

Appendix H.

Land Use Compatibility Guidelines For Airport And Heliport Noise

A significant, on-going, environmental issue of public concern in the Twin Cities region is the noise generated by airplanes and helicopters operating in-and-out of the regional system of airports and heliports. There are three methods in which aircraft noise control is focused:

- Reduction of noise at the source,
- Abatement, through alteration of operational procedures, and
- Mitigation - preventive and corrective, making land uses more compatible.

The regional, *Land Use Compatibility Guidelines for Aircraft Noise* have been prepared to assist communities in preventive and corrective mitigation efforts that focus on compatible land use. The compatibility guidelines are one of several aviation system elements to be addressed in the comprehensive plans and plan amendments of communities affected by aircraft and facility operational impacts. The Metropolitan Land Planning Act (MLPA), requires all local governmental units to prepare a comprehensive plan for submittal to the Metropolitan Council for review. The MLPA requires periodic update of community comprehensive plans; the next update is scheduled for 2008. The following overall process and schedule applies:

- In 2003 the Council adopted the *Development Framework* chapter of the Metropolitan Development Guide (MDG),
- In 2004 the Transportation Policy/System Plan (TPP) chapter of the MDG is updated and includes the revised *land use compatibility guidelines for aircraft noise*,
- In 2005, after adoption of the new TPP, the Council transmits new *Systems Statements* to each metro community,
- Within nine months after receipt of the *Systems Statements* each community reviews its comprehensive plan and determines if a plan amendment is needed to ensure consistency with the MDG. If an amendment is needed the community prepares a plan amendment and submits it to the Council for review,
- Each community affected by aircraft noise and airport owner jointly prepare a noise program to reduce, prevent or mitigate aircraft noise impacts on land uses that are incompatible with the guidelines; both operational and land use measures should be evaluated. Communities should assess their noise impact areas and include noise program in their 2008 comprehensive plan update. Owners/Operators of system airports should include their part of the noise program in preparation or update of each airports long-term comprehensive plan (LTCP). See Table 1 for listing of noise affected airports and communities.
- Council reviews community plan submittal and approves, or requires a plan modification.
- Airport owner submits long-term comprehensive airport plan or plan update, including noise mitigation program, for Council review and approval. A schedule for updates of LTCP's is included in the TPP.

**Table 1
Noise Impacted Communities**

Airport	Community
MSP International	Minneapolis, Bloomington, Richfield, Mendota Heights, Mendota, Eagan, Burnsville
St. Paul Downtown	St. Paul
Anoka County - Blaine	Blaine
Flying Cloud	Eden Prairie
Crystal	Crystal
Airlake	Eureka Twp., Lakeville
South St. Paul	So. St. Paul, Inver Grove Heights
Lake Elmo	Baytown, West Lakeland, Lake Elmo

I. AIRPORT NOISE

Both the airport and heliport sections of the land use compatibility guidelines assume:

- ✓ Programs for reduction of noise at its source (engines, airframes),
- ✓ Operational noise abatement measures/plan in place,
- ✓ Community comprehensive plans reflect compatible land use efforts occurring through land acquisition, "preventive" land use measures, or "corrective" land use measures,
- ✓ Availability of an approved noise policy map for the facility under consideration. The noise exposure maps identify where, geographically, the land use compatibility guidelines are to be applied.

Preventive and Corrective Land Use Measures:

Airport noise programs, and the application of land use compatibility guidelines for aircraft noise, are developed within the context of both local community comprehensive plans, and individual airport long-term comprehensive plans (LTCP's). Both the airport and community plans should be structured around an overall scheme of preventive and corrective measures. Table 2 depicts the land use measures adopted as part of the MSP Part-150 noise compatibility program for 2007.

The status of noise programs at other system airports, in relation to the land use measures adopted at MSP, are also included to indicate the extent of the current noise control effort on a system-wide basis. Other land use measures may also need to be considered at the reliever airports. The level and extent of noise impacts vary widely between the airports and therefore not all land use measures may be appropriate or the level of emphasis may need to be different for neighborhoods within the same community.

The compatibility guidelines indicate that some uses be "Discouraged". Prior to applying the guidelines the comprehensive plan or plan amendment needs to assess what has been or can be done to discourage noise sensitive uses. This should be done when the overall preventive and corrective land use measures are being assessed as part of the overall comprehensive plan.

**Table 2
LAND USE MEASURES**

PREVENTIVE LAND -USE MEASURES			CORRECTIVE LAND -USE MEASURES		
	MSP International Airport Communities	Other Regional Airport Communities		MSP International Airport Communities	Other Regional Airport Communities
<input type="checkbox"/> Amend local land use plans to bring them into conformance with regional land use compatibility guidelines for Aircraft noise.	YES	YES	<input type="checkbox"/> Acquire developed property. - within RPZ's - within runway safety zones - within DNL 70.	YES YES YES	YES FCM & STP Airports.
<input type="checkbox"/> Apply zoning performance standards.	YES	YES	<input type="checkbox"/> Part -150 sound insulation program.	YES (MAC 5db criteria)	NO
<input type="checkbox"/> Establish a public information program.	[YES] Policy Plan, LTCP, EIS, CIP	[YES] Policy Plan, LTCP, EIS, CIP	<input type="checkbox"/> Property purchase guarantee.	NO (Not supported by communities)	NO
<input type="checkbox"/> Revise building code.	YES MS 473.192 Builders Guide	YES MS 473.192 Builders Guide	<input type="checkbox"/> Creation of sound barriers. - walls, - Berms, - ground runup enclosures	YES YES YES	[YES]Proposed in the FCM & ANE LTCP's.
<input type="checkbox"/> Fair property disclosure policy.	[YES] Usually applied by developer or builder.	[YES] Usually applied by developer or builder.			
<input type="checkbox"/> Dedication of aviation easements.	YES	YES			
<input type="checkbox"/> Transfer of development rights.	NO	NO			
<input type="checkbox"/> Land banking. (acquisition of undeveloped property)	NO	NO			

The land use compatibility guidelines (contained in Table 3) are defined and described below. Land uses are categorized according to whether they are considered new/major redevelopment or in-fill/redevelopment.

New Development/Major Redevelopment - or - Infill/Reconstruction

- **"New Development"** - means a relatively large, undeveloped tract of land proposed for development. For example, a residential subdivision, industrial park, or shopping center.
- **"Major Redevelopment"** - means a relatively large parcel of land with old structures proposed for extensive rehabilitation or demolition and different uses. For example, demolition of an entire block of old office or hotel buildings for new housing, office, commercial uses; conversion of warehouse to office and commercial uses.
- **"Infill Development"** - pertains to an undeveloped parcel or parcels of land proposed for development, similar to or less noise-sensitive than the developed parcels surrounding it. For example, a new house on a vacant lot in a residential neighborhood, or a new industry on a vacant parcel in an established industrial area.
- **"Reconstruction or Additions to Existing Structures"** - pertains to replacing a structure destroyed by fire, age, etc., to accommodate the same use that existed before destruction, or expanding a structure to accommodate increased demand for existing use (for example, rebuilding and modernizing an old hotel, or adding a room to a house). Decks, patios and swimming pools are considered allowable uses in all cases.

Definition of Compatible Land Use

The four land use ratings in land use compatibility Table 3 are explained as follows:

- **COMP - "Compatible"** - uses that are acoustically acceptable for both indoors and outdoors.
- **PROV - "Provisional"** - uses that should be discouraged if at all feasible; if allowed, must meet certain structural performance standards to be acceptable according to MS473.192 (metropolitan area Aircraft Noise Attenuation Act). Structures built after December 1983 shall be acoustically constructed so as to achieve the interior sound levels described in Table 4. Each local governmental unit having land within the airport noise zones is responsible for implementing and enforcing the structure performance standards in its jurisdiction.
- **COND - "Conditional"** - uses that should be strongly discouraged; if allowed, must meet the structural performance standards, and requires a comprehensive plan amendment for review of the project under the factors described in Table 5.
- **INCO - "Incompatible"** - Land uses that are not acceptable even if acoustical treatment were incorporated in the structure and outside uses restricted.

Noise Policy Area A noise policy area is defined for each system airport and includes - aircraft noise exposure zones; a buffer zone; and , the preventive and corrective land use measures that apply to that facility.

Noise Exposure Zones:

- **Zone 1** - Occurs on and immediately adjacent to the airport property. Existing and projected noise intensity in the zone is severe and permanent. It is an area affected by frequent landings and takeoffs and subjected to aircraft noise greater than 75 DNL. Proximity of the airfield operating area, particularly runway thresholds, reduces the probability of relief resulting from changes in the operating characteristics of either the aircraft or the airport. Only new, non-sensitive, land uses should be considered - in addition to preventing future noise problems the severely noise-impacted areas should be fully evaluated to determine alternative land use strategies including eventual changes in existing land uses.
- **Zone 2** - Noise impacts are generally sustained, especially close to runway ends. Noise levels are in the 70 to 74 DNL range. Based upon proximity to the airfield the seriousness of the noise exposure routinely interferes with sleep and speech activity. The noise intensity in this area is generally serious and continuing. New development should be limited to uses that have been constructed to achieve certain exterior-to-interior noise attenuation and that discourage certain outdoor uses.
- **Zone 3** - Noise impacts can be categorized as sustaining. Noise levels are in the 65 to 69 DNL range. In addition to the intensity of the noise, location of buildings receiving the noise must also be fully considered. Aircraft and runway use operational changes can provide some relief for certain uses in this area. Residential development may be acceptable if it is located outside areas exposed to frequent landings and takeoffs, is constructed to achieve certain exterior-to-interior noise attenuation, and is restrictive as to outdoor use. Certain medical and educational facilities that involve permanent lodging and outdoor use should be discouraged.
- **Zone 4** - Defined as a transitional area where noise exposure might be considered moderate. Noise levels are in the 60-64DNL range. The area is considered transitional since potential changes in airport and aircraft operating procedures could lower or raise noise levels. Development in this area can benefit from insulation levels above typical new construction standards in Minnesota, but insulation cannot eliminate outdoor noise problems.

- **Noise Buffer Zones:**

Additional area that can be protected at option of the affected community; generally, the buffer zone becomes an extension of noise zone 4. At MSP, a one-mile buffer zone beyond the DNL60 has been established to address the range of variability in noise impact, by allowing implementation of additional local noise mitigation efforts. A buffer zone, out to DNL 55, is optional at those reliever airports with noise policy areas outside the MUSA.

Table 3

Land Use Compatibility Guidelines for Aircraft Noise										
Land Use Category	Compatibility with Aircraft Noise Levels									
Type of Development	New Development and Major Redevelopment					Infill Development and Reconstruction or Additions to Existing Structures				
Noise Exposure Zones	1 DNL 75+	2 DNL 74-70	3 DNL 69-65	4 DNL 64-60	Buffer Zone*	1 DNL 75+	2 DNL 75-70	3 DNL 70-65	4 DNL 65-60	Buffer Zone *
Residential										
Single/Multiplex with Individual Entrance	INCO	INCO	INCO	INCO		COND	COND	COND	COND	
Multiplex/Apartment with Shared Entrance	INCO	INCO	COND	PROV		COND	COND	PROV	PROV	
Mobile Home	INCO	INCO	INCO	COND		COND	COND	COND	COND	
Educational, Medical, Schools, Churches, Hospitals, Nursing Homes	INCO	INCO	INCO	COND		COND	COND	COND	PROV	
Cultural/Entertainment/Recreational										
Indoor	COND	COND	COND	PROV		COND	COND	COND	PROV	
Outdoor	COND	COND	COND	COND		COND	COND	COND	COMP	
Office/Commercial/Retail	COND	PROV	PROV	COMP		COND	PROV	PROV	COMP	
Services										
Transportation-Passenger Facilities	COND	PROV	PROV	COMP		COND	PROV	PROV	COMP	
Transient Lodging	INCO	COND	PROV	PROV		COND	COND	PROV	PROV	
Other medical, Health & Educational Services	COND	PROV	PROV	COMP		COND	PROV	PROV	COMP	
Other Services	COND	PROV	PROV	COMP		COND	PROV	PROV	COMP	
Industrial/Communication/Utility	PROV	COMP	COMP	COMP		PROV	COMP	COMP	COMP	
Agriculture Land/Water Areas/Resource Extraction	COMP	COMP	COMP	COMP		COMP	COMP	COMP	COMP	

*

Table 4

Structure Performance Standards ¹	
Land Use	Interior Sound Level ²
- Residential	45dBa
- Educational/Medical	45dBa
- Cultural/Entertainment/Recreational	50dBa ³
- Office/Commercial/Retail	50dBa
- Services	50dBa
- Industrial/Communications/Utility	60dBa
- Agricultural Land/Water Area/Resource Extraction	60dBa
¹ Do not apply to buildings, accessory buildings, or portions of buildings that are not normally occupied by people. ² The federal DNL descriptor is used to delineate all the system airport noise policy zones. ³ Special attention is required for certain noise sensitive uses, for example, concert halls.	

MSP Airport Noise Policy Area:

The noise policy area for MSP International Airport reflects the Part-150 Update process to redefine the MSP aircraft fleet information. That update projects the noise exposure anticipated in 2007 and is included for purposes of planning and review. The noise exposure map and Part-150 document is anticipated to be approved by the MAC and submitted to the FAA for its approval in 2004.

St. Paul Downtown Airport Noise Policy Area:

The noise policy area for St. Paul Downtown Airport reflects the noise exposure map generated in updating of the airport's long-term comprehensive plan in 2001. The map depicts the noise exposure projected for year 2020 aircraft operations. The MAC has not submitted the plan for Council review pending resolution of environmental and funding issues associated with flood protection of the airport.

Anoka County-Blaine Airport Noise Policy Area:

The noise policy area for the Anoka Co.-Blaine airport reflects the noise exposure map prepared as part of the final EIS in 2003 for the airport's long-term development. The map depicts the noise exposure expected for the year 2015 aircraft operations.

Flying Cloud Airport Noise Policy Area:

The noise policy area for the Flying Cloud Airport reflects the noise exposure map developed as part of the airport's environmental analysis and input from the City of Eden Prairie in finalizing the airport's long-term comprehensive plan. The map depicts the noise exposure projected for the year 2010 aircraft operations. A final EIS has been prepared on the airport development and a federal record of decision (ROD) is expected in 2005.

Airlake Airport Noise Policy Area:

The noise policy area for Airlake airport reflects the noise exposure map developed as part of the approved long-term development plan. The map depicts the noise exposure projected for the year 2015 aircraft operations. Land acquisition for the proposed cross runway has not occurred.

South St. Paul Airport Noise Policy Area:

The noise policy area for the So. St. Paul airport has not yet been updated and remains the same as depicted in the 1996 Aviation Policy Plan.

Crystal Airport Noise Policy Area:

The noise policy area for the Crystal airport has not been updated and remains the same as depicted in the 1996 Aviation Policy Plan.

Lake Elmo Airport Noise Policy Area:

The noise policy area for the Lake Elmo airport reflects the long-term comprehensive development plan approved in 1994. The noise exposure map depicts impact of year 2010 aircraft operations. The noise map in the 1996 Aviation Policy Plan has not been changed, with the exception that application of noise zone D was made optional at the communities discretion.

Special Purpose Airports:

Noise policy areas are not depicted for special purpose airport facilities since they generally do not have sufficient levels of activity to generate an annualized noise contour.

Table 5
Conditional Land Use Review Factors

Land Use Review Factor	Residential:		Education/ Medical	Cultural / Entertainment / Recreational		Office/ Commercial /Retail	Services
	Single, Multiplex with Individual Entrance, Mobile Home,	Multiplex/ Apartment, with Shared Entrance	Schools, Churches, Hospitals, and Nursing Homes	Indoor	Outdoor		
1. Indoor Sound level: Proposed construction design will provide outdoor to indoor attenuation required by structure performance standard in Table 2.	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
2. Location: Located under major departure flight track used by jets.	Incompatible ¹	Compatible	Incompatible	Compatible	Compatible	Compatible	Compatible
3. Location: Located parallel to primary runway used by jets.	Incompatible	Incompatible	Incompatible	Incompatible	Incompatible	Incompatible	Depends upon proposed use.
4. Location: Located parallel to runway to be used for unshielded engine run-ups.	Incompatible	Compatible	Incompatible	Compatible	Probably Incompatible, depends upon proposed use.	Compatible	Compatible
5. Planning Considerations: Consistent with adjacent land use ambient noise; consistent with the overall comprehensive plan.	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
6. Method of Disclosure: Local government has adopted effective method to inform future occupants of aircraft noise exposure (notice in property deed, truth in housing, informational bulletin, and permit notice).	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible

¹ Incompatible for new development; compatible for redevelopment & infill development if the municipality determines that Factor 5 is satisfied & Factors 1&6 will be enforced

II. HELIPORTS

Rotorcraft, including helicopters, can operate at the region's airports; however, one of the key attributes of a helicopter is its ability to be used in very small and hard to reach areas. Often times the landing area is within private property and appropriate operating corridors or buffer area is not adequate. Therefore, a separate model ordinance has been prepared by the Council to assist communities in responding to heliport proposals. The model ordinance is intended to provide the basis for a community to establish appropriate land-use controls (for noise and safety purposes) and administrative procedures for siting a freestanding heliport facility.

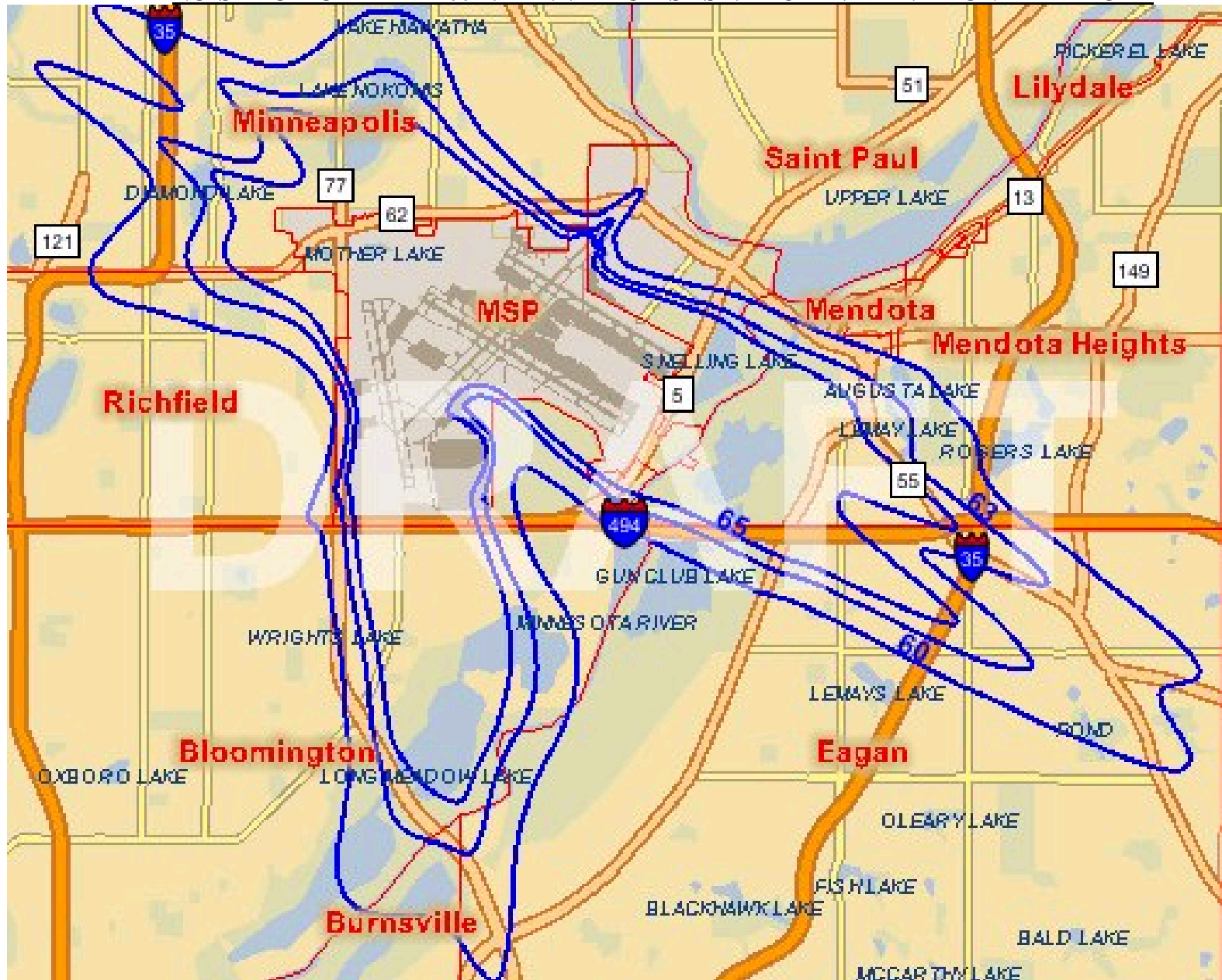
The Federal Aviation Administration (FAA) has an advisory circular (AC 150-5020-2) to provide technical guidance for communities and heliport operators in calculating the acoustic environment at heliports, helistops, or helipads. In lieu of adopted federal standards for helicopter noise, the circular is intended to provide assistance in preliminary evaluation of the noise compatibility for new helicopter sites.

A general discussion of the various helicopter facilities and activities is included in the airport system plan.

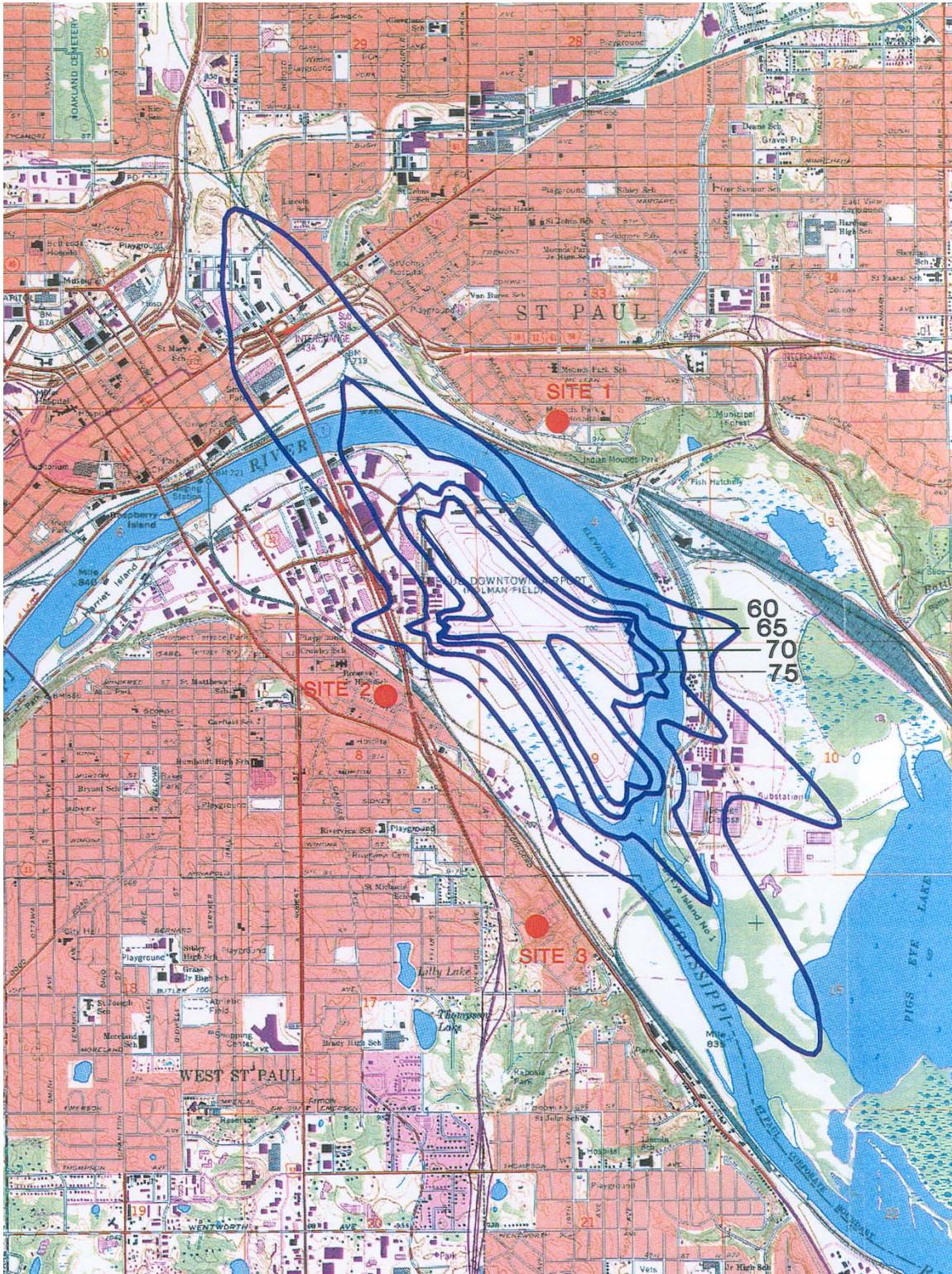
IMPLEMENTATION RESPONSIBILITIES

AIRPORTS	HELIPORTS
<ul style="list-style-type: none"> • Metropolitan Council <ul style="list-style-type: none"> - Encourage federal and state cooperation to reduce source noise. - Define noise policy area for system airports. - Encourage cooperation among airport operators and affected communities to develop and implement airport operations plans and community noise mitigation programs - Provide general guidance, planning and technical assistance, in application of the guidelines. - Review comprehensive plans and land-use agreements. - Monitor and evaluate changing conditions in land use, zoning, and operations that might affect the viability of the land use compatibility program. 	<ul style="list-style-type: none"> • Metropolitan Council <ul style="list-style-type: none"> - Proposal for any major or intermediate heliport to be reviewed by the Council prior to local approvals. - Development of a minor heliport will not require Council review or comprehensive plan amendment.
<ul style="list-style-type: none"> • Airport Owners/Operators <ul style="list-style-type: none"> - The MAC and other airport operators should prepare operational plans for each system airport. Airport operating procedures can reduce noise on and off-airport, while distribution of aircraft operations can reduce numbers of people affected by aircraft noise. - Participate in preparation and financing of programs to address existing incompatible land uses. The mitigation program should be reflected in the operators capital improvement program. 	<ul style="list-style-type: none"> • Airport Owners/Operators <ul style="list-style-type: none"> - Include a helicopter element in each airport development and noise abatement operations plan. - All heliports proposed to be located within five nautical miles of a System airport is to be reviewed by affected airport manager.
<ul style="list-style-type: none"> • Affected Communities <ul style="list-style-type: none"> - Adopt land use compatibility guidelines to prevent incompatible development. - Develop and implement local codes and ordinances. - Implement land use planning strategies, such as: <ul style="list-style-type: none"> - Insulate structures in noise sensitive areas - Adopt building noise attenuation standards. - Disclose degree of noise exposure to prospective home buyers. - Develop policies on location, relocation and closing of public structures. - Develop policies on extension of utilities into noise policy areas. - Zone or rezone properties. - Redevelop appropriate areas. 	<ul style="list-style-type: none"> • Affected Communities <ul style="list-style-type: none"> - Prepare major or intermediate heliport development plans for any heliports approved by city, but not located at a system airport. - Heliport plans submitted to the Council must adequately addresses: <ul style="list-style-type: none"> - Participation in planning of persons potentially affected by proposal. - Identification of potential users, type and frequency of operations. - Environmental evaluation of land use compatibility. - Description of facility design, operations and mitigation measures.

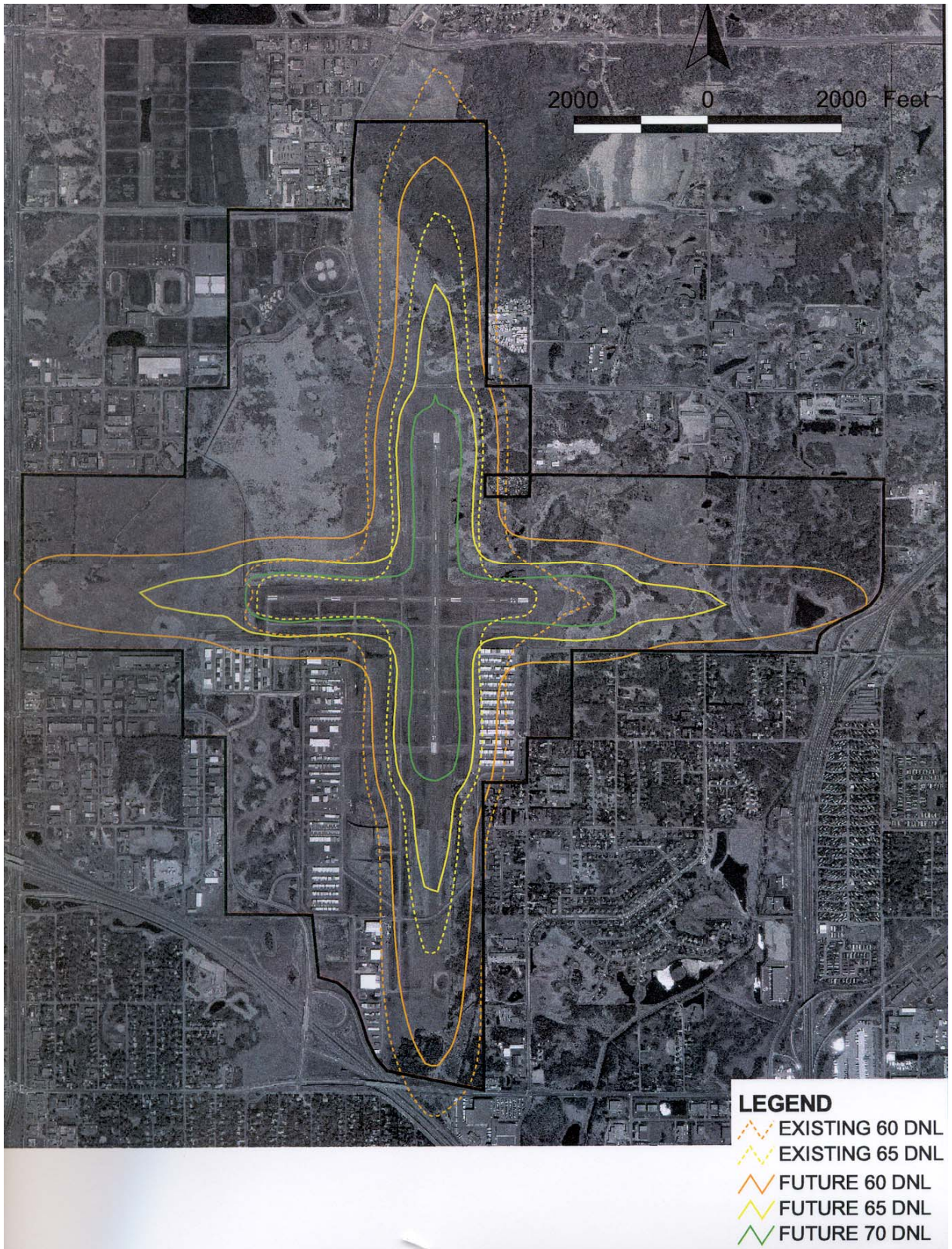
NOISE POLICY AREA 2007 : MINNEAPOLIS - ST. PAUL INTERNATIONAL AIRPORT



NOISE POLICY AREA : ST. PAUL DOWNTOWN AIRPORT



NOISE POLICY AREA : ANOKA COUNTY-BLAINE AIRPORT



NOISE POLICY AREA : FLYING CLOUD AIRPORT

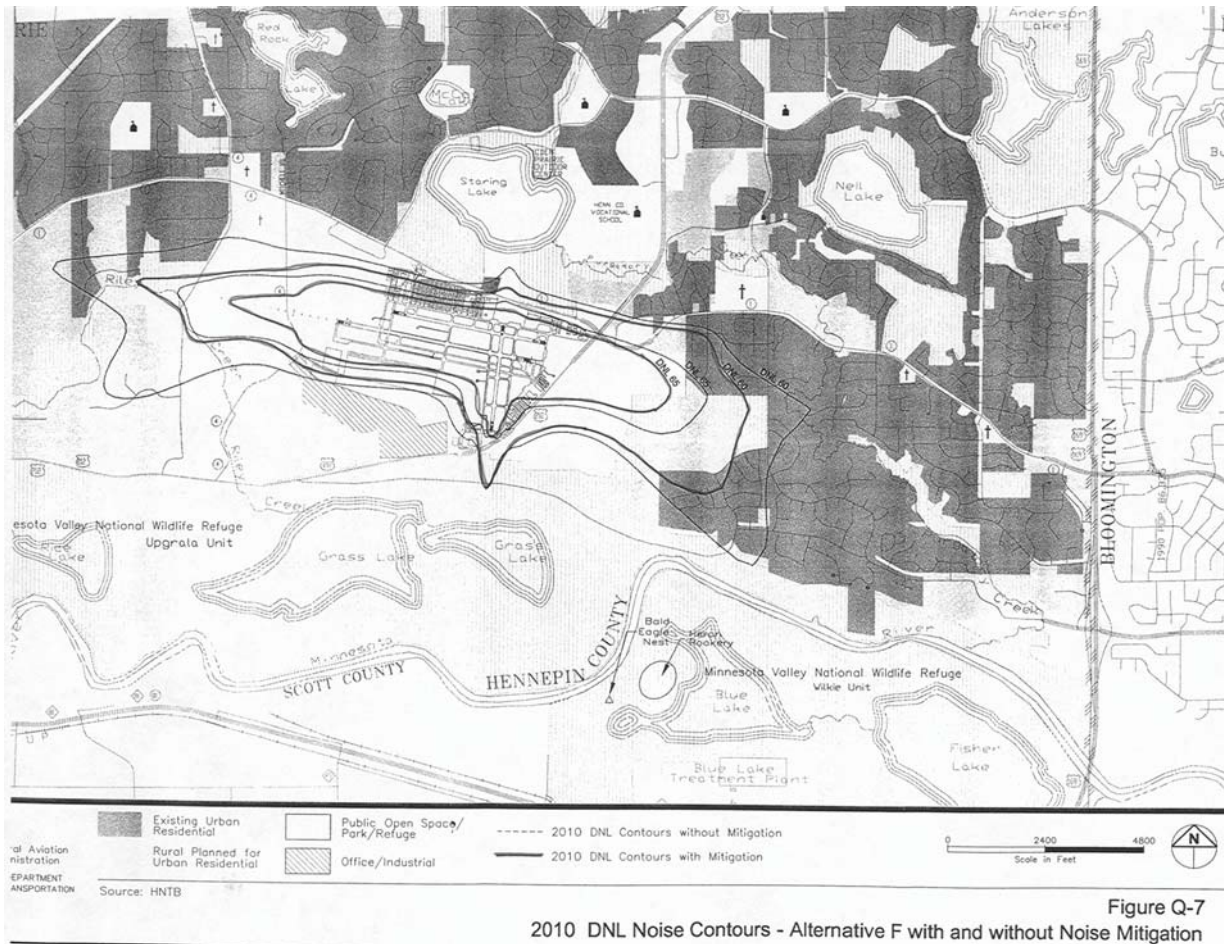


Figure Q-7
2010 DNL Noise Contours - Alternative F with and without Noise Mitigation

