



Appendix M: Land Use Compatibility Guidelines

Land Use Compatibility Guidelines for Aircraft Noise

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; updated plans were due December 2008. The new plans reflect the 2003 *Development Framework*, and the 2005 *Metro Systems Statements*. The following overall process and schedule applies:

- In 2011, after adoption of the new *2030 Transportation Policy Plan*, 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 a noise program in their 2018 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 M-1 for listing of noise impacted communities.
- Council reviews community plan submittal and approves, or requires a plan modification.
- Airport owner submits long-term comprehensive airport plan or plan update (LTCP), including noise mitigation program, for Council review and approval. A schedule for updates of LTCP's is included in the *Transportation Policy Plan*.

Airport Noise

The airport section of the land use compatibility guidelines assume:

- Federal and Manufactures programs for reduction of noise at its source (engines, airframes),
- Airport 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 a Council noise policy area map (from most recently approved LTCP) 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 (LTCPs). Both the airport and community plans should be structured around an overall scheme of preventive and corrective measures. Table M-2 depicts the current land use measures adopted as part of the MSP Part 150 noise compatibility program for 2007 that are being implemented through 2014.

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.

Table M-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
* As defined under MS 473.621, Sd. 6.	

Table M-2: Land Use Measures

PREVENTIVE LAND USE MEASURES			CORRECTIVE LAND USE MEASURES		
	MSP Int'l Airport Communities	Other Regional Airport Communities		MSP Int'l Airport Communities	Other Regional Airport Communities
Amend local land use plans to bring them into conformance with regional land use compatibility guidelines for aircraft noise.	YES	YES	Acquire developed property within RPZs within runway safety zones within DNL 70.	YES YES YES	YES FCM & STP Airports.
Apply zoning performance standards.	YES	YES	Part –150 sound insulation program.	YES (MAC 5db criteria)	NO
Establish a public information program.	[YES] Policy Plan	[YES] Policy Plan			
Revise building code.	YES - MS 473.192	YES - MS 473.192	Property purchase guarantee.	NO (Not supported by communities)	NO
Fair property disclosure policy.	[YES] Usually applied by developer or builder.	[YES] Usually applied by developer or builder.	Creation of sound barriers walls berms ground runup enclosures	YES YES YES	[YES] Proposed in the FCM & ANE LTCPs.
Dedication of avigation easements.	YES	YES			
Transfer of development rights.	NO	NO			
Land banking (acquisition of undeveloped property)	NO	NO			

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. The land use compatibility guidelines (contained in Table M-4) are defined and described below. All new land uses are categorized according to whether they are considered new/major redevelopment or new/in-fill/redevelopment.

The land uses are listed in Table M-4 as specific categories grouped to reflect similar general noise attenuation properties and what the normally associated indoor and outdoor use activities are. The listing is ranked from most to least sensitive uses in reference to the aircraft noise spectrum. In Table M-6 there is an additional breakdown of the land uses in each category based upon the acoustic properties of typical land uses by the standard land use coding manual (SLUCUM). The Council has prepared a *Builders Guide* to assist in determining acoustic attenuation of proposed new single-family detached housing, which is discouraged, but may be allowed by communities in zone 4 and the buffer zone.

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 M-4 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 M-3. 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 M-6.

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 [optional] 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 M-3: Structure Performance Standards*

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

Table M-4: Land Use Compatibility Guidelines for Aircraft Noise

		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 74-70	3 DNL 69-65	4 DNL 64-60
Land Use Category												
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		

NOTE: COMP = Compatible; PROV = Provisional; COND = Conditional; INCO = Incompatible

Table M-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 M-3.	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
2. Location: Located under major departure flight track used by jets.	Incompatible *	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

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

Table M-6: Typical Land Use by Standard Land Use Coding Manual Codes (SLUCM)

TYPE OF LAND USE	CODE NUMBERS AND SPECIFIC USES	
Residential		
Single/Multiplex with Individual Entrance	11	Household units
	11.11	Single units - detached
	11.12	Single units - semi detached
	11.13	Single units - attached row
	11.21	Two units - side-by-side
	11.22	Two units - one above the other
Multiplex/Apartment with Shared Entrance	11.31	Apartments - walk-up
	11.32	Apartments - elevator
	12	Group quarters
	13	Residential hotels
	14	Mobile home parks or courts
Educational Services		
Educational and Medical, Schools, Churches, Nursing Homes	65.1	Hospital
	68	Nursing homes
	69.1	Religious activities
	71	Cultural activities (including churches)
Cultural, Entertainment, Recreational		
Indoor	72	Public assembly
	72.1	Auditoriums, concert halls
Outdoor	74	Recreational activities (golf courses, riding stables, water recreation)
	75	Resorts and group camps
	76	Parks
Office, Commercial, Retail Services		
	52	Retail trade - building materials, hardware and farm equipment
	53	Retail trade - general merchandise
	54	Retail trade - food
	55	Retail trade - automotive, marine craft, aircraft and accessories
	56	Retail trade - apparel and accessories
	57	Retail trade - furniture, home furnishings, and equipment
	58	Retail trade - eating and drinking establishments
	59	Other retail trade

Table M-6: Typical Land Use by Standard Land Use Coding Manual Codes (SLUCM)

TYPE OF LAND USE	CODE NUMBERS AND SPECIFIC USES	
Other Medical, Health, Educational Services		
	60	Services
	61	Finance, insurance and real estate services
	62	Personal services
	63	Business services
	64	Repair services
	65	Professional services
	35	Professional, scientific and controlling instruments; photographic and optical goods; watches and clocks manufacturing
Transportation Passenger Facilities	40	Transportation, communication and utilities
Transient Lodging	15	Transient lodging

Noise Policy Area Contours

This section of the land use compatibility guidelines for aircraft noise contains maps depicting the latest noise information being used to define the noise policy areas for each system airport. The noise policy area is established as part of the [latest] LTCP reviewed and approved by the Council. The new noise policy area identifies the geographical area where the noise compatibility guidelines are to be applied, and replaces the previous TPP noise contours. The currently approved noise contours and associated planning time period for each system airport are identified in the following pages. The compatibility guidelines allow for use of noise buffer zones around an airport at the discretion of the affected community; application of buffer zones will be addressed through the systems statement process.

For additional noise related information refer to the individual airport LTCP for noise modeling and operational documentation, the Council's *Local Planning Handbook* for communities and the *Builder's Guide* for acoustic requirements concerning construction of new single-family detached housing in noise policy areas.

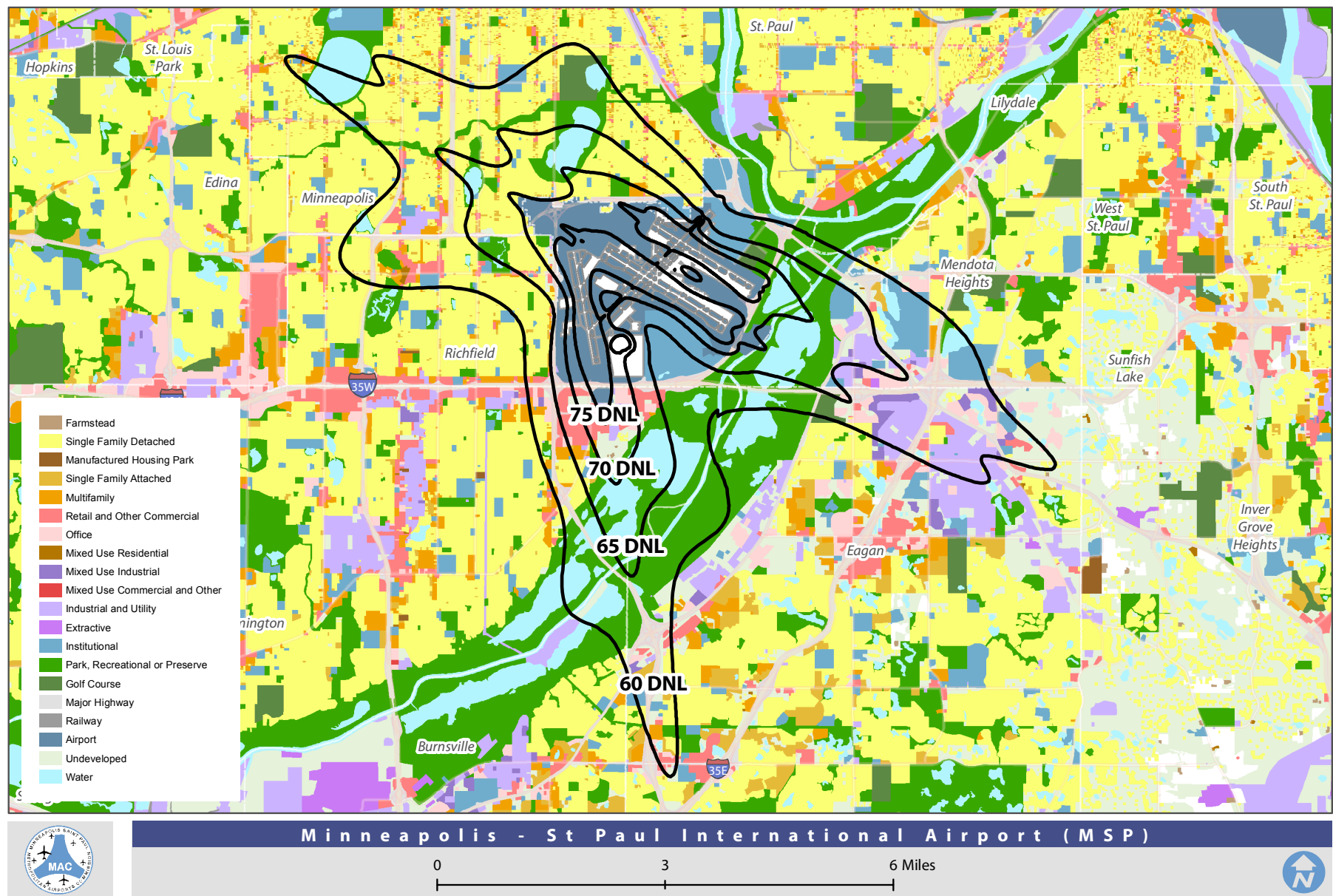


Figure M-8: 2025 Preferred Alternative Contours with 2005 Land Use – Downtown St. Paul

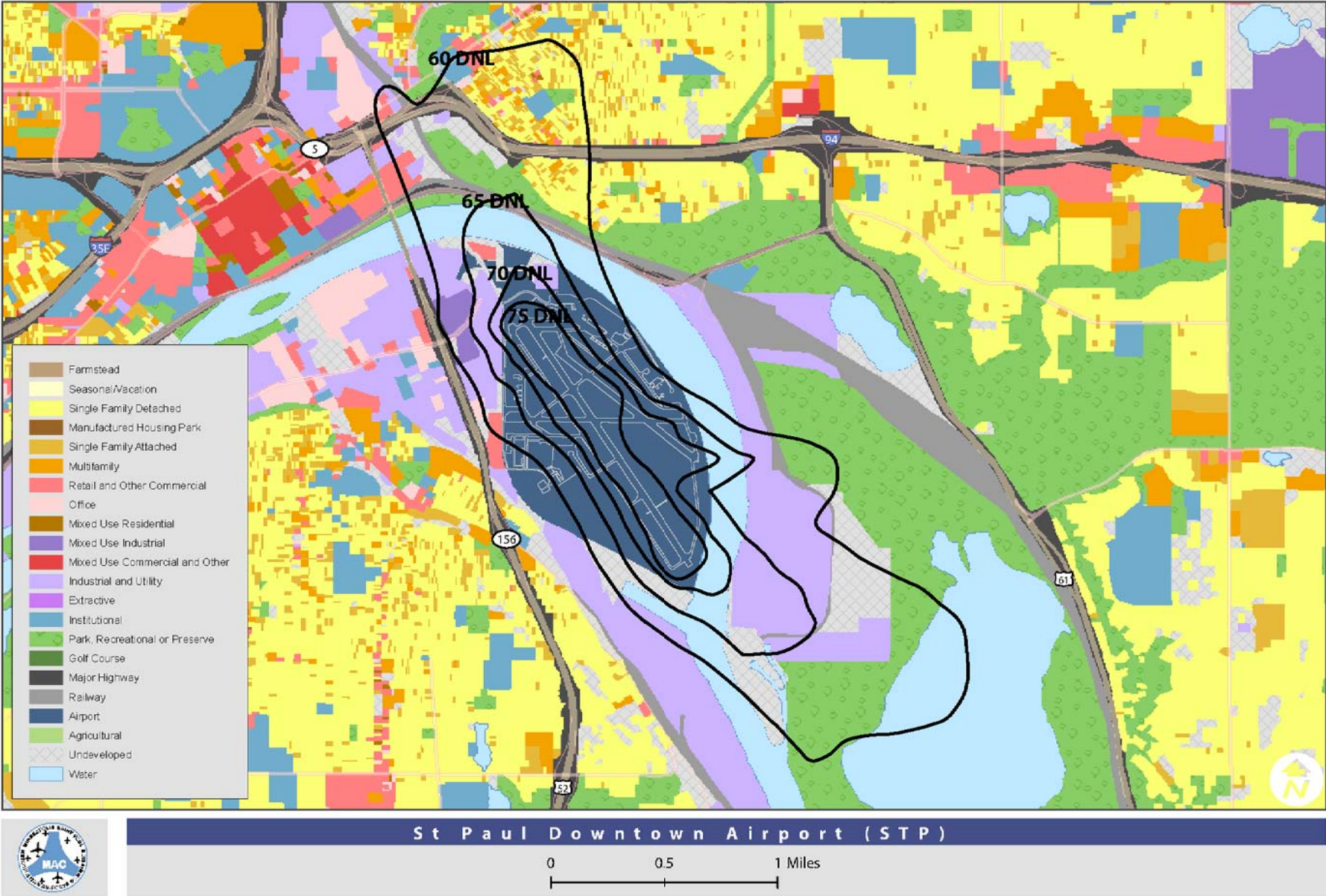


Figure M-9: 2025 Preferred Alternative Contours with 2005 Land Use – Flying Cloud

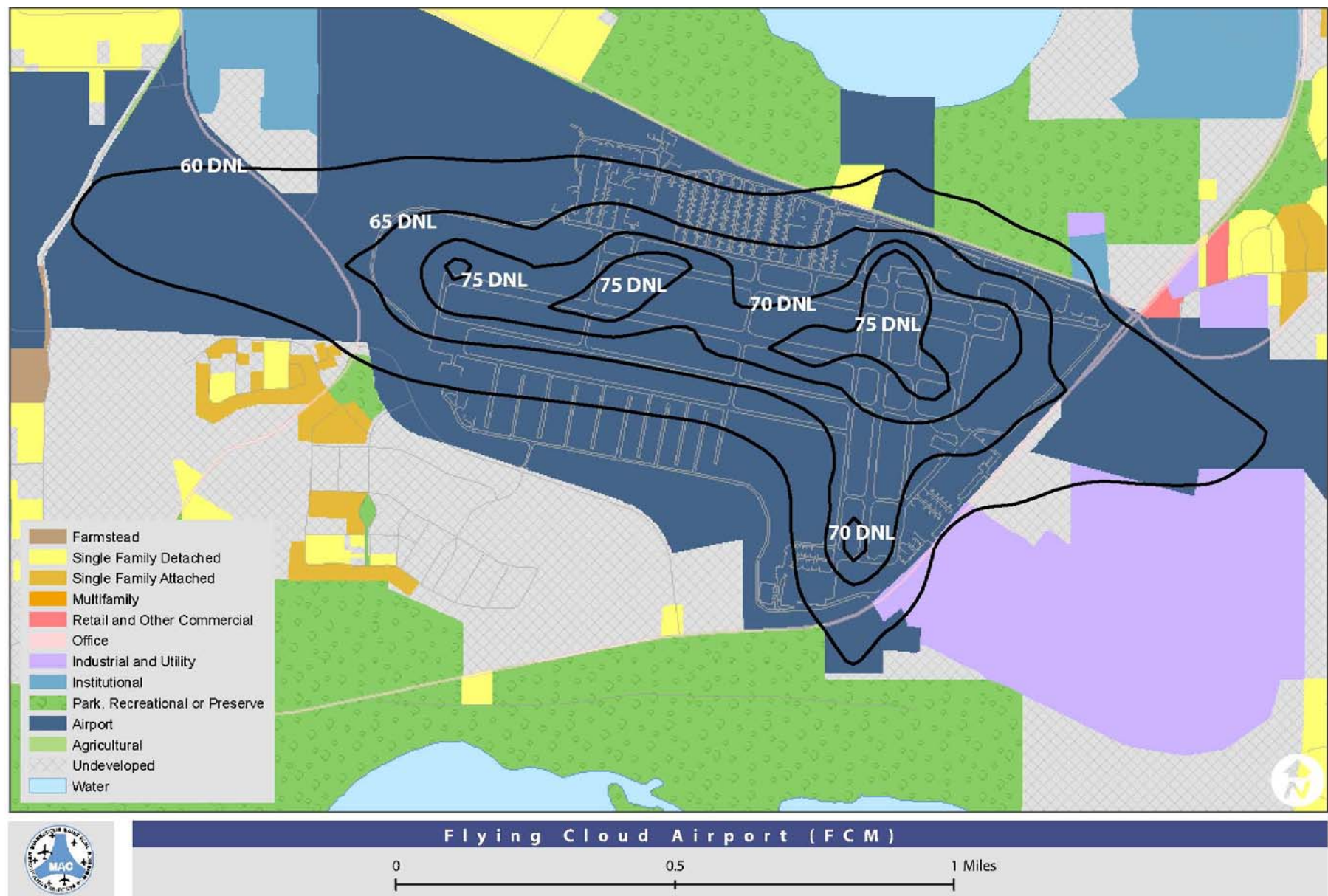


Figure M-10: 2025 Preferred Alternative Contours with 2005 Land Use – Anoka County – Blaine

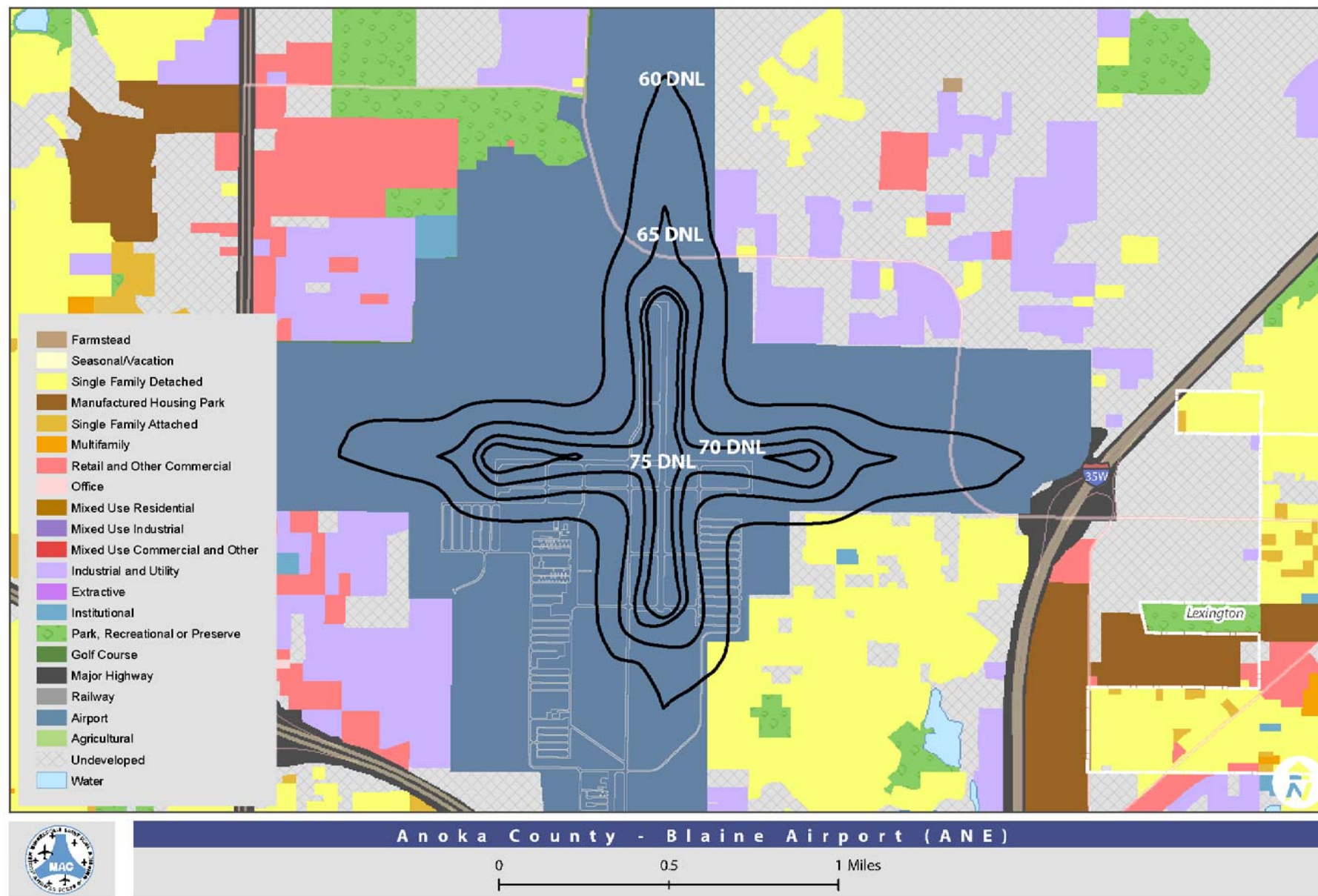


Figure M-11: 2025 Preferred Alternative Contours with 2005 Land Use – Crystal

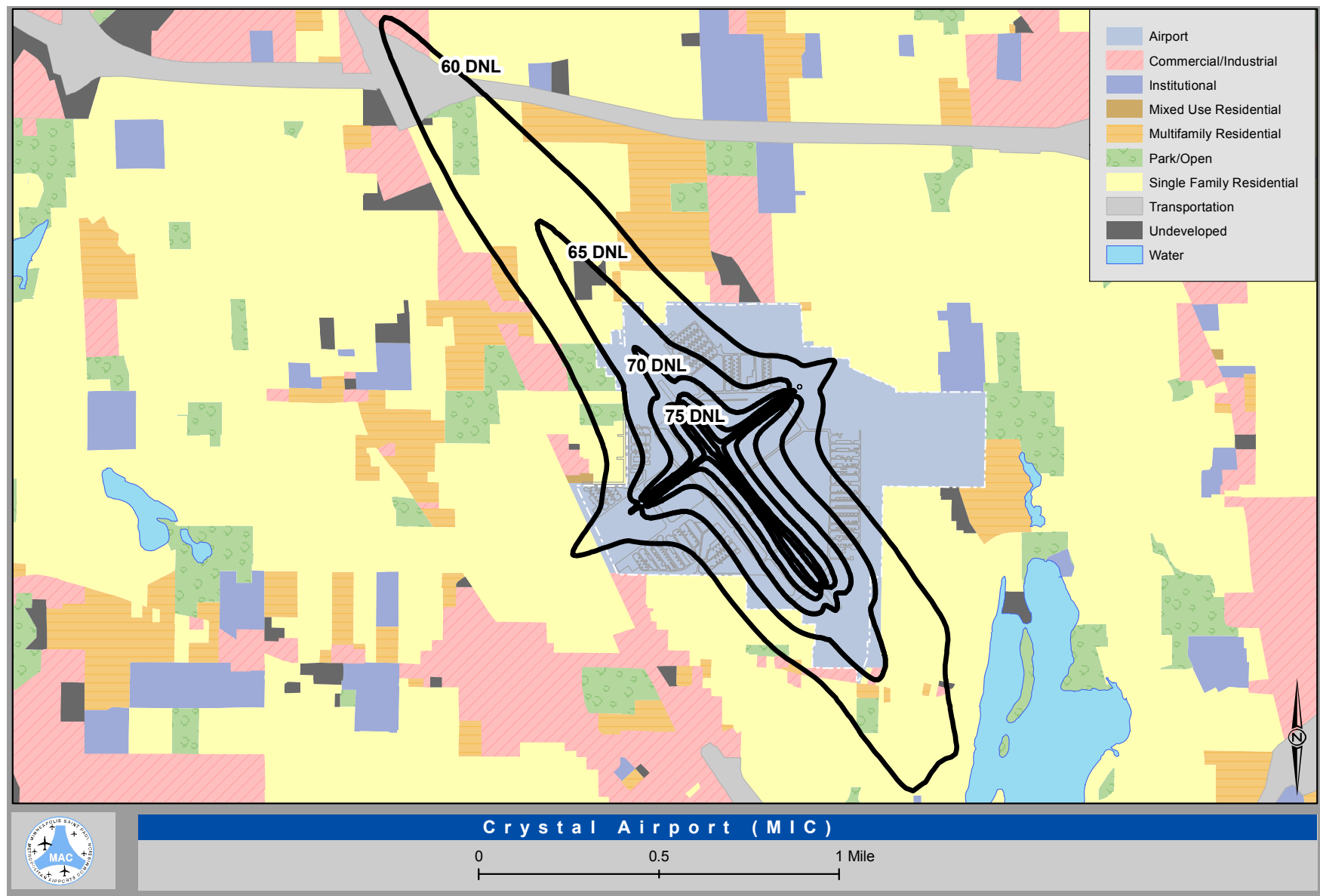


Figure M-12: 2025 Preferred Alternative Contours with 2005 Land Use - Airlake

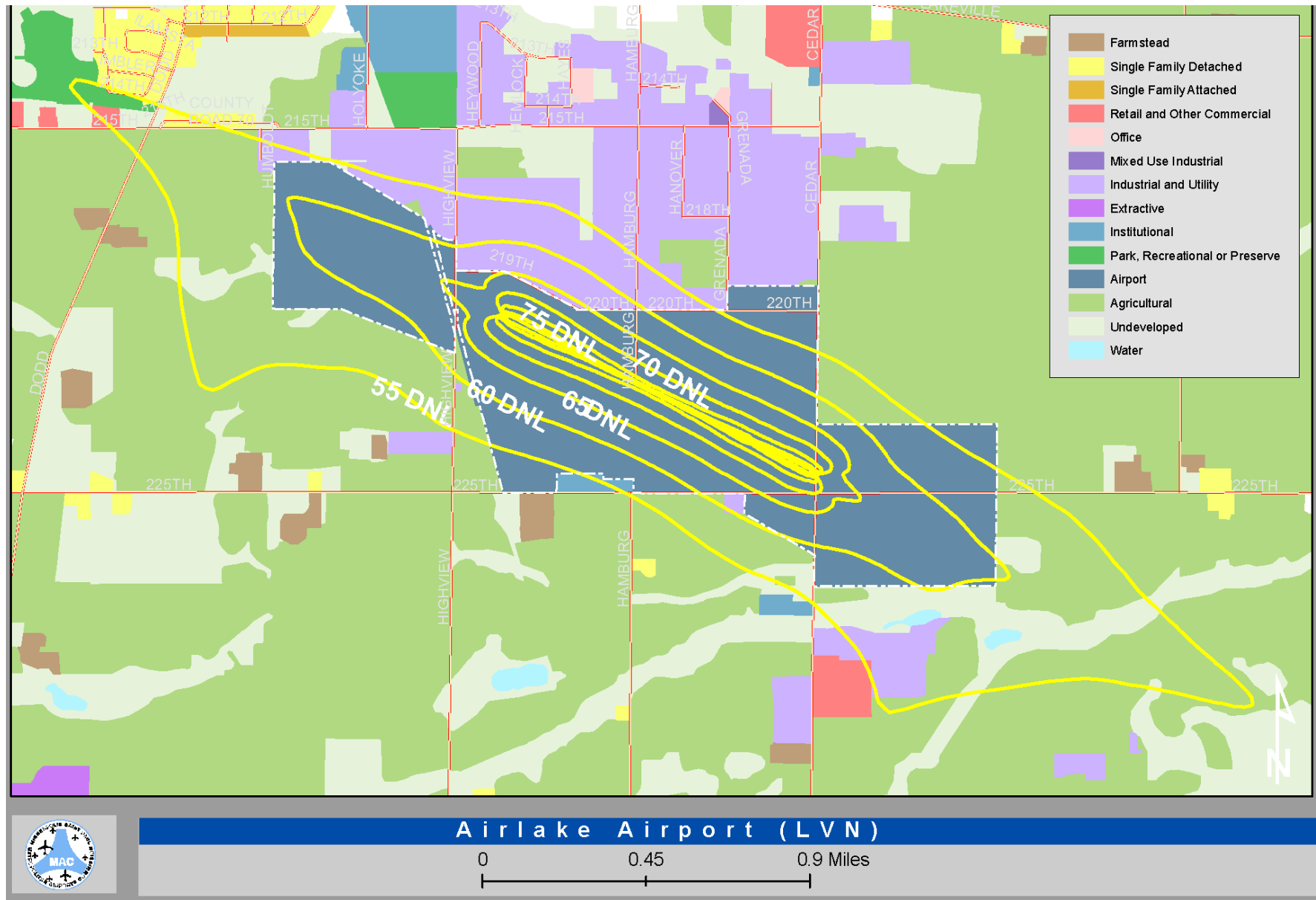
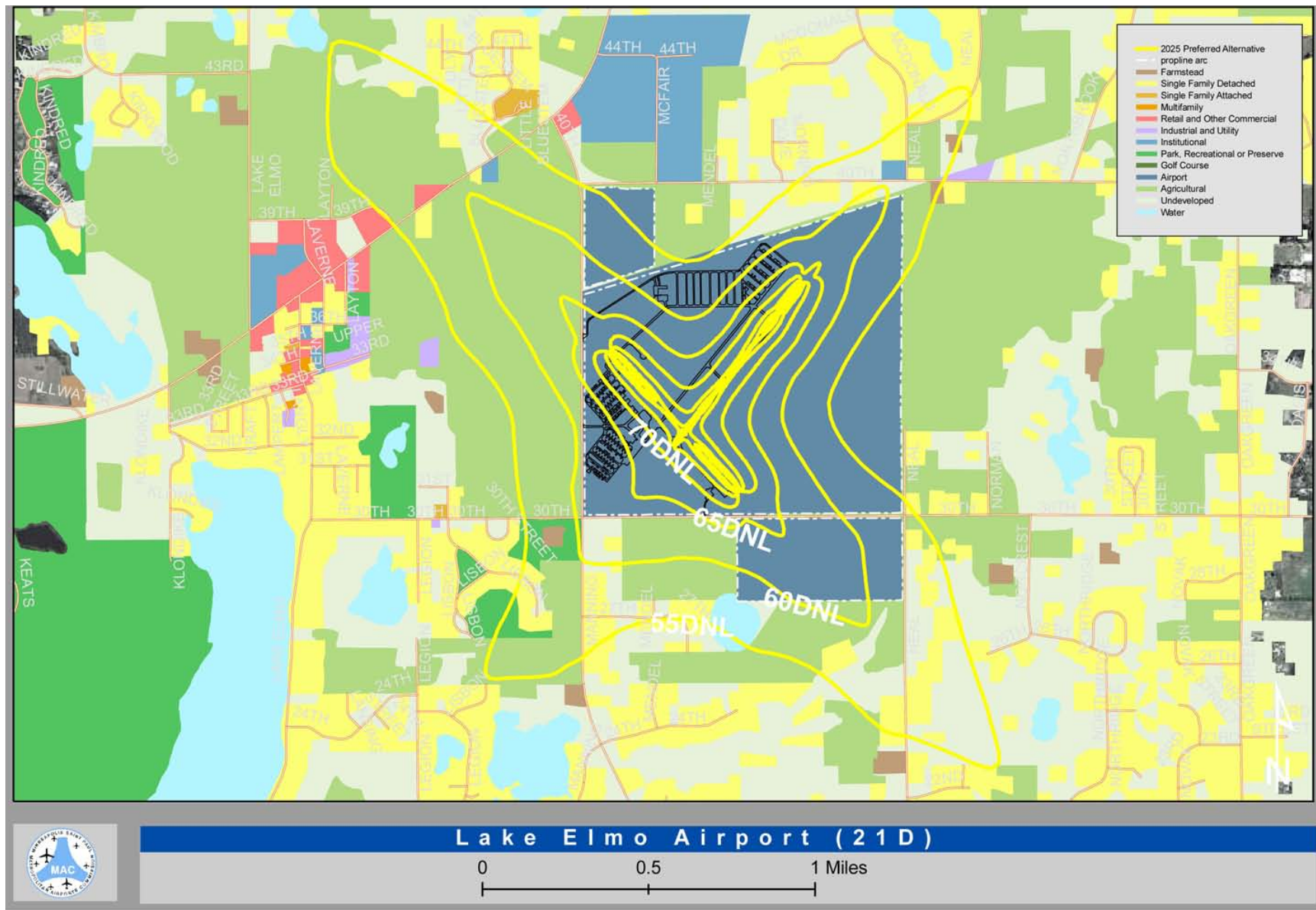


Figure M-13: 2025 Preferred Alternative Contours with 2005 Land Use – Lake Elmo



SOUTH SAINT PAUL MUNICIPAL AIRPORT

The South Saint Paul Municipal Airport is currently operating at an annual level of aircraft takeoffs and landings that is similar to Crystal and Airlake Airport activity and aircraft fleet mix. An up-to-date noise modeled contour is currently not available for this facility. It is assumed that similar to the Airlake Airport conditions that the DNL 65 noise contour is essentially all located on-airport, and that some portions of the DNL 60 contour extends into adjacent land uses. The airport is completely encroached by urban development and preventive noise mitigation measures have limited application at this time. Much of the noise impact area likely falls within established single-family residential areas of both So. St. Paul and Inver Grove Heights. Corrective noise mitigation measures are also not being applied in these areas since neither city has identified any parcels for land use re-development in its community comprehensive plan. Prior to community comprehensive plan update in 2018 the city should work with Mn/DOT and the Council to prepare a LTCP, including aircraft noise analysis and evaluation of land uses based upon the compatibility guidelines for aircraft noise as defined in the TPP.

FOREST LAKE AIRPORT

The Forest Lake Airport is part of the state and regional airport system, but not a part of the NPIAS, and does not have a LTCP- developed aircraft noise policy area established at this time. The Council has reviewed the community comprehensive plan update and the airport area AUAR for land use compatibility and land acquisition purposes. The level of air traffic at this facility is sufficiently low that aircraft noise is currently not sufficient to warrant any corrective land use measures. In its transition from private to public ownership adequate land use planning for safety and noise has been considered. The airport role has been changed from Special Purpose status to a Minor general aviation airport and intention to apply for NPIAS status and paving of the existing turf runway. Prior to the community comprehensive plan update in 2018 the city should work with Mn/DOT and the Council to prepare a LTCP sufficient to identify forecast levels of activity that would require potential land use changes to maintain or improve compatibility with adjacent land uses base upon the land use compatibility guidelines for aircraft noise as defined in the TPP.