the Advisory Committee, some alternatives were expanded or modified and presented at a subsequent meeting. Thus, some of the Recommendations have several alternatives combined into one Recommendation.

Table 11

FUTURE NOISE EXPOSURE MAP WITH EXISTING LAND USE, 2009*General Mitchell International Airport FAR Part 150 Noise Compatibility Study*

Land Use	DNL 65 Contour	DNL 70 Contour	DNL 75 Contour
Residential	80 Ac	0 Ac	0 Ac
People	2,220	0	0
House Units*	920	0	0
Churches	0	0	0
Schools	1	0	0
Agriculture	215 Ac	20 Ac	0 Ac
Transportation	1,480 Ac	914 Ac	550 Ac
Commercial	30 Ac	3 Ac	0 Ac
Industrial	45 Ac	0 Ac	0 Ac
Parks/Recreation	25 Ac	0 Ac	0 Ac
Government	65 Ac	14 Ac	0 Ac
Open	310 Ac	17 Ac	0 Ac
Utilities	10 Ac	2 Ac	0 Ac
Total Acres	2,260 Ac	970 Ac	550 Ac

SOURCE: Aerial Photography.

2000 Census Data, Milwaukee County Land Use Data, BDC Analysis.

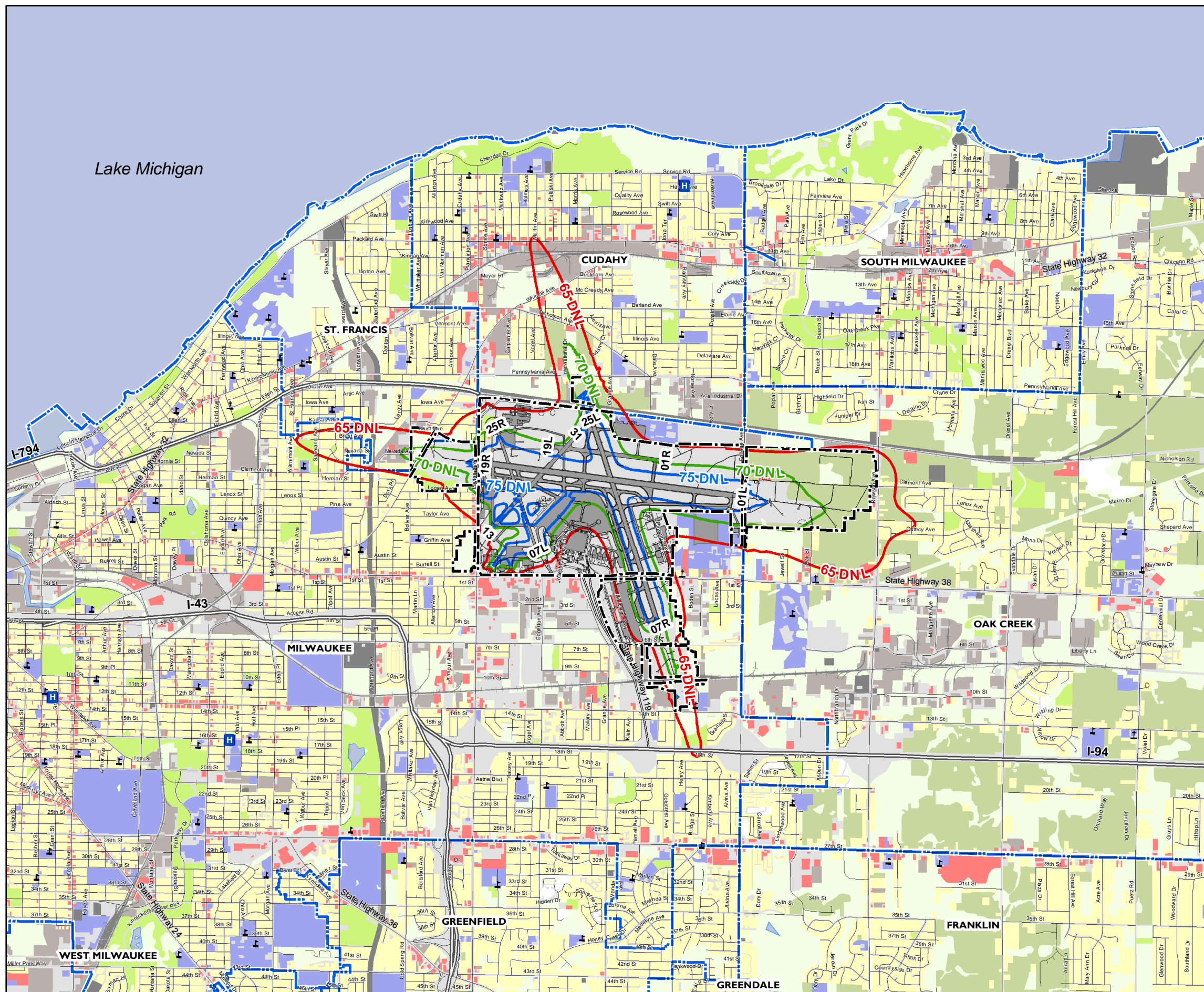
Calculations are based on preliminary information supplied by aerial photography.

The total figures for each contour are cumulative. The figures for the larger contours contain the area within all smaller contours. Population and housing units rounded to nearest ten.

*Over 1,000 homes have been sound attenuated, which are considered compatible. Approximately 77 not attenuated.

Final housing counts considered compatible will be identified when the final noise contour is determined.

Figure I1
Future 2009 Noise Exposure Map
 Generalized Existing Land Use



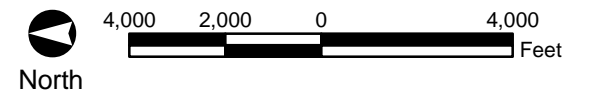
Legend

- 65 DNL Contour (v6.2)
- 70 DNL Contour (v6.2)
- 75 DNL Contour (v6.2)

- RESIDENTIAL
- COMMERCIAL
- GOVERNMENT/INSTITUTIONAL
- INDUSTRIAL
- AGRICULTURAL
- RECREATIONAL
- OPEN LANDS
- COMMUNICATION/UTILITIES
- TRANSPORTATION
- COMMUNITY FACILITY
- MUNICIPAL BOUNDARY
- AIRPORT BOUNDARY

- H hospitals
- S schools
- C churches

Source: Milwaukee County, 2003



The 65 DNL contour contains approximately 2,260 acres, 1 school, 920 residential structures and 2,220 people.

The 70 DNL contour contains approximately 970 acres, no residential structures and no people.

The 75 DNL contour contains approximately 550 acres, no residential structures and no people.

Planning jurisdictions are shown on the map.

Noise measurement sites and flight tracks are depicted on the Noise Measurement Sites and Flight Tracks Maps.

Residential land use, as defined by FAR Part 150, is an incompatible use without proper sound attenuation within the 65 DNL or greater contour.

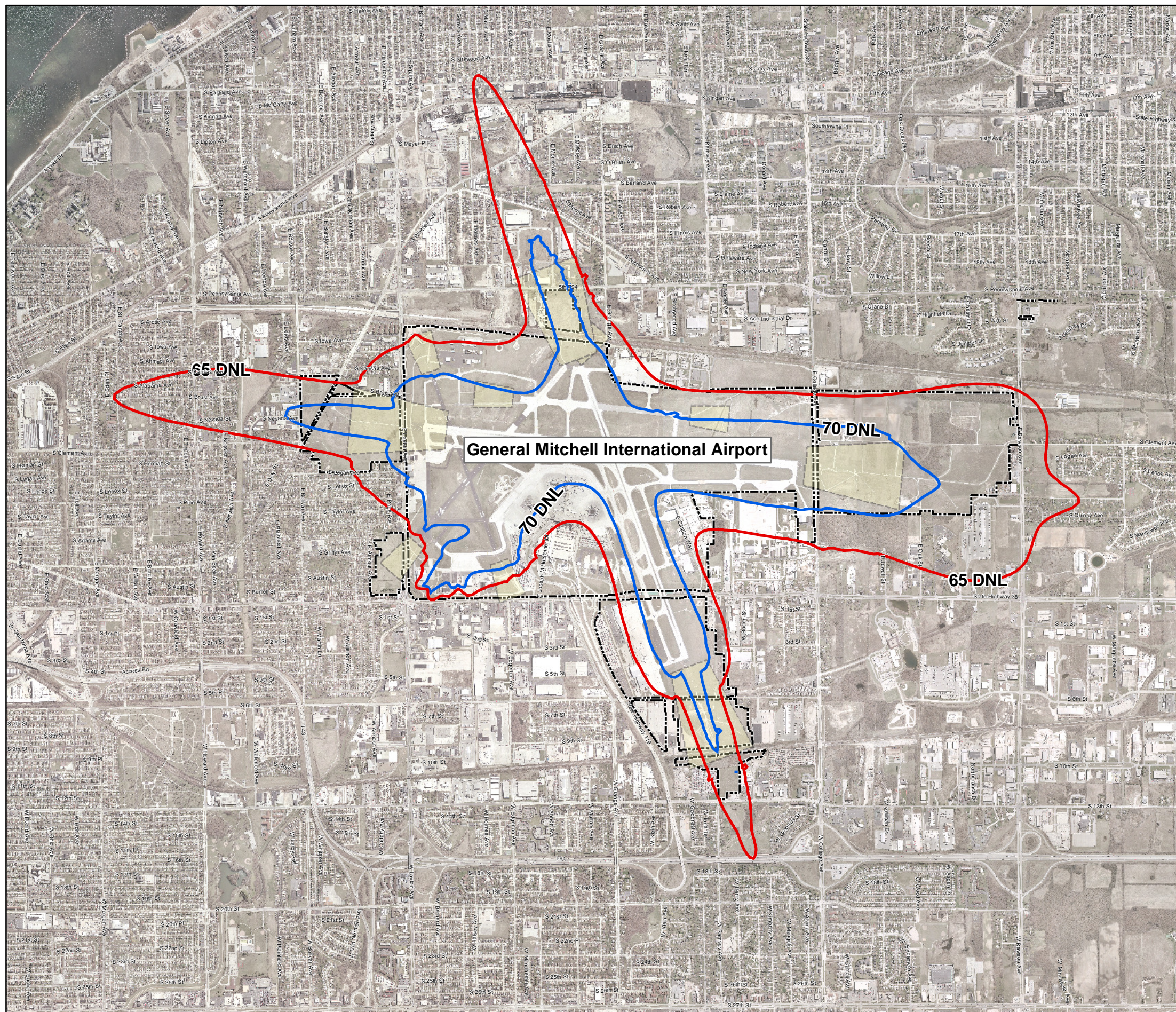
The Noise Exposure Maps and accompanying documentation for the Noise Exposure Map for General Mitchell Milwaukee International Airport, submitted in accordance with FAR Part 150 with the best available information, are hereby certified as true and complete to the best of my knowledge and belief.

In addition, it is hereby certified that the public was afforded the opportunity to review and comment on the document and its contents.

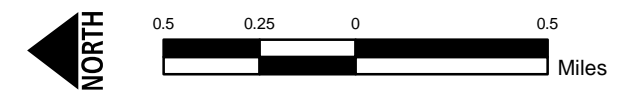
Signed _____ Date _____



Figure 12 Combined Noise Abatement Procedures Noise Contour Map



-  Airport Property
-  Runway Protection Zone
-  2009 Combined NAP 65 DNL
-  2009 Combined NAP 70 DNL



Recommendations

The Recommendations are summarized and categorized as follows. The Alternatives in the parentheses refer to the original alternatives evaluated in the Alternatives Chapters, by type; noise abatement, land use and administrative.

Noise Abatement Elements

- Recommendation 1** **Develop FMS departure procedures for Runway 25L including the I-94 corridor (Alt. 12)**
- Recommendation 2** **Evaluate altitude of turbo-prop departures (Alt. 5)**
- Recommendation 3** **Develop procedures to reduce early turns on approach for turbo-prop aircraft (Alt. 6)**
- Recommendation 4** **Increase altitude to 2,500 MSL for all departing jet aircraft prior to turning (modification of Brew Three departure) (Alt. 11)**
- Recommendation 5** **Develop ground-based noise reduction methods (Alts. 9, 13, and 14)**
- Recommendation 6** **Provide high-speed taxiways to reduce use of reverse thrust on landing (Alt. 10)**

Land Use Management Elements

- Recommendation 1** **Voluntary sound insulation of noise sensitive structures, such as single family homes, multifamily homes, assisted care facilities, schools and religious facilities within the 65 DNL (Alt. 1)**
- Recommendation 2** **Acquisition of non-compatible land or undeveloped land zoned for residential use within the 65 DNL (Alt. 2)**
- Recommendation 3** **Voluntary acquisition of aviation easements over non-compatible land uses within the 65 DNL (Alt. 3)**
- Recommendation 4** **Voluntary sales assistance within the 65 DNL (Alt. 4)**

Program Management and Administrative Elements

- Recommendation 1** **Upgrade noise monitoring/flight track monitoring system to include multi-lat system (Alt. 1)**
- Recommendation 2** **Install remote cameras to monitor ground activity, engine run-ups and use of APUs, and Electrification of some ramps (Alt. 2)**
- Recommendation 3** **Operations Review and Part 150 Updates (Alt. 3)**

It is the intent of the County and Airport to implement future noise mitigation programs as quickly as possible. However, it must be remembered that this will depend very heavily on the availability of funds and resources, especially the availability of Federal funding.

Additional Personnel and Staff Recommendations

In addition to the Recommendations presented above, there are additional recommendations concerning personnel additions and staff training which do not require FAA approval.

- Provide another technical staff person to the Noise Office, along with a vehicle that allows Noise Office staff easier access to the community and to observe activities on the Airport.
- Provide yearly or recurrent training for Noise Office staff on new technology, advances in the industry, and changes in FAA policy.
- Provide staff attendance at noise conferences, environmental conferences, and sound mitigation conferences to enhance professional education and understanding of industry trends and government policy.

Existing Actions

The Airport completed the previous FAR Part 150 Study in 1994, and the FAA issued its Record of Approval for that Study in March 1995. The FAA approved, and the Airport has implemented, several noise abatement/mitigation measures contained in that document. The Record of Approval can be found in the Appendix. The Airport implemented three new noise abatement measures along with continuing two existing noise abatement measures. Sixteen land use mitigation measures were approved by the FAA, of which eleven were outside the jurisdiction of the Airport to implement since the Airport has no land use control authority. The remaining five land use mitigation measures have all been implemented except for the Phase 2 aviation easement/sales assistance measure. The remaining seven continuing measures have all been implemented. These include publishing noise abatement procedures in the Airport Facility Directory, continued coordination with key agencies, maintaining a complaint response system, monitoring aircraft activity and fleet conversion status, developing flight track and noise monitoring system, evaluating and updating the Noise Compatibility Plan, and establishing noise abatement and mitigation staff.

Noise Abatement Elements (NAE)

NAE RECOMMENDATION 1—DEVELOP FMS DEPARTURE PROCEDURES FOR RUNWAY 25L INCLUDING THE I-94 CORRIDOR

ISSUE

Low flying aircraft over residential development.

NEW ACTION

The Airport will work with FAA air traffic control to develop a voluntary early southern turn to follow the I-94 corridor to the extent possible. All other departure headings would remain as they are today.

COMMENTS

This Action focuses on aircraft turning south after departing off of Runway 25L. To the extent possible, they would follow the I-94 corridor to avoid over flying residential land uses. FMS technology would be used to follow a narrow flight track defined along the Interstate. Aircraft would use the existing west departure and then turn southbound while using FMS technology to reduce dispersion over non-compatible land use areas west of I-94. Military aircraft, older hush-kit aircraft, turboprops, and general aviation aircraft are not equipped with the necessary instruments to fly FMS procedures; as such, these aircraft would fly a similar path, but it would be more dispersed than the FMS track. Other Runway 25L departures not turning south would continue to use existing departure procedures.

Aircraft would depart Runway 25L and fly runway heading using FMS way points. Aircraft flying to southern or eastern destinations would turn southward using FMS way points just before reaching I-94. This would result in aircraft turning earlier than they do today, and not all aircraft may be capable of making such early turns. Aircraft turning south would fly a narrower path, following I-94 to the extent possible. Aircraft

with a western or northern destination would continue to fly the existing departure procedure.

The majority of the benefits from this alternative occur beyond the 65 DNL noise contour. This alternative could potentially increase DNL levels up to 2.3 DNL in the commercial areas along the I-94 corridor south of the airport and decrease it up to 1.7 DNL in the residential areas to the southwest of the Airport. This Recommendation could be used by 80 percent of the existing commercial jet aircraft fleet operating at General Mitchell International Airport; exceptions are the older hush-kit jet aircraft that do not have the necessary navigation instruments and those aircraft that are not capable of making the early turn. This procedure would concentrate the turbojet departures over compatible land uses to a greater extent than the current procedure. The number of total housing units and people in the 65 DNL noise contour would be slightly reduced.

COST

The cost for implementing this Action is not considered significant. However, if it is determined that a NEPA document has to be prepared, the cost could be approximately \$100,000.

RESPONSIBLE PARTIES

The Airport is responsible for working with the Airport Traffic Control Tower (ATCT) to help develop and implement this procedure when conditions allow. The ATCT is responsible for implementing this procedure, when conditions allow, and for advising pilots to use it. Pilots are responsible for flying the procedure within given safety parameters.

AIRPORT ACTION

The Airport will consult with ATCT in helping develop this procedure.

TIME FRAME

This Action can be initiated upon developing the procedures and subsequent to required environmental documentation. It is not contingent upon other Recommendations.

NAE RECOMMENDATION 2—EVALUATE ALTITUDE OF TURBO-PROP DEPARTURES

ISSUE

Low flying aircraft over residential development.

NEW ACTION

The Airport will work with FAA air traffic control to evaluate and develop a procedure to keep turbo-prop aircraft from turning on course below 500 feet above field elevation.

COMMENTS

This Action evaluates methods to increase the altitude at which slow-climbing turbo-prop aircraft begin departure turns. While the majority of these aircraft are at, or above, 500 feet above field elevation (AFE) when they start their turns, some slow-climbing aircraft turn before reaching this altitude. In addition to increasing the altitude at which these propeller aircraft turn, it would also reduce the number of early turns by defining a minimum altitude when the turn should occur.

Small propeller aircraft would fly runway heading until reaching at least 500 feet AFE, or until reaching a designated, easily recognizable landmark to pilots assigned through coordination with FAA air traffic control. This would then be flown as a visual flight rules (VFR) procedure. At that point, the aircraft would turn towards its destination. This procedure would be used during periods of lower activity levels, for operations on the smaller runways during visual meteorological conditions, or when aircraft are able to make visual contact with the designated landmark.

This Action would not alter the DNL noise contours, but could have a beneficial effect by reducing annoyance from single event flyovers.

This Action could potentially reduce the single event noise levels by 2 to 4 dBA. While many aircraft are already at, or above, 500 feet AFE, this is designed to increase the altitude of the lowest aircraft. Typically, these aircraft generate the highest single event noise levels associated with these operations. This Action is dependent on Air Traffic Control workload and availability to have aircraft fly runway heading until 500 feet AFE. If an aircraft needs to expedite its departure, the aircraft might need to be turned early in order to ensure proper sequencing and separation from other aircraft.

COST

The cost for implementing this new Action is not considered to be significant. However, it will take a certain amount of staff time to develop the analysis. Pilot brochures could be developed at an approximate cost of \$15,000.

RESPONSIBLE PARTIES

The Airport is responsible for working with the Airport Traffic Control Tower (ATCT) to help evaluate and develop this procedure for use when conditions allow. The Airport is also responsible to advise pilots of the procedure and to publish it in the Airport Facility Directory. The ATCT is responsible for implementing this procedure, when conditions allow, and for advising pilots to use it. Pilots are responsible for flying the procedure within given safety parameters.

AIRPORT ACTION

The Airport will consult with ATCT about evaluating and developing such a procedure. An environmental document of some type will have to be prepared.

TIME FRAME

This Action can be initiated immediately after evaluation and development, subsequent to required environmental documentation, and is not contingent upon other Recommendations.

**NAE RECOMMENDATION 3—DEVELOP PROCEDURES TO REDUCE
EARLY TURNS ON APPROACH FOR
TURBO-PROP AIRCRAFT**

ISSUE

Low flying aircraft over residential development “cutting the corner” on arrivals for a short approach.

NEW ACTION

The Airport will work with FAA air traffic control to develop procedures to reduce early turns to the runway on approach for turbo-prop aircraft. Turbo-prop aircraft for this Action do include passenger and cargo aircraft.

COMMENTS

This Action was suggested by the Study Advisory Committee to reduce early turns on arrivals. These early turns are done for a variety of reasons including weather minimums, pilot convenience, and to assist in the sequencing of landing aircraft during high activity periods. These aircraft fly at relatively low altitudes (500 to 1,000 feet AFE) when approaching the Airport so that they are separated from and easily sequenced in with landing jet or other high performance aircraft.

With the recommended procedure, aircraft would not begin a turn to the final approach leg unless they are beyond a designated location (shoreline, way point, intersection, or landmark) at, or above, 500 feet AFE. When these aircraft are approaching the Airport, they would not descend early to 500 feet AFE and over-fly for long distances at level altitude. Instead, these aircraft would fly the three (3) degree glide slope to descend at a constant rate. This Action would not alter the DNL noise contours, but could have beneficial effects by reducing annoyance from single event flyovers.

This Action would potentially reduce the single event noise levels by 2 to 4 dBA. While

many aircraft are already at or above 500 feet AFE when established on final approach, this procedure is designed to reduce the incidence of close-in turns to the final approach by low-flying aircraft and to reduce the time aircraft fly level at 500 feet AFE when approaching the Airport. Typically, these aircraft generate the highest single event noise levels associated with these low-level operations.

Use of this procedure would be dependent on Air Traffic Control workload, and, if Air Traffic Control needs to expedite an arrival, the aircraft might need to be brought to a lower altitude in order to keep aircraft in the proper sequence.

COST

The cost for implementing this Action is not considered significant. However, it will entail staff time to develop and coordinate, and direct costs of approximately \$15,000 to develop pilot brochures if applicable.

RESPONSIBLE PARTIES

The Airport is responsible for working with the Airport Traffic Control Tower (ATCT) to help develop and implement this procedure when conditions allow. The ATCT is responsible for implementing this procedure, when conditions allow, and for advising pilots to use it. Pilots are responsible for flying the procedure within given safety parameters.

AIRPORT ACTION

The Airport will consult with ATCT to develop the procedure.

TIME FRAME

This Action can be initiated upon developing the procedure and subsequent to required environmental documentation. It is not contingent upon other Recommendations but may take approximately one year to fully implement.

NAE RECOMMENDATION 4—INCREASE ALTITUDE TO 2,500 FEET MSL FOR ALL DEPARTING JET AIRCRAFT PRIOR TO TURNING (MODIFICATION OF BREW THREE DEPARTURE)

ISSUE

Low flying aircraft over residential development on departure.

NEW ACTION

The Airport will work with the FAA air traffic control to develop a procedure to raise the altitude before turning from 2,000 to 2,500 feet MSL for jet aircraft.

COMMENTS

This Action was suggested by the Study Advisory Committee. This procedure defines the minimum altitude at which a turbojet aircraft may turn toward its destination after flying runway heading. This procedure would use existing departure flight tracks, but raise the minimum altitude before turning to reduce early turns by aircraft before reaching 2,500 feet MSL and to concentrate the flight tracks along the runway centerlines.

Aircraft would fly runway heading until reaching at least 2,500 feet MSL (approximately 1,800 feet above field elevation). The 500 feet of additional altitude is roughly the difference in climb rate between the new generation aircraft and the older generation aircraft. At that point, the aircraft would turn toward its destination as they do today. If this procedure causes delays due to additional separation needed as aircraft follow each other for a longer period of time, it could be used during periods of lower activity levels.

This Action results in little change to the 65 DNL, with the majority of changes occurring beyond the 65 DNL noise contour. However, it could potentially reduce DNL levels up to 1.6 DNL in noise contour sideline areas. The intent is to ensure that all aircraft, especially

the slow-climbing aircraft, are at higher altitudes and further downrange before initiating turns over residential areas. Typically, these aircraft generate the highest single-event noise levels associated with departures. Although there would be an additional 12 housing units within the 65 DNL over the future based case, these units have been previously sound attenuated. The community's desire is to keep aircraft over sound attenuated houses to the extent possible. This Action is dependent on Air Traffic Control workload and volume of departures. If an aircraft needs to expedite its departure, it might need to be turned early in order to keep it in the proper sequence.

COST

The cost for implementing this Action is not considered to be significant. However, it too will entail staff time to coordinate. FAA may incur costs in developing the procedure.

RESPONSIBLE PARTIES

The Airport is responsible for working with the Airport Traffic Control Tower (ATCT) to help develop and implement this procedure when conditions allow. The ATCT is responsible for implementing this procedure, when conditions allow, and for advising pilots to use it. Pilots are responsible for flying the procedure within given safety parameters.

AIRPORT ACTION

The Airport will consult with ATCT to develop and implement the procedure.

TIME FRAME

This Action can be initiated upon development and subsequent to required environmental documentation. It is not contingent upon other Recommendations but may require a year to completely develop and implement.

NAE RECOMMENDATION 5—DEVELOP GROUND-BASED NOISE REDUCTION METHODS; INCLUDING NOISE BARRIERS, PARKING PLANS, ELECTRIFICATION OF RAMPS AND GATES, AND AN ALTERNATE, LOW-TECH RUN-UP ENCLOSURE

ISSUE

Reduce ground-based noise generated by aircraft on the ground which affects residential development north/northwest of the airport.

NEW ACTION

This Action was suggested by the Study Advisory Committee and consists of designing and constructing a series of individual noise barriers, parking plans, run-up enclosures and electrification of parking ramps and gates. They consist of the following three noise barrier locations:

One, A noise barrier at the property line behind houses on East Armour Avenue across Layton Avenue could reduce noise levels up to 5 dBA;

Two, an approximate 10-foot tall noise barrier on the Signature Ramp that would break the line of sight between the neighborhood located on the north side of Layton Avenue and the Airport which would result in approximately a greater than 6 dBA noise reduction; and

Three, an approximate 12-foot tall barrier at the Skyways Ramp connecting to the hanger would result in a greater than 6 dBA noise reduction over the unmitigated conditions. These changes in noise level are from single events attributable to idling and taxing aircraft, and are not measured in DNL but still included in the contour calculation. In addition to the noise barriers, aircraft parking plans and electrification of the gates/aprons to reduce APU associated

ground noise is also recommended. Generalized parking plan recommendations are found in the Alternatives Chapter for each of the respective parking ramps.

Electrification of the International Arrivals Building gates, Concourses D and E of the Passenger Terminal, the Signature ramp and the West ramp are recommended to eliminate the need for APU use. Pre-conditioned air would also need to be provided at the terminal gates.

The one additional ground noise reduction Recommendation is to construct an alternate or “low-tech” noise enclosure for engine maintenance run-ups for the northeast hangar area.

COMMENTS

This Action addresses aircraft noise from ground operations, which is defined as all aircraft movement while an aircraft is on the ground, including operations on the taxiways, runways, apron areas, terminal area, and ground run-up enclosure. The term “remote facilities” is an umbrella term that encompasses all facilities away from the passenger terminal, including maintenance hangars, general aviation areas, military areas, and fixed-based operators (FBOs). Types of ground noise include the following:

- Run-up procedures by all aircraft categories at the remote facilities;
- Taxiing:
 - to and from remote facilities
 - to and from terminal gates
- Idling:
 - at terminal gates
 - at remote facilities
- Takeoff roll prior to liftoff;
- Engine start and auxiliary power unit (APU) use at remote facilities; and,
- APU use at terminal gates.

There is one noise barrier on the Airport: the Ground Run-Up Enclosure (GRE), located on the southwest side of the airfield. The GRE is used for aircraft run-up operations and can be used by any aircraft at the Airport. The GRE is used when aircraft need to perform an above-idle (above 50% power) run-up after maintenance has been performed or during other engine tests. Presently, there are no noise barriers on the north end of the Airport or near the terminal facilities.

The four areas of the airfield examined in this alternative that are used for aircraft parking and taxiing are the Signature Flight Support Ramp, Skyway Ramp, West Ramp, and Terminal Facilities.

COST

The cost for implementing these Actions varies. The noise barriers at the property line behind houses on East Armour Avenue across Layton Avenue, the Signature Ramp and the Skyway Ramp are estimated to cost approximately \$1,300,000. The Signature Ramp is recommended for a noise barrier, parking plan (\$50,000) and electrification (\$1,200,000). The Skyway Ramp is recommended for a noise barrier and parking plan (\$50,000). The West Ramp is recommended for electrification (\$1,200,000) and a parking plan (\$50,000). The IAB is recommended for a parking plan (\$50,000) and electrification (\$400,000). In addition, Concourse D and E are recommended for electrification at a cost of approximately \$4,200,000. The northeast hangar area alternate “low-tech” run-up area is estimated to cost approximately \$550,000. The total cost for these Actions is estimated to be approximately \$9 million.

RESPONSIBLE PARTIES

The Airport is responsible for designing the barriers, parking plan, electrification plan and the low tech run-up enclosure, and applying to the FAA for funding. The based operators are responsible for following the parking plans and using the run-up facility. The FAA is responsible for funding those elements which are eligible for AIP funding.

AIRPORT ACTION

The Airport will hire necessary consultants, design the facilities and apply to the FAA for appropriate funding. The Airport will also work with the users to explain the parking plan and use of the run-up facility.

TIME FRAME

This Action can be implemented upon approval of the NCP and the availability of funding, and is not contingent upon other Actions. This Action could take several years to complete, depending upon available funding.

**NAE RECOMMENDATION 6—PROVIDE HIGH SPEED TAXIWAYS TO
REDUCE USE OF REVERSE THRUST ON
LANDING**

ISSUE

Reduce noise intrusion to residents living near the Airport due to use of reverse thrust on landing.

NEW ACTION

This Action is to take into consideration the design and placement of new high-speed taxiway exits in future airfield planning.

COMMENTS

This Action is recommended in light of the proposed new runway and for any additional runway/taxiway improvements at the Airport. The Airport currently has such taxiways in place and located appropriately, considering the existing landing thresholds and aircraft types using the Airport. However, in planning for the future runway and if conditions change, such as displaced distances or different aircraft types, additional high-speed taxiways should be considered and placed appropriately.

COST

The cost for implementing high-speed taxiways cannot be determined at this time, but should be considered as part of the cost of airfield development for future projects.

RESPONSIBLE PARTIES

The Airport is responsible for designing such taxiways in future planning activities. The FAA is responsible for providing funds, if such funds are available.

AIRPORT ACTION

The Airport will consider the placement and implementation of such taxiways as airfield design occurs.

TIME FRAME

This Action can be initiated as the need arises.

Land Use Management Elements (LUME)

LUME RECOMMENDATION 1—VOLUNTARY SOUND INSULATION OF NOISE SENSITIVE STRUCTURES SUCH AS SINGLE FAMILY HOMES, MULTIFAMILY HOMES, ASSISTED CARE FACILITIES, SCHOOLS AND RELIGIOUS FACILITIES WITHIN THE 65 DNL

ISSUE

Reduction of noise sensitive land uses within the airport environs.

CONTINUED ACTION

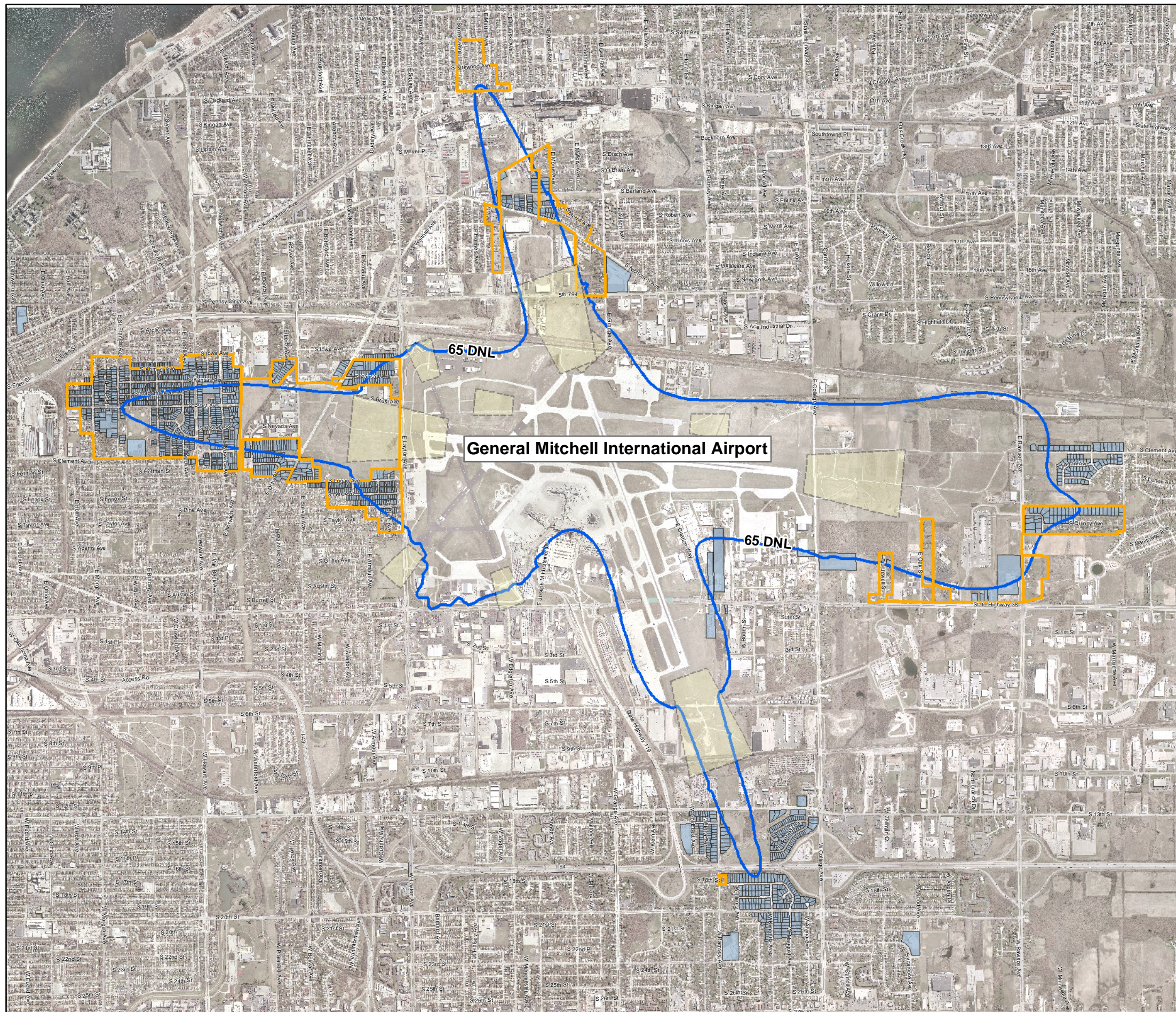
It is recommended that the Airport sound attenuate to achieve a 25 dB reduction, on a voluntary basis, those single-family houses within the 65 DNL noise contour as defined by the Eligibility Boundary shown on the following page. The sound attenuation would reduce indoor noise levels which would result in the houses being considered as a compatible land use. As a consideration for such sound attenuation, the Airport would receive a noise easement from the homeowner. If attenuation is found to be economically unfeasible or if other circumstances exist, the Airport would determine if purchase of a noise easement only would be more desirable. (See the discussion of LUME Recommendation 3, below.)






In addition, if other noise sensitive uses are found within the Eligibility Boundary they too would be eligible to receive sound attenuation on a voluntary basis. The Action continues and expands the previous measures LU-14, LU-15 and LU-16 approved in the 1995 Record of Approval.

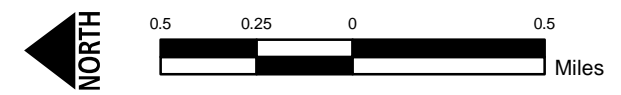
COMMENTS

This Continued Action would allow those homeowners within the 65 DNL noise contour or greater to receive sound attenuation to reduce the inside noise levels to 45 dB or below. The FAA guidelines consider sound

Revised
Figure I3 **FAA Recommended Sound Insulation Eligibility Boundary**



-  Airport Property
-  Runway Protection Zone
-  Property Eligible for Sound Attenuation 1993 Program data verified as of: July 17, 2005
-  Proposed Sound Insulation Eligibility Boundary
-  2009 Base Case Noise Contour - 65 DNL



Revised August 19, 2008

attenuated houses within the 65 DNL contour compatible if sound attenuated. Sound attenuation does not apply to manufactured or mobile homes, as they cannot be attenuated to meet reduction codes. This Action would convert non-compatible uses to compatible uses and would reduce the noise intrusion to those residences who decide to take advantage of sound attenuation. The Airport would receive a noise easement in return for the sound attenuation. However, if the local jurisdiction will not issue a building permit until the house is “brought up to code”, the cost to do so is not eligible for FAA funding.

COST

There are approximately 560 residential structures within the eligibility boundary. The cost for sound attenuation is estimated at approximately \$50,000 per house, depending upon type of construction, resulting in an estimated cost of \$28 million.

RESPONSIBLE PARTIES

The Airport would apply to the FAA for the necessary funding to conduct the program and to sound attenuate those houses found feasible. Contingent upon availability of federal funds, the Airport would institute the new sound attenuation program. The homeowners need to respond to the Airport concerning attenuation.

AIRPORT ACTION

The Airport would apply to the FAA for necessary funds to accomplish this Action upon the approval of the FAR Part 150 Study.

TIME FRAME

This new action would be initiated by the Airport as soon as the FAR Part 150 Study is approved. It is estimated that it will take approximately five years to complete the sound attenuation program, and this is an element of that program.

LUME RECOMMENDATION 2—VOLUNTARY ACQUISITION OF NON-COMPATIBLE LAND OR UNDEVELOPED LAND ZONED FOR RESIDENTIAL USE

ISSUE

Reduction and prevention of noise sensitive land uses within the airport environs.

CONTINUED ACTION

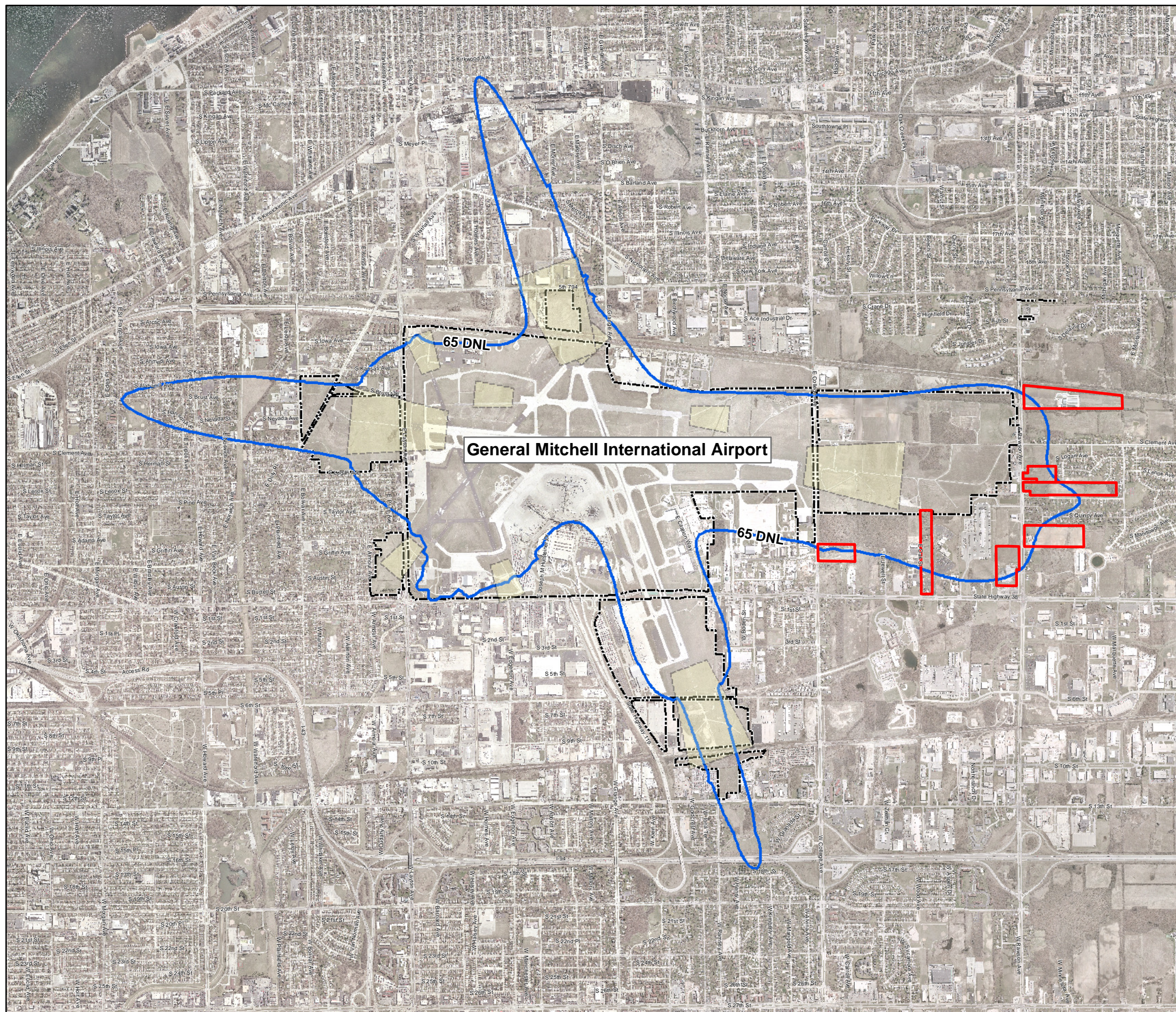
It is recommended that the Airport voluntarily acquire those areas identified on the Parcel Acquisition Map as being zoned for residential development, but are presently vacant, and those isolated residential parcels that are not part of a contiguous neighborhood. In addition, other properties may be eligible that are not identified in the illustration but may be identified as the acquisition process is implemented.





COMMENTS

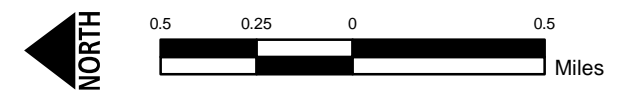
This Continued Action would allow the Airport to purchase, on a voluntary basis, isolated residential structures and parcels of vacant property that are zoned for residential development. Isolated existing residential parcels would be purchased and the property converted to a compatible use. Vacant parcels zoned for residential or other noise sensitive use would also be purchased, on a voluntary basis, to prevent the introduction of additional such uses within or adjacent to the 65 DNL noise contour.

Property currently zoned for residential development is very difficult to rezone for a more compatible use, and local land use jurisdictions are reluctant to initiate such rezoning on their own without the explicit consent of the property owner. By acquiring the property, rezoning the property as appropriate, and then reselling it for compatible uses, the Airport can avoid future compatibility problems.

Figure I4 **Parcels Identified for Voluntary Acquisition**



-  Airport Property
-  Runway Protection Zone
-  Parcels Identified for Voluntary Acquisition
-  2009 Base Case Noise Contour - 65 DNL



COST

The cost to purchase the homes is estimated to be approximately \$250,000 each. There are approximately 7 areas, consisting of several parcels and approximately 8 residential units, for a total cost of between \$4,300,000 and \$4,500,000. More detailed on-site evaluation indicated revisions to the structures and properties subsequent to presentation in the alternatives chapter. The actual cost would be based on fair market value determined through professional appraisals, as required by the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (URARPAPA, P.L. 91-646), at the time of purchase.

RESPONSIBLE PARTIES

The Airport would apply to the FAA for the necessary funding to purchase the homes and parcels. Contingent upon availability of federal funds, the Airport would institute the acquisition program. The homeowners and landowners need to respond to the Airport concerning acquisition.

AIRPORT ACTION

The Airport would apply to the FAA for necessary funds to accomplish this Action upon the approval of the FAR Part 150 Study.

TIME FRAME

This Action would be initiated by the Airport as soon as the FAR Part 150 Study is approved. It is estimated that it will take approximately five years to complete the sound attenuation program, and this is an element of that program.

**LUME RECOMMENDATION 3—VOLUNTARY ACQUISITION OF
AVIGATION EASEMENTS OVER NON-
COMPATIBLE LAND USES**

ISSUE

Reduction of noise sensitive land uses within the airport environs.

CONTINUED ACTION

It is recommended that the Airport voluntarily purchase a noise easement from a homeowner if attenuation is found to be economically unfeasible or if they do not want to participate in the sound attenuation program. This is a continuation of measures LU-14 and LU-15 contained in the 1995 Record of Approval.

COMMENTS

This Continued Action would allow those homeowners within the 65 DNL noise contour or greater that do not want to participate in the sound attenuation program to voluntarily sell an easement to the Airport. The avigation easement does not reduce or mitigate noise levels; it does, however, make it an official matter of record that the Airport has the right to have aircraft fly over a particular piece of property and create noise or vibration. The easement would be attached to the deed and would transfer with the property to any future owner.

This Action is a continuation of an existing program, and all of the requirements of the 1993 program would apply to the continuation with one clarification: If a home owner sells an easement to the county and then sells the home, the new purchaser would have the option of buying back the easement at the current fair market value plus applicable administrative costs. The home would then be eligible to receive sound insulation provided that the Airport still had an active sound insulation program in existence.

COST

Typically approximately 10% of eligible homeowners opt to sell an easement and not participate in the sound attenuation program. This would result in approximately 56 homes, with an average cost of \$4,000 per home for the easement, resulting in a total cost of \$224,000. The URARPAPA (Uniform Act) as amended, requirements would apply to this Recommendation.

RESPONSIBLE PARTIES

The Airport would apply to the FAA for the necessary funding to conduct the program and to purchase the easements. Contingent upon availability of federal funds, the Airport would institute the easement purchase program. The homeowners need to respond to the Airport concerning attenuation.

AIRPORT ACTION

The Airport would apply to the FAA for necessary funds to accomplish this Action upon the approval of the FAR Part 150 Study.

TIME FRAME

This Action would be initiated by the Airport as soon as the FAR Part 150 Study is approved. It is estimated that it would take approximately five years to complete the sound attenuation program.

LUME RECOMMENDATION 4—VOLUNTARY SALES ASSISTANCE.

ISSUE

Reduce noise impacts to areas of non-compatible land uses.

NEW/AMENDED ACTION

The Airport would offer Sales Assistance to home owners wishing to sell their homes but who are concerned that they are not able to do so due to proximity to the Airport. This would be a voluntary Action available to home owners who are eligible for sound attenuation.

COMMENTS

This voluntary Action would provide a Sales Assistance Program as an option for owners of residential uses if they are eligible for sound insulation. In some cases, home owners desire to sell their homes and feel that they cannot receive fair market value for a home due to its proximity to the Airport. This Action helps alleviate that situation, but it does not require the Airport to actually purchase the homes. As a result, if fair market could not be obtained, the Airport would compensate the current owner for a sale that is verified to be less than the current fair market or appraised value.

The owner is guaranteed fair market value for the property. In this type of program, the Airport operator does not take title to the property, but rather compensates the property seller for the difference between fair market and the value offered by a purchaser. Should the property sell for less than the appraised value, the Airport operator would compensate the selling owner for the shortfall. Property is appraised at its current fair market value of the home owner's interest "as is," subject to aircraft noise. The property is listed and sold subject to the Airport's easement that is conveyed to the Airport at the sale of the property. This Action is most successful with single family, as opposed to multifamily,

structures because the sale prices of most owner-occupied multifamily structures are not as sensitive to aircraft noise levels.

COST

Participation in such a program is traditionally relatively small, about 3% of those eligible for sound attenuation. Assuming an approximate differential of \$5,000 for each sale, the cost would be approximately \$84,000.

RESPONSIBLE PARTIES

The Airport is responsible for applying to the FAA for funding, the home owners are responsible for notifying the Airport of their intention to participate. The FAA is responsible for granting funds, if available.

AIRPORT ACTION

The Airport would apply to the FAA for necessary funds to accomplish this Action upon the approval of the FAR Part 150 Study.

TIME FRAME

This Action can be initiated immediately upon approval of the Part 150 Study and is not contingent upon other Recommendations.

Program Management and Administrative Elements (PMAE)

PMAE RECOMMENDATION 1—UPGRADE NOISE MONITORING AND FLIGHT TRACK MONITORING SYSTEM TO INCLUDE A MULTI-LATERATION SYSTEM

ISSUE

Monitoring the success of the noise abatement Actions, improving citizen liaison, and promoting citizen awareness.

NEW ACTION

It is recommended that the Airport upgrade the existing noise-monitoring system to provide new features in the measurement and analysis of aircraft noise levels and real-time flight track information. This is a continuation, update and improvement of approved measure CP-5 of the 1993 Record of Approval.

COMMENTS

This Action would result in a noise monitoring system installed at the Airport to help monitor aircraft noise levels. The Airport purchased and installed its current noise management system in 1997 from Tracor, Inc., now ERA Corporation. Total Airport Monitoring and Information System (TAMIS) software incorporates flight, noise, complaint, and weather data in a stored database. The current TAMIS database includes data collected since the original installation. The data provided by the system can be used to evaluate changes over time, to identify specific problem operations, to respond to citizen inquiries, and to keep a long-term record of overall noise levels in neighborhoods surrounding the Airport.

The current noise management system does not possess modern features that would be of use to the Airport Noise Office. Features currently unavailable in the existing system include the ability for the Airport to accurately track long-term compliance with noise

abatement procedures, including runway use and refined flight corridors. The noise monitors deployed around the Airport do not have the ability to precisely separate aircraft noise from other noise sources in a high-background-noise environment. Additionally, the existing monitors cannot specifically measure ground noise emanating from aircraft on the airfield. Another useful feature of modern systems is to make the noise and flight rack data more readily available through the Airport's Web site.

COST

The cost for implementing this Action is estimated to be in the range of \$2.05 million, which includes the multi-lateration system.

RESPONSIBLE PARTIES

The Airport is responsible for hiring the consultant, identifying the sites, developing the specifications, budgeting for the equipment and installing equipment through a contractor. The FAA is responsible for assisting the Airport with funding if such funding is available.

AIRPORT ACTION

The Airport will budget for monitoring, hire the consultant, prepare specifications and initiate the process as soon as possible. They will apply for Federal funds for the permanent system when such funds become available.

TIME FRAME

This Action can be initiated immediately and is not contingent upon other Recommendations. It will take approximately one year to acquire the equipment and become operational.

PMAE RECOMMENDATION 2--INSTALL REMOTE CAMERAS TO MONITOR GROUND ACTIVITY, ENGINE RUN-UPS AND USE OF APU, AND ELECTRIFICATION OF SOME RAMPS

ISSUE

Monitor compliance with run-up restrictions and recommendations, and APU use in remote apron locations.

NEW ACTION

It is recommended that the Airport purchase and install remote cameras with sound capability to monitor specific run-up, APU and parking requirements at locations not easily observed by Airport personnel.

COMMENTS

The apron locations and run-up/parking plans presented in the NAE Recommendation 5 all occur at locations remote from Airport personnel offices, and there is no other method available to monitor compliance and success of the Actions. The cameras would be placed in locations that are capable of observing the entire area and could correlate noise events with run-ups to determine if the run-ups were conducted consistently, as required. Sophisticated vision systems can be programmed to detect certain types of activity that are of interest. In addition, heat-sensitive cameras can be used to identify when APUs are in use. Citizen complaints can be correlated with actual activity to determine the success of the recommended placement of specific aircraft, with adjustment made accordingly.

COST

The cost for implementing this Action is estimated to be approximately \$30,000 per camera, and assuming six cameras, the cost could be in the \$180,000-\$200,000 range depending upon the cost of variables.

RESPONSIBLE PARTIES

The Airport would apply to the FAA for the necessary funding to purchase the cameras.

Contingent upon availability of federal funds, the Airport would purchase and install the cameras, and initiate the monitoring process.

AIRPORT ACTION

The Airport will budget for implementing the program. They will apply for Federal funds when such funds become available.

TIME FRAME

This Action can be initiated immediately and is not contingent upon other Recommendations. It will take approximately one year to acquire the equipment and become operational.

PMAE RECOMMENDATION 3—OPERATIONS REVIEW AND PART 150 UPDATES

ISSUE Update and review of the FAR Part 150 Study.

CONTINUED ACTION The FAR Part 150 Study is a five-year program recommended to be reevaluated at the end of the five-year period. In addition, if there is a significant change in either aircraft types or numbers of operations, or significant new facilities, then it is recommended that the Study be reevaluated prior to the end of the five-year time frame.

COMMENTS It is recommended that Airport management undertake a yearly review of the aircraft types and numbers, along with the actual number of operations occurring at the Airport, and determine if they are consistent with the projections contained in the FAR Part 150 document. The various Actions will also be reviewed as to their ability to mitigate the projected noise intrusion and the overall effectiveness of the program.

COST The cost of monitoring the information set forth in this section will be borne out of the normal Airport operating budget. Consultant assistance for various elements would be approximately \$30,000. The cost to update the entire Part 150 Study would range from \$800,000 to \$1 million.

RESPONSIBLE PARTIES The Airport would be responsible for updating and monitoring the FAR Part 150 Study. The Federal Aviation Administration could help fund the update if there are funds available for such planning.

AIRPORT ACTION

Based on the monitoring activities described, the Airport will reevaluate the program when there is a significant change in operations, aircraft types or at the end of the five-year timeframe.

TIME FRAME

The Airport will continue its monitoring program and plan for a full update at the end of the fifth-year after submittal or earlier if necessary as per FAR Part 150.