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January 16, 2008

DOCKET
06-AFC-6
DATE JAN 16 2008
RECD. JAN 22 2008

Dockets Unit
California Energy Commission
1516 Ninth Street, MS 4
Sacramento, CA 95814

RE: Eastshore Energy Center (06-AFC-6)

To Whom It May Concern:

Please find enclosed the Alameda County Airport Land Use Policy Plan (adopted July 16, 1986) for docketing in the above-referenced matter. The enclosure has been marked Exhibit 535 and was accepted into evidence on January 14, 2008.

Very truly yours,

RICHARD E. WINNIE
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By
Andrew J. Massey
Associate County Counsel

Enclosures

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA

APPLICATION FOR CERTIFICATION FOR THE EASTSHORE ENERGY CENTER IN CITY OF HAYWARD BY TIERRA ENERGY	**Docket No. 06-AFC-6** **PROOF OF SERVICE** **(Revised 12/4/2007)**

INSTRUCTIONS: All parties shall either (1) send an original signed document plus 12 copies or (2) mail one original signed copy AND e-mail the document to the address for the Docket as shown below, AND (3) all parties shall also send a printed or electronic copy of the document, which includes a proof of service declaration to each of the individuals on the proof of service list shown below:

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DECLARATION OF SERVICE

I, Dalia Liang, declare that on January 16, 2008, I deposited copies of the attached Alameda County Airport Land Use Policy Plan (adopted July 16, 2986) in the United States mail at Oakland, CA, with first-class postage thereon fully prepaid and addressed to those identified on the Proof of Service list above.

OR

Transmission via electronic mail was consistent with the requirements of the California Code of Regulations, title 20, sections 1209, 1209.5, and 1210. All electronic copies were sent to all those identified on the Proof of Service list above.

I declare under penalty of perjury that the foregoing is true and correct.

Dalia Liang

ALAMEDA COUNTY
AIRPORT LAND USE POLICY PLAN

AIRPORT LAND USE COMMISSION OF ALAMEDA COUNTY
ADOPTED JULY 16, 1986

ALAMEDA COUNTY

AIRPORT LAND USE POLICY PLAN

Alameda County Airport Land Use Commission

Adopted July 16, 1986

ALAMEDA COUNTY AIRPORT LAND USE COMMISSION

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Michael E. Baines
Chuck Corica
Alex Giuliani
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GLOSSARY

Accident Potential Zone (APZ): For military airports, area of higher likelihood of accidents based on U.S. Department of Defense (DOD) guidelines, station aircraft operations and accident history. Usually identified through an Air Installation Compatible Use Zone (AICUZ) study by DOD. Not an adopted ALUC planning boundary.

Acoustical Study: A study performed by a person qualified in acoustical analyses, identifying construction materials and techniques required to achieve noise level reduction in residences and offices as specified by the ALUC plan.

Air Carrier Aircraft: A commercial aircraft operating pursuant to a federal certificate of public convenience and necessity.

Air Installation Compatible Use Zone (AICUZ): Department of Defense programs established by DOD Instruction 4165.57 "Air Installation Compatible Use Zones", November 8, 1977. An AICUZ study may serve as background documentation for ALUC.

Airport Hazard: Any use of land, structure or natural growth, permanent or temporary, located on or in the vicinity of a public use or military airport, that obstructs the airspace required for or is otherwise hazardous to the flight of aircraft in landing or taking off at such airport.

Airport Land Use Commission (ALUC): The county-level body, established pursuant to the State ALUC law, responsible for developing plans for achieving land use compatibility between airports and their environs.

ALUC Determination of Plan Consistency: Resolution adopted by ALUC pursuant to State ALUC law, finding whether or not a proposed public agency action is consistent with the ALUC Policy Plan.

ALUC General Referral Area: An adopted ALUC planning boundary. The area near an airport which is now or could in the future be affected by airport operations. Generally encompasses adopted ALUC hazard prevention, safety and noise zones. All public agency actions that concern properties within this area, which are subject to ALUC review under the State ALUC law, must be referred by the public agency considering the action to the ALUC for Determination of Plan Consistency.

ALUC Hazard Prevention Zone: An adopted ALUC planning boundary. Includes the area wherein avigation may be significantly impacted by hazards including smoke, electrical interference, glare, disorienting lighting or uses which attract concentrations of birds. The hazard prevention zone boundary is identical to the ALUC General Referral Area boundary. Within the zone, ALUC hazard prevention policies are applied.

ALUC Height Referral Area: An adopted ALUC planning boundary. Delineates the airspace of concern to ALUC due to possible hazards to air navigation caused by tall structures (identical to FAA notification requirements for proposed construction or alteration.) Any local public agency action which is subject to ALUC review under the State ALUC law, and which would permit an object to protrude into the identified airspace, must be referred to ALUC for Determination of Plan Consistency. ALUC policies relating to height (based on FAR Part 77) are applied. Any proposed construction project which would protrude into the identified airspace must also be referred by the project sponsor to the FAA for an Aeronautical Study. The results of an FAA study serve as background documentation for ALUC.

ALUC Law (State of California): The California ALUC law is contained within the State Aeronautics Act, Article 3.5 of the Public Utilities Code, Section 21670 et seq. Also in Public Utilities Code Section 21661.5, and Government Code Section 65302.3 et seq. The State ALUC law is contained in Appendix A to the ALUC Plan.

ALUC Noise Impact Zone: An adopted ALUC planning boundary. Includes the existing or projected future area that is subject to significant levels of aircraft noise as defined by the California airport noise standards. Within this area, ALUC noise/land use compatibility standards are applied.

ALUC Planning Boundaries: Designated areas in the vicinity of airports with significant potential for incompatibility of airport operations with other land uses. Includes ALUC general referral area, height referral area, safety zone, hazard prevention zone, and noise impact zone.

ALUC Project: Any action under consideration by a local public agency or airport operator which is subject to ALUC review. Under existing State ALUC law, such actions include amendment of a general plan or specific plan or approval of a zoning ordinance or building regulation affecting land use within an ALUC planning boundary. It includes plans for any proposed new airport or heliport and modification of an airport master plan by the airport owner. As specified by the State ALUC law, under certain circumstances, a project may include other proposed local agency actions, regulations or permits (see Policy #26.1, page 17).

ALUC Safety Zone: An adopted ALUC planning boundary within which land uses should be limited in density and type due to accident potential. Within this area, ALUC safety policies are applied.

Airport Layout Plan: The airport layout plan is generally prepared by the airport operator and used as background documentation by the ALUC. The layout plan depicts existing and proposed airport facilities and land uses, their locations, and the pertinent clearance and dimensional information required to show conformance with the applicable state or federal standards. It shows the airport location, clear zones, approach areas, and other environmental features that may influence airport usage and expansion capabilities, and includes the following elements:

- airport layout
- location map or vicinity map
- basic data table
- wind information

Airport Master Plan: Provides guidelines for future airport development which will satisfy aviation demand and be compatible with the environment, community development, other modes of transportation, and other airports. The plan is generally prepared by the airport operator. The State ALUC law requires agencies owning any airport to refer proposed modifications of airport master plans to the ALUC for Determination of Plan Consistency. The airport master plan serves as background documentation for ALUC.

Ambient Noise: The background or residual level of noise (excluding aircraft operations) at a given location.

"A" Weighted Sound Level (dBA): A sound pressure level in decibels as measured on a sound level meter equipped with weighting networks that represent the way the human ear hears certain sounds.

Civil Aircraft: General aviation and commercial air carrier aircraft.

Community Noise Equivalent Level (CNEL): The noise rating in decibels adopted by the State of California airport noise standards. It is the average daily noise level, averaged for each of the 24 hours, and weighted more heavily during evening and nighttime hours to account for the lower tolerance of persons to noise during those hours.

Concentration of Population: A gathering of people yielding an average density of more than 25 people per net acre over an 8-hour period (long term), or a single event that would yield a gathering of more than 50 people per net acre for more than a two-hour period (short term). Net area excludes public and private streets and San Francisco Bay waters.

Federal Aviation Administration (FAA): The federal agency charged with regulating air commerce to promote its safety and development, encouraging and developing civil aviation, air traffic control, and air navigation and promoting the development of a national system of airports.

FAA Aeronautical Study: Performed by FAA pursuant to Federal Aviation Regulations (FAR) Part 77. Assesses the effect of proposed construction or alteration on the use of air navigation facilities or navigable airspace by aircraft. The conclusion of such a study is normally an FAA determination of whether the proposed construction would be a hazard to air navigation. Such a study serves as background documentation for ALUC.

FAA Approach Area: Defined in FAA airport development grant guidelines, an area underlying the approach surface beyond the FAA clear zone, within which the FAA recommends limitations on land use in order to avoid interference with air navigation. Not an adopted ALUC planning boundary.

FAA Clear Zone: Defined in FAR Part 152.9b, a land or water surface extending beyond the primary runway surface and underlying the approach surface out to a point where the approach surface reaches 50 feet above ground level and within which no structures other than those serving air navigation should be erected. Not an adopted ALUC planning boundary.

FAA Imaginary Surfaces: Three-dimensional surfaces established in relation to the end of each runway or designated takeoff and landing area (for heliports), as defined in FAR Part 77. Such surfaces include imaginary approach, horizontal, conical, transitional, primary and other surfaces. The imaginary surfaces determined under FAR Part 77 are a basis for identification of obstructions and hazards to air navigation by FAA and ALUC.

FAA Overflight Zone: The area where aircraft are maneuvering to enter or leave the traffic pattern, defined by the FAR Part 77 horizontal surface.

Federal Aviation Regulations (FAR): Issued by the FAA to regulate air commerce; issued as separate "parts." Two frequently cited parts are:

> FAR Part 36: Establishes noise standards for the civil aviation fleet.
>
> FAR Part 77: Establishes standards for determining obstructions in navigable airspace, sets forth requirements for notice of proposed construction or alteration and provides for aeronautical studies of obstructions to air navigation.

General Aviation Aircraft: All aircraft other than air carrier and military aircraft.

Helicopter: A rotorcraft that, for its horizontal motion, depends principally on its engine-driven rotor.

Heliport: An area of land, water, or structure used or intended to be used for the landing and take-off of helicopters.

Incompatible Land Use: Any land use located within an ALUC airport planning boundary (general referral, height referral, noise, safety, hazard prevention), which is inconsistent with the adopted airport land use plan.

Noise Impact Area: As defined in the California airport noise standards, that area within the noise impact boundary devoted to existing incompatible uses, generally residential uses lacking special acoustical treatment. (California Administrative Code Section 5014) Not an adopted ALUC planning boundary, although may be used as background documentation.

Noise Impact Boundary: The boundary is the criterion noise contour as established in the airport noise standards, Administrative Code Section 5012. Effective January 1, 1986, the criterion noise contour is 65 dB CNEL for all airports. Not an adopted ALUC planning boundary, although it is the basis for the adopted ALUC noise impact zones.

Noise Sensitive Uses: These include, but are not limited to, residential, educational, and health-related activities.

Normalized CNEL: An aircraft CNEL level adjusted to reflect the impact of aircraft noise in relation to ambient noise.

Public Use Airport: Publicly or privately owned airport that offers the use of its facilities to the public without prior notice or special invitation or clearance, and that has been issued a California Airport Permit by the Division of Aeronautics of the California Department of Transportation. The ALUC does not make determinations as to the public use status of facilities.

Single Event Noise Exposure Level (SENEL): The A-weighted sound level of a single noise event, such as an aircraft overflight, measured over the time interval between the initial and final times for which the noise level exceeds a threshold level and normalized to a reference duration of 1 second.

Traffic Pattern: Projection on the ground of the aerial path associated with an aircraft on the crosswind, downwind, base, and final approach legs of the approach/departure process.

I. INTRODUCTION

A. ALAMEDA COUNTY AIRPORT LAND USE COMMISSION

County airport land use commissions (ALUCs) are established pursuant to the State ALUC law[1] to protect the public health, safety, and welfare by promoting orderly expansion of airports and adoption of land use measures by local public agencies to minimize exposure to excessive noise and safety hazards near airports.

State law authorizes ALUCs to coordinate planning at the state, regional and local levels; to prepare and adopt airport land use plans; and to review and make recommendations concerning specified plans, regulations and other actions of local agencies and airport operators. ALUCs review plans for proposed new airports or heliports. However, the law does not give ALUCs jurisidiction over airport operations or authorize ALUCs to zone property or apply other land use controls normally exercised by local public agencies. ALUCs do not have jurisdiction over existing incompatible uses.

Within Alameda County, ALUC jurisdiction relates to the following airports: Metropolitan Oakland International Airport (MOIA), including general aviation and air carrier facilities; the Alameda Naval Air Station (NAS); and four general aviation airports: Fremont Airport, Fremont Sky Sailing Airport, Hayward Air Terminal, and Livermore Municipal Airport. The Policy Plan includes a preliminary discussion of the proposed Fremont General Aviation Reliever Airport and includes Heliport Guidelines.

The seven-member Alameda County Airport Land Use Commission (ALUC) was created in 1971. After approving interim plans in the early 1970s, ALUC adopted the Alameda County Airport Land Use Policy Plan in 1977. The Policy Plan was amended in 1979. The 1979 Plan was in use until the present Plan was adopted in 1986.

Of the seven ALUC commissioners, two are appointed by the airport managers, two by the County Mayors' Conference, and two by the County Board of Supervisors. The seventh commissioner is appointed by the other six to represent the general public. The term of appointments is four years. The County Planning Director serves as Administrative Officer to the ALUC. County Planning staff provides technical assistance. In accordance with adopted bylaws, public meetings are held on the second Wednesday of each month.

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1 The State ALUC law is contained in Public Utilities Code Article 3.5, State Aeronautics Act, Section 21661.5, Section 21670 et seq., and Government Code Section 65302.3 et seq. (see Appendix A).

B. THE POLICY PLAN

The purpose of the Policy Plan is to provide guidelines for ALUC review of proposed local public agency actions to determine if the actions are compatible with current and anticipated airport operations. The review applies only to proposed new development. However, the criteria on which Plan policies are based can help to evaluate the compatibility of airport operations with existing development and help to determine if mitigations are appropriate and feasible.

The Policy Plan is divided into the following chapters:

I. Introduction

II. Policies and Standards (general policies applicable to all airports)

III. Airport Land Use Plans (adopted ALUC planning boundaries and modified policies applicable to each specific airport)

IV. Heliport Guidelines

V. Appendices

Noise and Safety Policies

ALUC is concerned with airport activities which may adversely affect adjacent areas, and near-airport land use which may interfere with airport operations. The most significant airport-related concerns are:

- Prevention of obstacles to air navigation (tall objects; objects in clear zones).
- Exposure of persons on the ground to accident potential.
- Prevention of hazards to flight such as smoke, glare, electrical interference and concentrations of birds.
- Noise exposure, especially from jet aircraft.

For each concern (height, safety, hazards, and noise), the ALUC has adopted land use compatibility policies in Chapter II of the Policy Plan. These are generalized to apply to all airports in the County. In Chapter III of the Plan, these policies may be modified to reflect conditions at individual airports. After a local public agency refers a proposed action to the ALUC, the ALUC determines whether the proposal is consistent with adopted ALUC policies.

Planning Boundaries

For each airport, the ALUC has adopted planning boundaries related to project referral, height, safety, hazard prevention, and noise impact. General standards for the planning boundaries are included in Chapter II, while specific zones are shown on the individual airport maps

included in Chapter III. These planning boundaries define the areas subject to the respective ALUC policies.

Projects

A "project" is any proposed action under consideration by a local public agency or airport operator which is subject to ALUC review. Under existing State law, such actions include amendment of a general or specific plan or adoption of a zoning ordinance or building regulation by a local public agency which affects land use within an ALUC planning boundary. It includes plans for proposed new airports or heliports and modification of an airport master plan by the airport owner. As specified by State law, under certain circumstances a project may include other proposed local agency actions, regulations or permits (see Policy #26.1, page 17).

Project Referral

State ALUC law requires local public agencies to refer proposed projects to the ALUC for determination of consistency with the ALUC plan, prior to final action by the governing body of the local public agency.

The ALUC has adopted a General Referral Area in the vicinity of each airport (Chapter III). The General Referral Area covers a larger area than any of the impact zones (except for the Height Referral Area). All local public agency actions which are subject to ALUC review and which would affect land use within the General Referral Area must be referred to the ALUC by the public agency.

Where an adopted ALUC Height Referral Area extends beyond the General Referral Area, only those local agency actions which are subject to ALUC review and which would affect the height of uses within the identified airspace must be referred to the ALUC.

Determination of Plan Consistency

ALUC staff will review all proposed actions referred by local public agencies. As specified in Chapter II, in certain simple cases the ALUC Administrative Officer may make the Determination of Plan Consistency. In more complicated cases, ALUC staff will submit the proposed project to the Commission for Determination of Plan Consistency. Under State law, the ALUC must respond to a completed application within 60 days.

At a public hearing, the ALUC will consider public testimony and make a finding of project consistency or inconsistency with the policies in the ALUC Policy Plan. Such a finding may be conditional. The local public agency will be notified of the ALUC action.

In the event that ALUC finds a proposal to be inconsistent with the ALUC Plan, the local public agency may amend the proposal to be consistent or

it may override the ALUC, with a two-thirds vote of its governing body, if it makes specific findings that the proposed project is consistent with the purposes of the State ALUC law. (see Policy #29, pages 18-19).

Plan Time Frame

By State law, the Plan is "long range"--approximately twenty years. This time frame is a general guideline, as the Plan in fact contains various components of differing lifespans. Among the components hardest to project are future noise levels near an airport because of uncertainties as to the number of flights, future aircraft noise levels,[1] types of aircraft using an airport, and so forth. Thus, periodic amendment of the Plan can be expected in order to reflect changes in projected airport impacts, revisions in state and federal law and regulations, and new experience gained concerning the suitability of guidelines set by the ALUC.

Relationship to Other Agencies

The Policy Plan complements the planning responsibilities of the cities, County, and other affected agencies. It is the responsibility of the ALUC to identify new uses compatible with accepted levels of airport operations and to set uniform policies and standards to prohibit development of incompatible uses. It is the responsibility of the cities and County through planning and zoning powers to specify which compatible uses are appropriate. These land use designations will naturally be based on consideration of a wider range of factors than just compatibility with airport operations.

Consistency with Local General Plans and Airport Master Plans

The State ALUC law requires local general plans and applicable specific plans to be consistent with the ALUC plan.[2] In the event that the ALUC plan is amended, the law requires the local public agency to amend its general or specific plan within 180 days to be consistent with the revised ALUC plan. In the event that the local public agency does not concur with a provision of the ALUC plan, the public agency may override the ALUC under the same terms as apply for overrides of project referrals (see Policy #29, page 19).

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1 The FAA is responsible for adopting aircraft noise emission standards. These are contained in FAR Part 36 for newly certificated aircraft and FAR Part 91 for existing aircraft.

2 Pursuant to State law, in 1983 the ALUC reviewed the general plans of the County and the Cities of Alameda, Fremont, Hayward, Livermore, Oakland, Pleasanton, and San Leandro. At that time the general plans of the County and each affected city except Fremont were found to be inconsistent with at least one ALUC policy. Local public agencies were notified of the specifics of the ALUC finding.

The ALUC Plan should also be consistent with airport goals, insofar as these goals conform to regional planning policies and take due account of environmental impacts. State law provides that, before modification of an airport master plan, the public agency owning the airport must submit the proposed change to the ALUC for a finding of consistency with the ALUC plan. The ALUC will follow the same procedures used for review of city or County actions. The public agency owning the airport may override the ALUC with a two-thirds vote of its governing body, if it makes specific findings that the proposed action is consistent with the purposes of the State ALUC law.

Limits to ALUC Jurisdiction

There are specific limits to ALUC jurisdiction. The Commission has no authority over airport operations, although the ALUC Plan must include assumptions about future activities at each airport. Once adopted, the ALUC Plan serves as a framework for reviewing significant proposals for further airport development.

Secondly, Commission jurisdiction and plan scope are confined to land use-related primary impacts on the area surrounding the airport. This definition excludes impacts affecting areas at a considerable distance from the origin or destination of a flight (for instance, noise from transit flights of aircraft). Air pollution is another impact which is of more regional scope and does not directly affect land use. The definition of relevant impacts also excludes "secondary" impacts, such as traffic or air pollution generated by vehicles of airport workers and patrons, which are not direct products of airport operations. These secondary impacts are more appropriately considered in the environmental impact report for the airport master plan and in regional planning studies.

Because the jurisdiction of the Commission is limited to new land uses, existing uses which are in conflict with or injured by existing or anticipated airport operations are not subject to the policies established by the ALUC. However, existing incompatible uses are the concern of the airport and of the city (or county) having jurisdiction over the affected area, and policies should be developed to handle this problem.

C. PLAN COORDINATION

The ALUC Policy Plan has been coordinated with the following plans:

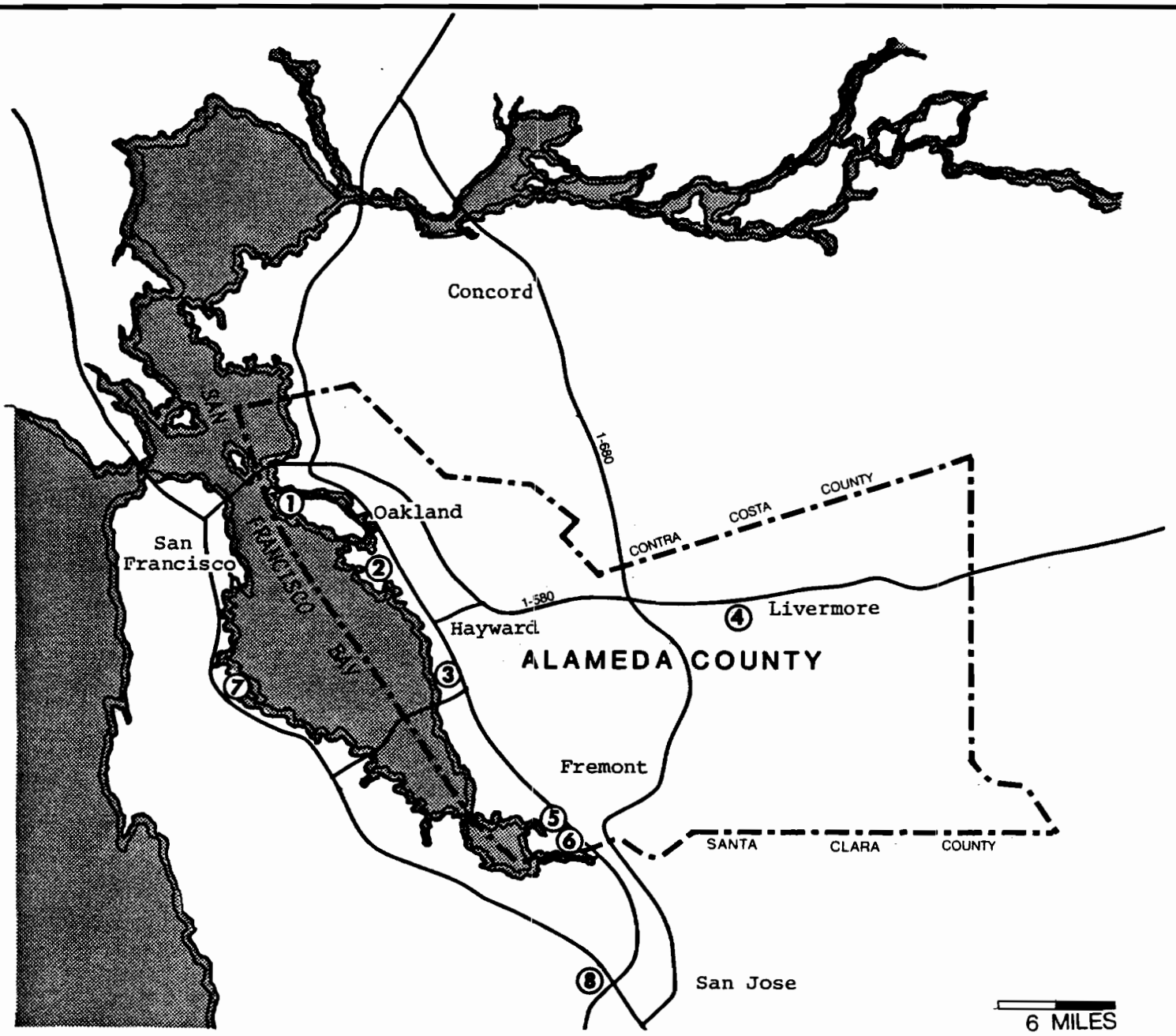
*Master Plans for the Metropolitan Oakland International Airport, Livermore Municipal Airport, Hayward Air Terminal, and NAS Alameda.
*Air Installation Compatible Use Zones Study, Alameda Naval Air Station, August, 1978 and Update, May, 1981.
*General plans for Alameda County and the Cities of Alameda, Hayward, Fremont, Livermore, Oakland, Pleasanton and San Leandro.

Of particular interest were the safety, noise, and land use and circulation elements.

*The Metropolitan Transportation Commission Regional Transportation Plan Aviation Element.

Also consulted were local and regional plans and studies from the Association of Bay Area Governments, Bay Area Air Pollution Control District, East Bay Regional Park District, Oakland Airport Transit Access Project, San Francisco Bay Conservation and Development Commission, and State Office of Noise Control. Also reviewed were the ALUC plans for other counties in California and the California Department of Transportation Division of Aeronautics' Airport Land Use Planning Handbook (July, 1983) (prepared by the Metropolitan Transportation Commission and Association of Bay Area Governments.) All are listed in the Bibliography.

MAP I
REGIONAL SETTING



1. Alameda Naval Air Station
2. Metropolitan Oakland International Airport
3. Hayward Air Terminal
4. Livermore Municipal Airport
5. Sky Sailing Airport
6. Fremont Airport
7. San Francisco International Airport
8. San Jose International Airport

II. POLICIES AND STANDARDS

This chapter includes standards used to determine ALUC planning boundaries, general ALUC land use policies that apply within those boundaries, and Plan implementation procedures. Specific planning boundaries and modified policies for each airport are included in Chapter III.

A. ALUC SAFETY ZONES

Safety zones are established to restrict population density and structural development in order to limit harm to persons on the ground and aircraft occupants in the event of an accident.

Safety Zone Planning Boundaries

1. Safety zones are established at both ends of all runways. ALUC safety zones are not identical to FAA clear/approach zones. The latter include navigable airspace around a normal flight path, whereas ALUC safety zones include the somewhat larger area of high accident potential.[1]

1.1 The standard safety zone dimensions are:

General Aviation aircraft up to 12,500 lbs.:	.	single runway: 1500' wide
	.	dual runway: 750' wide from centerline of each runway plus the distance between runway centerlines
	.	3500' long, measured from end of runway
All jet aircraft and all aircraft over 12,500 lbs.:	.	single and dual runway width as defined above
	.	5300' long, measured from end of runway

1.2 Alignment of safety zones shall reflect flight tracks.

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1 Safety zone dimensions are based on the ALUC's review of background reports concerning accident potential near airports and the experience of other ALUCs, airport operators and government agencies on this subject. For a discussion of accident locations and safety zone configuration, one recommended source is the California Division of Aeronautics, Airport Land Use Planning Handbook (July, 1983), Chapter.IV.

1.3 At individual airports adjustments to zone dimensions may be required to reflect operating conditions (aircraft weight, engine type, flight track, navigational aids), frequency of flights, and degree to which lands within the recommended zone are already developed with particular uses.

Safety Zone Policies

2. Within the inner portion of the safety zone, extending up to 1/4 mile (1320 feet) from the end of the runway, the following are defined as incompatible land uses:

2.1 Permanent structures or objects projecting above the level of the primary surface of the runway.

2.2 Any use which on a regular basis would result in a density which would exceed 25 persons per net acre[1] at a time.

2.3 Recommended uses include agriculture and open space. Non-permanent structures or objects, such as parking areas for aircraft or automobiles, are permitted where object height is consistent with height restrictions contained in FAR Part 77.

3. Within the outer portion of the safety zone, extending beyond 1/4 mile (1320 feet) from the end of the runway, new uses shall be non-residential, low density.

3.1 Suggested uses are agriculture, open space, non-intensive recreation, warehousing, non-intensive industry, and equipment storage.

3.2 Uses are defined as incompatible if they would yield a density of more than 25 persons per net acre[1] over an 8-hour period (long-term) or a density of more than 50 persons per net acre for more than 2 hours per day (short-term). In particular, new shopping centers, restaurants, schools, hospitals and arenas are not compatible.

3.3 Within the overall density limits identified in Policy 3.2, clustering of uses within a parcel may be compatible where such clustering provides emergency landing areas, avoids concentration of development along the extended runway centerline, and does not pose a hazard to air navigation.

4. Flammable liquids, as defined in the Uniform Fire Code, shall be stored underground (with appropriate safeguard).

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[1]Net acre excludes public and private streets and San Francisco Bay waters.

5. To be consistent with the ALUC plan, proposed new land uses must be compatible with Policies #2 - #4 above. To be consistent with the ALUC plan, an existing local general plan or zoning ordinance shall not permit the incompatible uses identified in Polices #2 - #4.

6. Recommendations Concerning Land Use In ALUC Safety Zones:

   In areas where existing uses result in a population density and/or character of development incompatible with the above policies, and where local governments find mitigation measures are not available to them, airport operations should be reviewed for possible actions to mitigate accident potential.

   It is recommended that local jurisdictions require dedication of a noise and avigation easement prior to development of properties at least within the ALUC safety zones. Such easements may "mitigate" airport noise impacts under State law and may help ensure that prospective property owners are aware of potential airport impacts. An example of such an easement is contained in Appendix E.

B. ALUC HEIGHT REFERRAL AREAS

The purpose of ALUC Height Referral Areas is to preserve unimpeded airspace required for safe air operations in the vicinity of the airport.

ALUC Height Referral Area Planning Boundaries

7. The ALUC Height Referral Area for each airport is identical to the FAA notification requirement for new construction or alteration (FAA Advisory Circular No. 70/7460-2G, November 30, 1977) (see Plan Appendix C). However, the FAA requirement refers to notification to FAA by the project sponsor of specific construction projects, whereas the ALUC Height Referral Area normally concerns referral to ALUC by the local public agency of proposed general plan amendments and rezonings.

   The referral area encompasses the following airspace (see Figure I):

   - For an airport runway more than 3,200 feet in length, a sloping surface identifies the airspace above one foot in height for each 100 feet (100:1) horizontally from the nearest point of the nearest runway, up to 20,000 feet;

   - For an airport runway no more than 3,200 feet in length, a sloping surface identifies the airspace above one foot in height for each 50 feet (50:1) horizontally from the nearest point of the nearest runway, within 10,000 feet of the runway.

- Anywhere in Alameda County, a contoured plane representing all airspace above 200 feet in height at its location.

- If the proposed project is a traverse way, the above standards apply after the project height is increased by: 17 feet for an Interstate Highway, 15 feet for other public roads, 10 feet for private roads (or the height of the tallest mobile objects that would normally traverse the road), 23 feet for a railroad and, for waterways or other throughfares not mentioned above, the height of the tallest mobile objects that would traverse the proposed route.

ALUC Height Policies

8. The ALUC adopts height restriction policies on new structures and vegetation within the height referral boundary. Compatible land use is defined consistent with standards and procedures set forth in FAR Part 77, including Subpart D (see Appendix C). Although findings contained in an FAA Aeronautical Study of a particular proposal are necessary and important background information for the Commission, the ALUC will review for Plan Consistency and may conduct an independent analysis and evaluation of proposals.

9. Proposed new land uses must be consistent with ALUC Policy #8. To be consistent with the ALUC Policy Plan, affected local general plans or zoning ordinances shall not permit uses inconsistent with FAR Part 77.

C. HAZARD PREVENTION ZONES

ALUC hazard prevention zones are established to prevent hazards to safe avigation such as concentrations of birds, electrical interference, glare, and smoke.

ALUC Hazard Prevention Zone Planning Boundary

10. The Hazard Prevention Zone corresponds to the General Referral Area for each airport (see Policy #26.2).

ALUC Hazard Prevention Zone Policies

11. Within a hazard prevention zone, the following are incompatible:

    11.1 Any use which would direct a steady light or flashing light of red, white, green, or amber colors associated with airport operations toward an aircraft engaged in an initial straight climb following take-off or toward an aircraft engaged in a straight final approach toward a landing at an airport, other than an FAA approved navigational signal light or visual approach slope indicator (VASI).

11.2 Any use which would cause sunlight to be reflected toward an aircraft engaged in an initial straight climb following take-off or toward an aircraft engaged in a straight final approach toward a landing at an airport.

11.3 Any use which would generate smoke or which would attract large concentrations of birds, or which may otherwise affect safe air navigation within this area.

11.4 Any use which would generate electrical interference that may be detrimental to the operation of aircraft and/or aircraft instrumentation.

12. Proposed new land uses shall be consistent with Policy #11. To be consistent with the ALUC Plan, affected local agency general plans or zoning ordinances shall not permit incompatible land uses identified in Policy #11. It is recommended that each affected jurisdiction adopt an airport hazard zoning ordinance (a model airport hazard zoning ordinance is contained in Appendix D).

D. NOISE IMPACT ZONES

Noise Impact Zone Planning Boundaries

13. The ALUC has adopted Noise Impact Zones as shown in maps for each airport in Chapter III.

Noise impact boundaries result from a weighing of several factors.

* The ALUC considers future noise levels: its policies help insure that for the timespan of the ALUC Plan new development will not be incompatible with noise from airport operations, according to the best available noise projections and the noise levels defining incompatibility (see Table I).

* ALUC policies are consistent with the California Airport Noise Standards and adopted airport master plans. The policies also coordinate with local plans that consider noise impact.

* The ALUC may recognize zone boundaries which do not correspond to a specific CNEL but which reflect noise variation expected over time, community sensitivity, land use factors, and other relevant variables.

In establishing and implementing land use policies based on CNEL contours, the ALUC assumes that the noise produced by operations at an airport is consistent with planned service level and that recognized noise levels reflect feasible abatement procedures. The

ALUC relies on the airport master plan and the noise and land use elements of community general plans to consider alternative noise impacts and abatement procedures.

Regulating new land uses on the basis of current or anticipated noise impacts should only be undertaken when an overriding public interest (the availability of public airport facilities and services) has been established.

Noise Impact Zone Policies

14. The Commission endorses the California Airport Noise Standards[1] as a means to control and reduce airport noise impact. Land use compatibility standards adopted in the Policy Plan shall be at least as restrictive as those in the noise standards.

15. The Commission recognizes the State Uniform Minimum Noise Insulation Performance Standards[2] for new residential units other than single-family detached dwelling units and the State general plan noise element requirements.[3]

    15.1 Because cities and counties are required by State law to incorporate in their building codes standards at least as restrictive as those set by the State, the ALUC recognizes the noise insulation standards of the local jurisdictions affected by the ALUC Plan.

    15.2 The Commission recognizes the State Office of Noise Control "Guidelines for the Preparation and Contents of Noise Elements of the General Plan."[4]

16. The Commission adopts Table I, "Land Use Compatibility for Airport Noise Environments," for use in evaluating projects within the noise impact zones.

17. Table II, "Adjustments to the Measured Community Noise Equivalent Level (CNEL) to Obtain Normalized CNEL," is adopted for use in determining need for normalization of the aircraft CNEL at a specific project site.

18. Sound insulation is required to insure a maximum interior 45 dB CNEL in new residential, education, and health-related uses in aircraft noise areas.

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1 California Administrative Code, Sections 5000-5032
2 California Health and Safety Code, Sections 17922.6 and 17922.7.
3 California Government Code, Section 65302(g).
4 Adopted February 1976.

18.1 The ALUC shall accept a certification from local building officials that under the local building construction ordinance insulation is adequate to meet the standards adopted in this ALUC Plan.

19. Each project in a location with a "conditionally acceptable" CNEL range for that use, as defined in Table I, will be considered consistent with the Plan if it is found that:

19.1 Project design provides for insulation adequate to reduce interior noise to a level acceptable for that use, as defined in the Plan.

19.2 The project conforms with height and safety policies.

19.3 The basic intent of the ALUC Plan in protecting public health, safety, and welfare is not violated.

20. It is recommended that local jurisdictions adopt procedures to ensure that prospective property owners in aircraft noise exposure areas above a current or anticipated 65+ db CNEL are informed of these noise levels and of any land use restrictions associated with high noise exposure.

20.1 To facilitate implementation of this policy, the ALUC will evaluate alternative means of notification and make recommendations based on this evaluation on a case-by-case basis.

21. It is recommended that all individual developments on property above a 65 CNEL contour be referred to the ALUC for evaluation on a case-by-case basis for land use compatibility and appropriate noise mitigation. (Under State law, individual developments that do not involve a general or specific plan amendment or rezoning can only be referred to ALUC under specific circumstances as described in Policy 26.1).

22. To be consistent with the ALUC Plan, proposed new uses must be compatible with Policies #13 - 19. To be consistent with the ALUC Plan, existing local general plans or zoning ordinances shall not permit the incompatible uses identified in Policies #13 - 19.

E. EXCEPTIONS TO ALUC LAND USE POLICIES

23. The ALUC will consider proposed exceptions to Commission policies on a case-by-case basis. The ALUC is guided by the following principles in determining a special exemption:

23.1 That any exemption authorized shall not constitute a grant of special privilege inconsistent with the limitations on other properties in the vicinity.

23.2 That because of special circumstances applicable to the subject property, such as its size, shape, topography, location or surroundings, the strict application of ALUC standards would deprive unreasonably the subject property of a use which will not, under the circumstances of the particular case, conflict with the Plan.

23.3 That any exception authorized shall substantially meet the intent and purpose of the adopted Plan and any necessary conditions shall be required to accomplish this purpose.

24. The following special policies apply to new development in areas which are already substantially developed with incompatible uses (existing structures are not within ALUC jurisdiction). The ALUC will consider proposed exceptions to Commission policies on a case-by-case basis. Proposals must be consistent with criteria listed in Policy 23 and must not create signficant airport safety or noise problems. Policy 24 does not apply to any use which is within a clear zone as defined by FAR Part 152.9.

24.1 **Minor Additions:** Minor additions to an existing non-conforming residential use, e.g., a bedroom or family room, is consistent with the ALUC Plan if such addition does not increase the number of housing units on the site. An addition or conversion which increases the number of housing units so that the population would exceed ALUC density limits is not consistent with the Plan. Minor additions to an existing non-conforming commercial or industrial use would be consistent with the ALUC Plan if such addition does not increase the employment density of the site or create a hazard to avigation.

24.2 **Replacement.** Replacement of a non-conforming use destroyed by fire or natural disaster is consistent with the Plan if the portion destroyed is valued at less than 50 percent of the market value of the improvements on the parcel as determined by the Assessor, or consistent with the local agency's zoning ordinance or general plan statement on this issue.

24.3 **Infill of Developed Areas.** "Infill" is the development of vacant parcels in areas that are already substantially developed with uses not ordinarily permitted by the Plan. Infill is consistent with the ALUC Plan where all the following conditions exist:

a. 80 percent of the parcels within 250 feet of the subject property are already developed.

b. The proposed development is a permitted use under existing zoning.

c. The proposed use is consistent with the prevailing use of the surrounding area.

d. The ALUC determines that the infill would not harm the public health, safety and welfare.

F. IMPLEMENTATION POLICIES

Relationship of the Airport Land Use Policy to Local Cities, the County, and Regional Planning.

25. ALUC policies will be coordinated with regional planning and through this will promote a balance between airport activities and the welfare of the surrounding Bay Area communities. ALUC will fulfill its obligation to review local general plans and revisions to airport master plans.

Project Referral and Review

26. State ALUC law requires local public agencies and airport operators to refer certain projects to the ALUC for determination of consistency with the ALUC plan, prior to final action by the governing body of the local public agency.

26.1 A project includes, but is not limited to, any of the following actions that affect land use within an adopted ALUC General Referral Area or Height Referral Area (affecting defined airspace only):

- General Plan Amendment
- Specific Plan Amendment
- Adoption of Zoning Ordinance/Rezoning
- Adoption of Building Regulation
- Revision of Airport Master Plan
- Approval of plans to construct a new airport/heliport

Where the ALUC has advised a local public agency that its general plan is not consistent with the ALUC Plan, and the local agency fails to either revise its general plan to be consistent or to override the ALUC, then actions subject to ALUC review would include any action, regulation or permit, including issuance of a land use or building permit, affecting land use within adopted ALUC referral areas.

State law also permits ALUC review of individual projects, even after a local jurisdiction overrides the ALUC's findings regarding the local general plan, if the local jurisdiction agrees to such a review. Jurisdictions which request ALUC review of individual projects should notify the Commission.

26.2 An adopted ALUC General Referral Area is shown for each airport in Chapter III. The General Referral Area encompasses an area at least as large as the adopted ALUC safety, noise and hazard prevention areas. General Referral Area boundaries are normally drawn along major roadways or other easily recognized borders.

26.3 A Determination of Plan Consistency is a resolution adopted by the ALUC, after reviewing the staff report and hearing from all interested parties, in which the ALUC finds whether a proposed action is consistent with Plan policies.

26.4 A project is normally referred by the local public agency responsible for designating land use. However, any interested party believing an action to be taken by a public agency to be inconsistent with the ALUC plan may bring this action to the attention of the ALUC.

27. ALUC staff will review all proposed actions referred by local public agencies. If, in the opinion of the ALUC Administrative Officer, the proposed action is (a) clearly consistent with the ALUC Plan, (b) would not have a significant impact on land use near an airport, and (c) is not an "exception" as provided under Policies 23 or 24, then the Administrative Officer may find the proposal consistent with the ALUC Plan and so notify the local agency. This finding will be transmitted to the ALUC for its information at its next meeting.

If, in the opinion of the ALUC Administrative Officer, the proposed action may not be consistent with the ALUC Plan or may have a significant impact on land use in the airport vicinity, or is an "exception" as provided under Policies 23 and 24, the action will be reviewed by ALUC staff and referred to the Commission. At a public hearing, the ALUC will consider public testimony and make a finding of project consistency or inconsistency with the ALUC Policy Plan. Such a finding may be conditional. The local public agency will be notified of the ALUC action.

ALUC Review of Local General Plans

28. State ALUC law requires local general plans and applicable specific plans to be consistent with the ALUC Plan. In the event that the ALUC Plan is amended, the law requires the local public agencies to amend their general or specific plans within 180 days to be consistent with the revised ALUC Plan.

28.1 Subsequent to each amendment or revision to the ALUC Plan, the ALUC will notify local agencies and indicate whether the affected local general plan or specific plans are consistent with the ALUC Plan.

28.2 In the event that a local public agency does not concur with a provision of the ALUC Plan, it may override the ALUC as provided below.

Local Public Agency Proposal Revision or Override

29. In the event that the ALUC finds a proposal to be inconsistent with the ALUC Plan, the governing body of the local public agency may amend the proposal to be consistent, or may vote by two-thirds majority to override the ALUC. Under State ALUC law, in order to override the ALUC the local public agency must make specific findings that the proposed project is consistent with the purposes of the State ALUC law found in Section 21670 of the Public Utilities Code (see Appendix A):

- Provide for the orderly expansion of airports;
- Minimize the public's exposure to excessive noise and safety hazards near airports, to the extent such areas are not already devoted to incompatible uses.

In accordance with State law, an override may result in the airport operator becoming immune from liability for damages to property or personal injury caused by or resulting directly or indirectly from the public agency's decision to override the ALUC.

Supporting Documentation and Time Frame

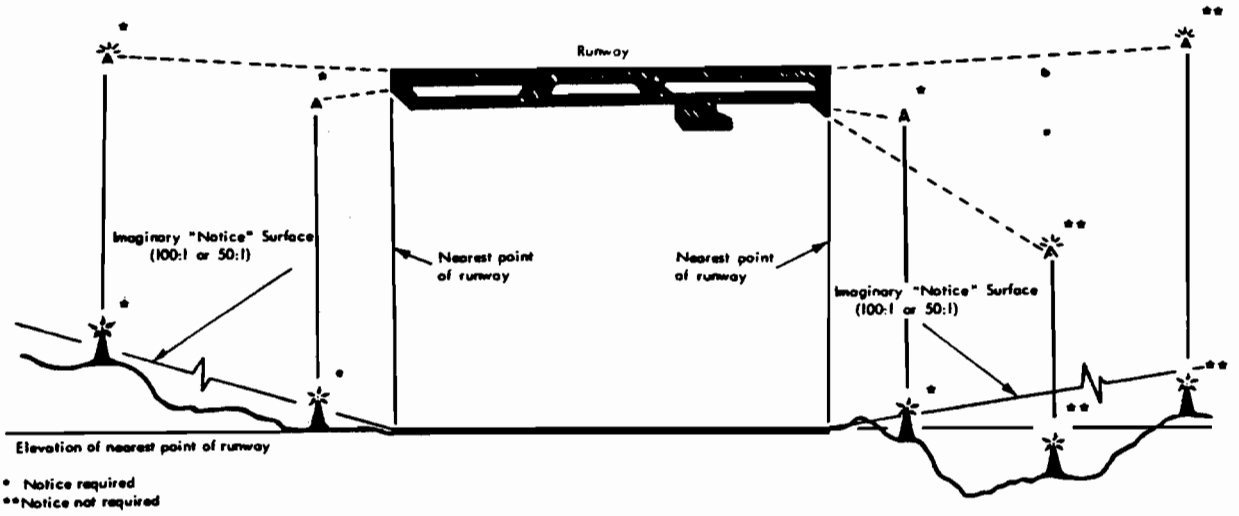
30. The agency referring a proposed project shall include a description of the action to be taken by the agency and a statement indicating whether the agency is requesting an ALUC Determination of Consistency or simply an informal project review, such as review of environmental documents including CEQA.

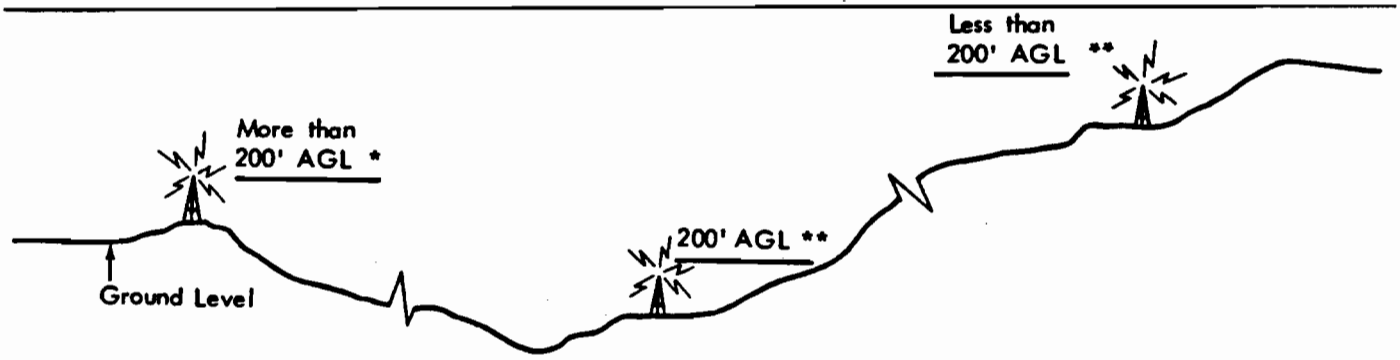
30.1 The referring agency should include a description of the site location, existing and proposed uses, and any other pertinent information. It is advisable for the referring agency to contact ALUC staff as early as possible to discuss ALUC data requirements relating to a particular proposal.

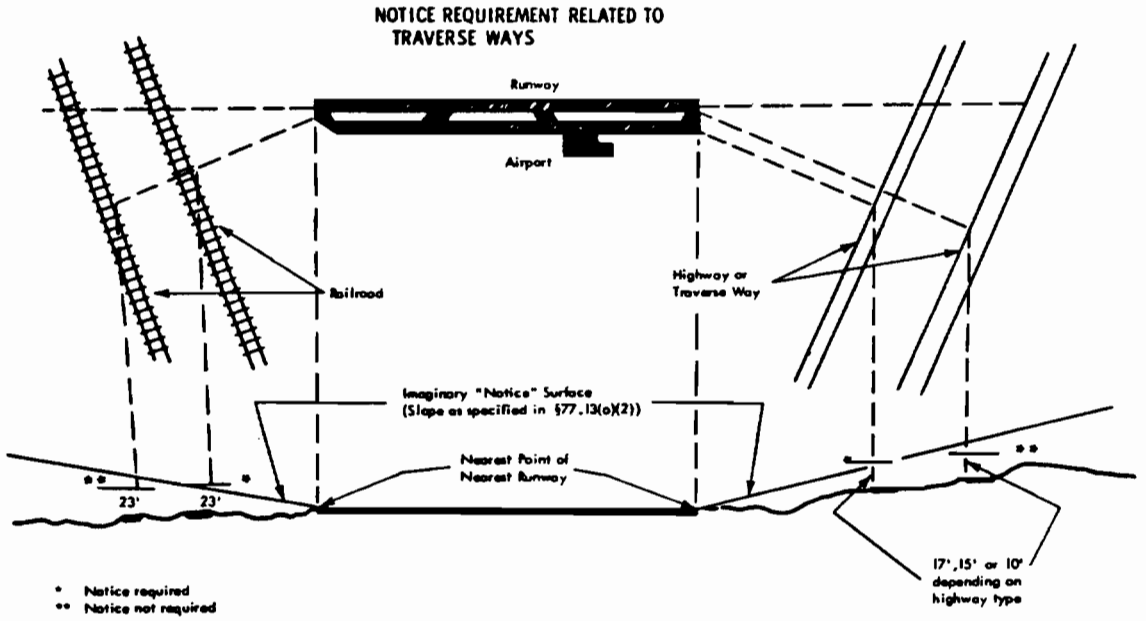
30.2 The request for ALUC review, with supporting documentation, must be received at the ALUC offices at least two weeks in advance of the ALUC meeting at which consideration is requested. For large or complicated proposals, additional time should be allowed to permit a thorough review by ALUC staff.

Under State ALUC law, the ALUC must make a Determination of Plan Consistency within 60 days of project referral. If the Commission fails to make the determination within that period, the proposed action shall be deemed consistent with the ALUC plan.

FIGURE I
FAA NOTICE REQUIREMENTS RELATED TO AIRPORTS

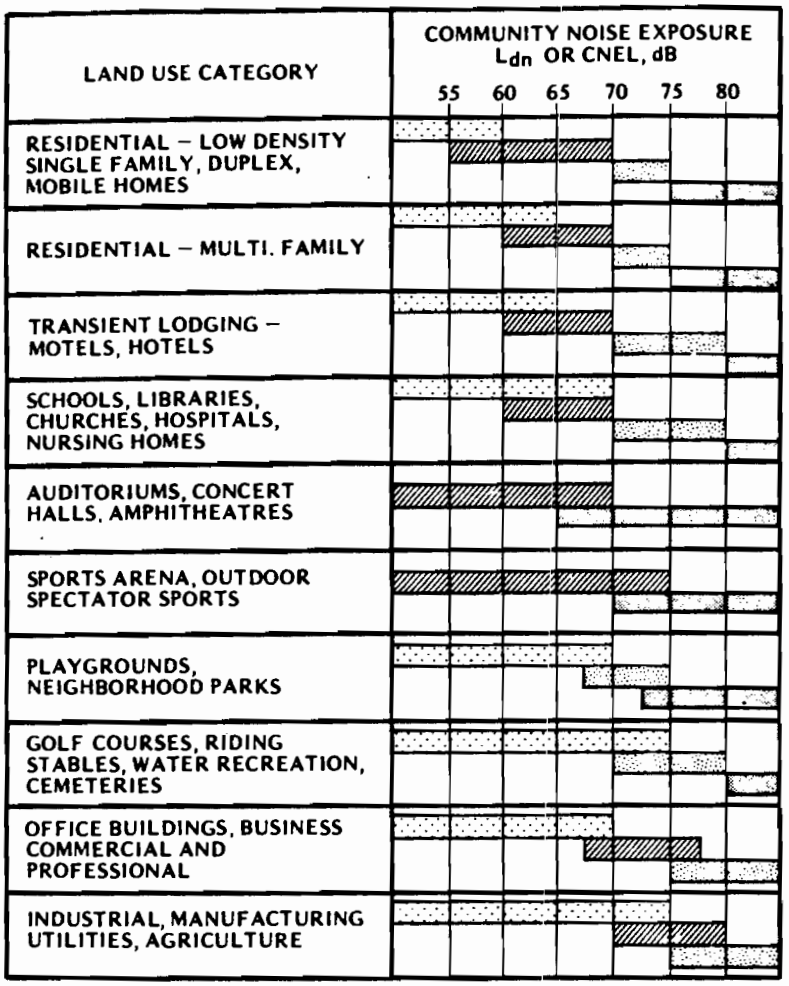






Source: Federal Aviation Regulations, Part 77

TABLE I
LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS



INTERPRETATION

NORMALLY ACCEPTABLE

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

CONDITIONALLY ACCEPTABLE

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

NORMALLY UNACCEPTABLE

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

CLEARLY UNACCEPTABLE

New construction or development should generally not be undertaken.

CONSIDERATIONS IN DETERMINATION OF NOISE-COMPATIBLE LAND USE

A. NORMALIZED NOISE EXPOSURE INFORMATION DESIRED

Where sufficient data exists, evaluate land use suitability with respect to a "normalized" value of CNEL or L_{dn}. Normalized values are obtained by adding or subtracting the constants described in Table 1 to the measured or calculated value of CNEL or L_{dn}.

B. NOISE SOURCE CHARACTERISTICS

The land use-noise compatibility recommendations should be viewed in relation to the specific source of the noise. For example, aircraft and railroad noise is normally made up of higher single noise events than auto traffic but occurs less frequently. Therefore, different sources yielding the same composite noise exposure do not necessarily create the same noise environment. The State Aeronautics Act uses 65 dB CNEL as the criterion which airports must eventually meet to protect existing residential communities from unacceptable exposure to aircraft noise. In order to facilitate the purposes of the Act, one of which is to encourage land uses compatible with the 65 dB CNEL criterion wherever possible, and in order to facilitate the ability of airports to comply with the Act, residential uses located in Community Noise Exposure Areas greater than 65 dB should be discouraged and considered located within normally unacceptable areas.

C. SUITABLE INTERIOR ENVIRONMENTS

One objective of locating residential units relative to a known noise source is to maintain a suitable interior noise environment at no greater than 45 dB CNEL of L_{dn}. This requirement, coupled with the measured or calculated noise reduction performance of the type of structure under consideration, should govern the minimum acceptable distance to a noise source.

D. ACCEPTABLE OUTDOOR ENVIRONMENTS

Another consideration, which in some communities is an overriding factor, is the desire for an acceptable outdoor noise environment. When this is the case, more restrictive standards for land use compatibility, typically below the maximum considered "normally acceptable" for that land use category, may be appropriate.

Source: California Office of Noise Control, "Guidelines for the Preparation and Content of Noise Elements of the General Plan," February 1976

TABLE II
CORRECTIONS TO BE ADDED TO THE MEASURED CNEL
TO OBTAIN NORMALIZED CNEL

Type of Correction	Description	Amount of Correction to be added to Measured CNEL in dB
Seasonal Correction	Summer (or year-round operation).	0
	Winter only (or windows always closed).	- 5
Correction for Outdoor Residual Noise Level	Quiet suburban or rural community (remote from large cities and from industrial activity and trucking).	+10
	Quiet suburban or rural community (not located near industrial activity).	+ 5
	Urban residential community (not immediately adjacent to heavily traveled roads and industrial areas).	0
	Noisy urban residential community (near relatively busy roads or industrial areas).	- 5
	Very noisy urban residential community.	-10
Correction for Previous Exposure and Community Attitudes	No prior experience with the intruding noise.	+ 5
	Community has had some previous exposure to intruding noise but little effort is being made to control the noise. This correction may also be applied in a situation where the community has not been exposed to the noise previously, but the people are aware that bona fide efforts are being made to control the noise.	0
	Community has had considerable previous exposure to the intruding noise and the noise maker's relations with the community are good.	- 5
	Community aware that operation causing noise is very necessary and it will not continue indefinitely. This correction can be applied for an operation of limited duration and under emergency circumstances.	-10
Pure Tone or Impulse	No pure tone or impulsive character.	0
	Pure tone or impulsive character present.	+ 5

Source: California Office of Noise Control, "Guidelines for the Preparation and Content of Noise Elements of the General Plan," February 1976

III. AIRPORT LAND USE PLANS

This chapter identifies specific areas near Alameda County airports to which ALUC noise, height, safety and hazard prevention policies apply. In this Plan, these areas are termed "planning boundaries." The extent of these areas and the applicable policies reflect current and projected conditions. For example, policies for noise/land use compatibility are applied by weighing forecast levels of aircraft noise along with current noise levels at a site.

By considering current and future conditions, the Plan ensures that for the foreseeable future any new development will be compatible with projected airport operations. This is a critical task: development today of airport-sensitive land uses can become a future constraint on airport operations. On the other hand, anticipation of future airport impacts can constrain near-airport development. For this reason, the ALUC Policy Plan emphasizes "legitimate" airport operations--current and future--as defined in airport master plans and environmental impact reports, and in conformance with local, state and federal law. This is consistent with the State ALUC law requirement that the ALUC plan "reflects the anticipated growth of the airport during at least the next 20 years."[1]

Revisions to planning boundaries and policies will be made as necessary. Changes to state and federal laws and regulations relating to noise, height, or safety policies may call for updating affected ALUC policies. Changes in airport operations affecting near-airport areas could provide reasons to modify planning boundaries.

Since ALUC policies are applicable only to new development, the ALUC Plan will not eliminate all problems of airport/land use compatibility. The Commission has no jurisdiction over airport operations, although it may make recommendations to alleviate existing problems or avoid anticipated conflicts, and the ALUC does have the responsiblity to review proposed modifications to airport master plans.[2] Another major check on Commission power stems from the ability of the public agency considering a proposed project to override an adverse Commission decision.

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1 California Public Utilities Code, Section 21675

2 Proposed modifications to the airport master plan must be submitted for ALUC review (California Public Utilities Code, Section 21676).

A. METROPOLITAN OAKLAND INTERNATIONAL AIRPORT (MOIA)

ALUC General Referral Area

All proposed projects which are subject to ALUC review and would affect property within a General Referral Area must be referred to the ALUC for a Determination of Plan Consistency (see Policy 26). In the vicinity of MOIA, the agencies responsible for land use are the Port of Oakland and the Cities of Alameda, Oakland and San Leandro. Portions of the City of Hayward and the unincorporated community of San Lorenzo are included.

Due to the proximity of MOIA and Hayward Air Terminal, Map II shows a combined ALUC General Referral Area. Referral area boundaries follow convenient urban features such as highways, so as to include major land uses, access routes, and noise and safety impact areas near the airport.

ALUC Noise Impact Zones

Noise impact zones for Oakland North and South Airports are shown in Maps III[1], IV[2] and V[3], adopted by the ALUC.

The ALUC does not intend that only noise monitoring conducted by the Port of Oakland be used to validate the location of the 65 CNEL line of demarcation. Rather, these data shall be among the information used to evaluate the location of the line. Validation will be conducted yearly.

The following airport-specific ALUC noise policies apply to MOIA:

(a) For Table II, Chapter II, "Corrections to be Added to the Measured CNEL to Obtain Normalized CNEL", the normalization factor for Bay Farm Island is zero (0).

(b) For new development within 500 feet north of the 65 CNEL Line of Demarcation on Bay Farm Island, insulation shall meet the standards established in this Plan, based on an assumed exterior 65 CNEL.

(c) New residential development shall be allowed between the 65-70 CNEL Line of Demarcation on Bay Farm Island if the property is subject to a noise easement and if insulation standards defined in this Plan for 70 CNEL exterior noise are met.

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1 Source: North Airport Master Development Plan, Draft Supplement to the MOIA Master Plan FEIR, April 1982, "Year 2000 Case 65 CNEL Contour"

2 Source: City of Alameda Noise Element, 1976, p. 25
Source for 65 db line: Line of Demarcation, Settlement Agreement between the Port of Oakland, City of Alameda, Harbor Bay Isle Associates, and Reclamation District 2105, July, 1976.

3 Source: MOIA, Master Plan Draft EIR, May 1977, p. D-32

(d) Depending on the findings of the ALUC study of notification, for new development within 500 feet north of the 65 CNEL Line of Demarcation on Bay Farm Island, it is recommended that the City of Alameda adopt procedures to ensure that prospective property owners are informed of the current and anticipated airport noise impact, as recognized in this Plan.

(e) It is recommended that all individual developments on Bay Farm Island above a 70 CNEL, where noise easement and insulation standards of this Plan are met, be referred to the ALUC for evaluation on a case-by-case basis for land use compatibility and noise mitigation. (Under State law, referral of individual developments where a general or specific plan amendment or rezoning is not involved may only be referred to ALUC under special circumstances -- see Policy #26.1).

Height Referral Area

The ALUC Height Referral Area for MOIA is shown in Map VI. Within this area, the height restrictions contained in ALUC Policy #8 apply. These restrictions are in accord with FAR Part 77 (Appendix C).

The ALUC Height Referral Area for MOIA includes a larger territory than the ALUC General Referral Area. If a project site is within the Height Referral Area but not within the General Referral Area, only a project that would permit structures to protrude into the Height Referral Area must be referred to ALUC.

ALUC Safety Zones

Maps VII and VIII depict the safety zone boundaries for Oakland North Airport Runways 27R/9L, 27L/9R and 15/33. Since approaches and departures for Oakland South Airport Runway 29/11 are over water, safety zones are not applied here.

Background Information: MOIA

MOIA combines general aviation, commercial airline, and aircraft maintenance facilities on a 2,580 acre site (see Figure II, Airport Layout Plan). The airport is located six miles south of central Oakland and is within the Oakland City Limits. The airport borders the City of Alameda on the northwest and the City of San Leandro on the southeast.

1. South Airport

The Bay Area is served by three commercial airports: Oakland (at the South Airport), San Francisco, and San Jose. A 1985 survey found that commercial air passengers at MOIA were approximately 12% of the Bay Area total (with about 75% at San Francisco Airport and

13% at San Jose.) However, MOIA accounted for 26% of the increase in Bay Area passengers between 1980-1985.[1]

Between 1980 and 1985, the number of weekly airline departures at MOIA increased from 360 to 630. As a result, the airport now provides more convenient flights and is used to a greater extent by passengers within its primary service area. MOIA currently serves 51% of the air passengers from Alameda and Contra Costa counties--up from 39% in 1980. At present, about 30% of MOIA users travel within the "California Corridor."[2] In 1985, Terminal II was opened to serve the California Corridor commuter traffic.

South Airport facilities are also used for commercial airline training and for those general aviation aircraft prohibited from use of North Field.

Forecasts vary as to the future regional role and air traffic volume at South Airport. The capacity of the single 10,000 foot runway (29/11) is at least 13 million annual passengers (MAP). In the early 1970s, traffic volume was forecast to expand greatly from 2 MAP in 1970 to 24 MAP in 1985[3]. Actual volume reached only 2.4 MAP in 1980, then nearly doubled to 4.2 MAP by 1985.

This pattern is consistent with regional and national experience for the period, as air traffic has been affected by deregulation and shifts in economic conditions, especially fuel costs. The Regional Airport Planning Commission (RAPC) issued new airport forecasts in 1982 which allocated a more realistic share of passenger growth to Oakland Airport.[4] Based on this information, airport planning at MOIA is predicated on the following air passenger forecasts:

6 MAP:	1994
8 MAP:	1999
10 MAP:	2003

The scale and timing of growth are significant for surface traffic, noise, safety, air quality, and other aspects of airport use. For example, slower expansion of commercial and other jet activity may

---

1 Metropolitan Transportation Commission, 1985 Air Passenger Survey, San Francisco Bay Area, pp. 14, 16.

2 The "California Corridor" includes all areas in the State, although most traffic is between the Bay Area and Southern California.

3 Association of Bay Area Governments, Regional Airport Systems Study, Final Plan, p. 1.1.

4 MTC Regional Airport Planning Committee, "Revised Aviation Forecasts for the San Francisco Bay Area," August 20, 1982.

allow incorporation of better sound attenuation technology in this growth. Comparing Oakland Airport's regional role, location and capacity with San Jose and San Francisco, MTC contends that MOIA offers the best opportunity for major increases in runway capacity for airline operations.[1] According to MTC, as the San Francisco Airport approaches capacity, airline services should divert to Oakland and San Jose. MTC argues that the convenient location of MOIA for the East Bay population[2] and improved public transit will encourage this expansion.

2. North Field

Opened in 1927, North Field is a full service general aviation facility which accommodates business and personal flying as well as flight instruction activities. Commercial aircraft maintenance facilities are also located here. North Field is equipped for instrument landing and has two main parallel runways (27R/9L and 27L/9R) and a crosswind runway (15/33) for light aircraft.

Figure III shows the North Airport VFR aircraft noise abatement traffic patterns.

North Field activity normally includes light single and twin engine aircraft; however, a signficant portion of Alameda County business and jet aircraft use North Field as well. In 1984, 38 turbine engine aircraft were based at North Field, or 8% of total based aircraft. In addition, Runway 27R is equipped with one of the few Instrument Landing Systems (ILS) dedicated solely to general aviation activity, and is widely used by Bay Area aircraft, especially for training.

Total flight operations at North Field increased from 400,000 in 1980 to about 500,000 in 1985 and are projected to increase to 600,000 by the year 2000. The Port predicts that available capacity will accommodate demand through the year 2000.[3]

Resolution No. 24450 (1978) by the Board of Port Commissioners, which manages the Airport, prohibits take-offs from 27R/L and landings on 9R/L of all turbojets and turbofans, turboprops over 12,500 pounds, and all four engine reciprocating engine aircraft under most conditions. However, North Field would be used for these aircraft whenever major repairs are being made to South Airport Runway 29/11 or during inclement weather.

---

1 MTC, Regional Airport Plan Update Program, Phase I, p. 124.

2 Of the total Bay Area airline passengers, only half are residents, however; visitors tend to be located in San Francisco.

3 Oakland North Airport Master Development Plan, July, 1984.

3. Land Use On and Near the Airport

Airport planning and development are carried on by the Port of Oakland.[1] Of the total airport area, over 22% (650 acres, 500+ at the South Airport) is undeveloped. The location and type of any expansion of airport facilities, industry, or related activities would have repercussions for the surrounding areas. The greatest impact would likely be in Alameda (on Bay Farm Island), although areas in San Leandro and Oakland (for instance, near San Leandro Bay) could also be affected. Figure IV shows generalized land uses surrounding MOIA.

4. Safety Zones Near MOIA

The areas most subject to crash hazards are located near each runway end, within 1/2 to 1 mile depending on the type of aircraft operations. Since approach and departure for South Field Runway 29/11 are over water, potential development near the North Field 27/9 runways and Runway 33/15 are of most concern to ALUC.

The safety zones for Oakland North Field are shown in Maps VII and VIII. Zone dimensions follow the ALUC standards found in Chapter II, except that an additional curved safety zone for Runway 27R follows the departure flight track over the Alameda Municipal Golf Course on Bay Farm Island.

ALUC safety zone dimensions are the same as those adopted by the City of Alameda in the Airport Safety Study for its Safety Element.

ALUC Policies for new land uses within the first quarter mile from the end of the runway emphasize maintenance of clear space; beyond this distance new uses must be low density, limited building coverage, and non-residential (see ALUC Policies #2 and #3).

Analysis of Land Use and Development Policies for the Safety Zones

ALUC safety zones for Runway 33/15 are over Airport property and San Leandro Bay. Given this location, it is unlikely that questions of development will arise; however, ALUC policies apply to all areas within its jurisdiction.

Within safety zones in Alameda under departure tracks from Runways 27R/L, most property is developed, including a substantial residential area. ALUC Policies #2 and #3 prohibit new housing in airport safety zones (some exceptions are allowed under Policy #24).

---

1 The Oakland City Charter establishes the Port as a relatively autonomous department (Article VI, Section 600 et. seq.).

The Alameda Safety Element[1] allows residential development within the outer safety zone if (a) all aircraft weighing more than 12,500 lbs. are prohibited from using a straight-out take-off from Runways 27R/L, (b) there are no other feasible locations for residential development and (c) population densities do not exceed 25 persons per acre. Under these conditions, residential use is "discouraged."

Extensive moderate-density residential development in zones under the straight-out take-off flight tracks from Runways 27R/L is a less-than-optimal situation according to both ALUC and City of Alameda policies. Straight-out departures from Runway 27R continue, despite efforts to reduce the number of such flights.[2] Based on these factors, ALUC safety policies that prohibit residences must hold for new development in the safety zones.

The risk to existing residents is reduced by the infrequency of heavy aircraft flights using the straight-out tracks. Thus, relocation of existing homes has little justification given current North Field operating conditions. However, existing development within the safety zones in Alameda is a constraint on operations from Runways 27R/L due to the risk entailed in expansion of straight-out flights, particularly by aircraft over 12,500 lbs.

Existing land use in Oakland and San Leandro within safety zones under the approaches to Runways 27R/L is generally compatible:

	USE	ACREAGE	JURISDICTION
Inner 1/4 mile	Airport	78	Port of Oakland
Outer zone	Golf Course	145	Oakland
	Industrial	81	San Leandro, Oakland

---

1 City of Alameda, Airport Safety Study, June, 1976, pp. 48-49.

2 The City of Alameda Airport Safety Study estimates that these flights are less than one percent of IFR departures from Runways 27L and 27R. The Port of Oakland states that a flight track measurement study conducted at North Airport in mid-1982 indicated that 5% of all 27R itinerant departures used straight-out paths over Bay Farm Island (Runway 27L is used almost exclusively for student training touch and go operations in a closed traffic pattern south of the runway). The same Port study concluded that an Airport campaign to encourage pilots to follow noise abatement flight tracks has been very successful, except during IFR weather conditions. General Aviation straight-out departures from North Airport under IFR conditions cannot be directly curtailed by the Port. The FAA air traffic control at Oakland Tower assigns departure paths in low visibility conditions. The FAA has refused the request of Airport management to establish a curfew on all IFR low altitude departures from North Field during the 10 p.m. to 7 a.m. period.

5. Noise Impact Zones: MOIA

The Noise Impact Zone for Oakland North Field is shown in Map III.

The South Airport Noise Impact Zone is shown in Maps IV and V. In Map IV, the 1976 "Demarcation Line" or "Settlement Agreement Line" is shown in place of the 65 CNEL line for clarity, since both lines occupy the approximate same location.

"Acceptable tolerance" for CNEL Measures is ±1.5-3.0 dB; forecast accuracy relies on valid technical assumptions. For example, CNEL computations do not generally include fixed point noise sources.

Current Noise Levels

- CNEL's on Bay Farm Island (BFI) range from slightly below 60 to 76 dB.[1] This is true whether San Francisco overflights are included or only aircraft noise from Oakland is considered.
- BFI lies above the 60 dB CNEL from San Francisco Airport,[2] which adds approximately 1.2 dB to a 65 CNEL from MOIA.
- Most of the developed, residential area of BFI is exposed to noise between 60-70 dB CNEL.
- In 1976, 140 acres of vacant residentially-zoned land on BFI were above the "current 65 CNEL" recognized by the City Noise Element.[3] This 65 CNEL reflects only MOIA departures and assumes no jet operations on North Field. It is generally equivalent to the "line of demarcation" recognized in the Settlement Agreement.

Future Noise Levels

MTC issued an air passenger forecast in 1982.[4] For the entire Bay Area, MTC forecasts 42-53 MAP by the year 2005. This compares to an earlier MTC forecast for up to 56 MAP in the Bay Area by the year 2000.

---

1 Wyle Labs, CNEL Contour Study for MOIA, pp.4-3 -- 4-5 (prepared for the City of Alameda Noise Element , 1976); and Bolt, Baranek and Newman, "1973-1974 CNEL contours (MOIA)", in Port of Oakland Draft Environmental Impact Report for the Airport Master Plan, May 1977.

2 Wyle Labs, "CNEL's: San Francisco International Airport," in Alameda Noise Element, pp. 37-39.

3 Noise Element, p. 91.

4 See MTC Regional Airport Planning Committee, "Revised Aviation Forecasts for the San Francisco Bay Area," August 20, 1982.

MTC contends that the growth rate at MOIA largely depends on when San Francisco International (SFO) reaches capacity. MTC projects that SFO will reach capacity at 31 MAP in 1992. At that date, MOIA is projected to have 6.0 MAP. MOIA passenger volume would then rapidly expand to 15 MAP in 2002. As noted earlier, the Port of Oakland projects 10 MAP by 2003. In 1985, about 24.7 MAP used SFO and 4.2 MAP used MOIA.

Estimates of future noise from MOIA operations vary depending on the assumed service level, number of operations, aircraft noise levels, fleet mix and airport operating policies. More data are available for South Airport departures than for approaches because the 1976 Wyle/Thompson study excluded approaches over San Leandro and Hayward:

- Assuming growth in air carrier activity to accommodate 5-7.5 MAP within the next ten years, aircraft compliance with FAR 35, and continuation of Port Resolution 23150(24450), only a minor increase over current noise levels would occur. The CNEL band might shift north 400-500 feet over portions of the Highlands on Bay Farm Island.

- Long-term noise forecasts cannot be made with confidence. While MTC has suggested up to 15 MAP at MOIA by the year 2002, as yet no analysis has been made of the noise associated with this service level. For land use planning purposes, it seems reasonable to assume that the area near the airport will continue to experience noise levels at least as high as at present. However, the composition of that noise environment may shift toward larger numbers of relatively quiet aircraft. If future data indicate that the noise levels are likely to increase significantly, ALUC impact zones should be redrawn.

Constraints on the level of MOIA operations:

Noise impact on existing residences -- The Port of Oakland is developing an FAR Part 150 Noise Compatibility and Land Use Program in order to reduce existing non-compatible land uses and to prevent the introduction of new non-compatible land uses around MOIA. This program is expected to be completed by December, 1986.

The Port needs to conduct a Part 150 Study for two reasons: First, in anticipation of future passenger growth at MOIA, the Part 150 Study will identify future noise problems and recommend various mitigation measures. Second, the January 1, 1986 change in the criterion noise level, under California State law, to 65 CNEL may place MOIA in non-compliance. Information generated by the Part 150 Study may be used to determine the necessary steps to bring the airport back into compliance. Most significantly, the Part 150 program will develop new combined noise contour maps for both North

and South Airports in order to better identify noise impacts and to help achieve progressive improvement in noise compatibility between MOIA and surrounding communities.

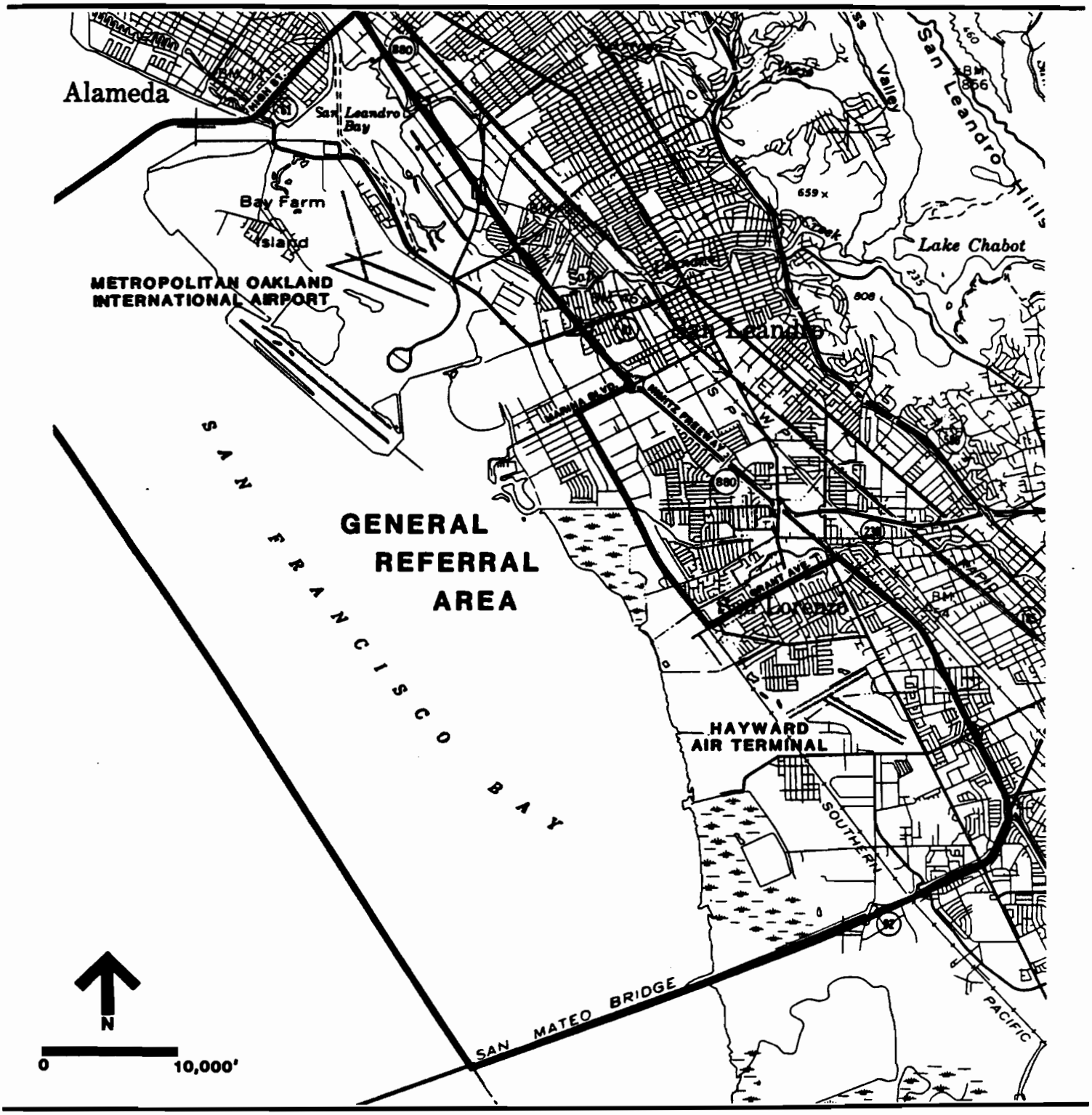
There are significant noise and safety constraints on the use of North Field by jets and heavy aircraft. Developed neighborhoods lie within the safety zones for straight-out departures from the North Field. Use of North Field by business jets, assuming current levels of aircraft noise emissions and traffic volumes at MOIA, would place virtually all residential areas of BFI above a 65 CNEL.

To prevent this noise problem at North Field, the Port has adopted Resolution 24450 (see page 28). The Port has also established Noise Abatement Traffic Patterns to alleviate single noise events from aircraft overflights of nearby residential areas. These published preferential flight tracks are posted at North Field and are widely circulated among local and itinerant pilots. Also, MOIA has instituted quarterly noise abatement public meetings to review noise data and complaints and to find solutions to aircraft operation procedures in order to reduce future noise events from impacting adjacent Airport environs.

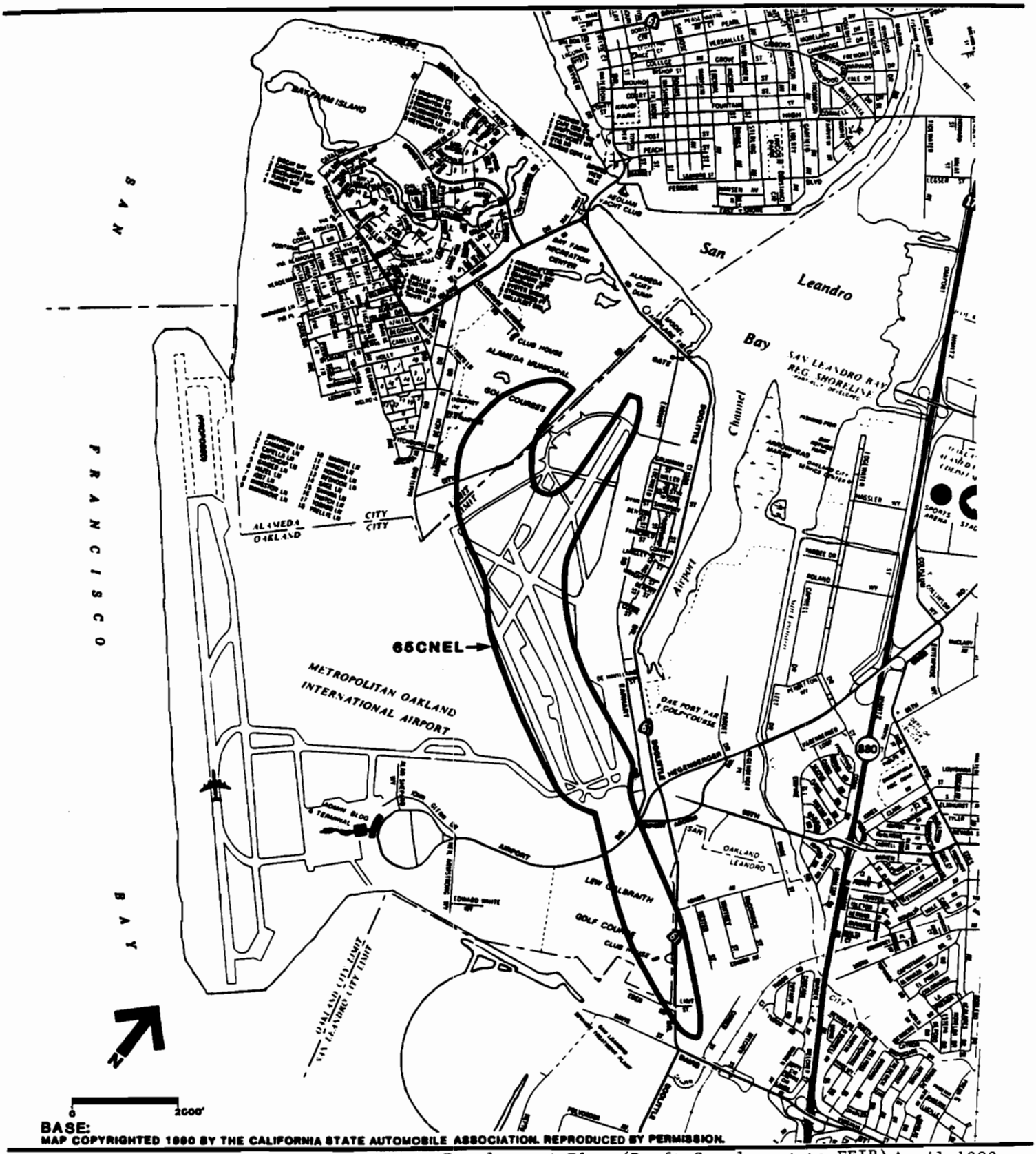
Access Capacity of the Road and Transit System — The entire transportation network which serves MOIA as well as the San Leandro Bay environs (Harbor Bay Isle, Bay Farm Island, San Leandro, Oakland Airport Business Park, etc.) is currently being evaluated with respect to alternative road access solutions to remedy predicted traffic congestion in the area. The study is being conducted under the auspices of the NIMDOTS planning group. When completed, the results of this study will be forwarded to the ALUC for consideration for inclusion into the next revised ALUC Plan.

Air Quality -- air quality impact of MOIA is being studied for the Airport Master Plan EIR.

MAP II
METROPOLITAN OAKLAND INTERNATIONAL AIRPORT AND HAYWARD AIR TERMINAL
ALUC GENERAL REFERRAL AREA



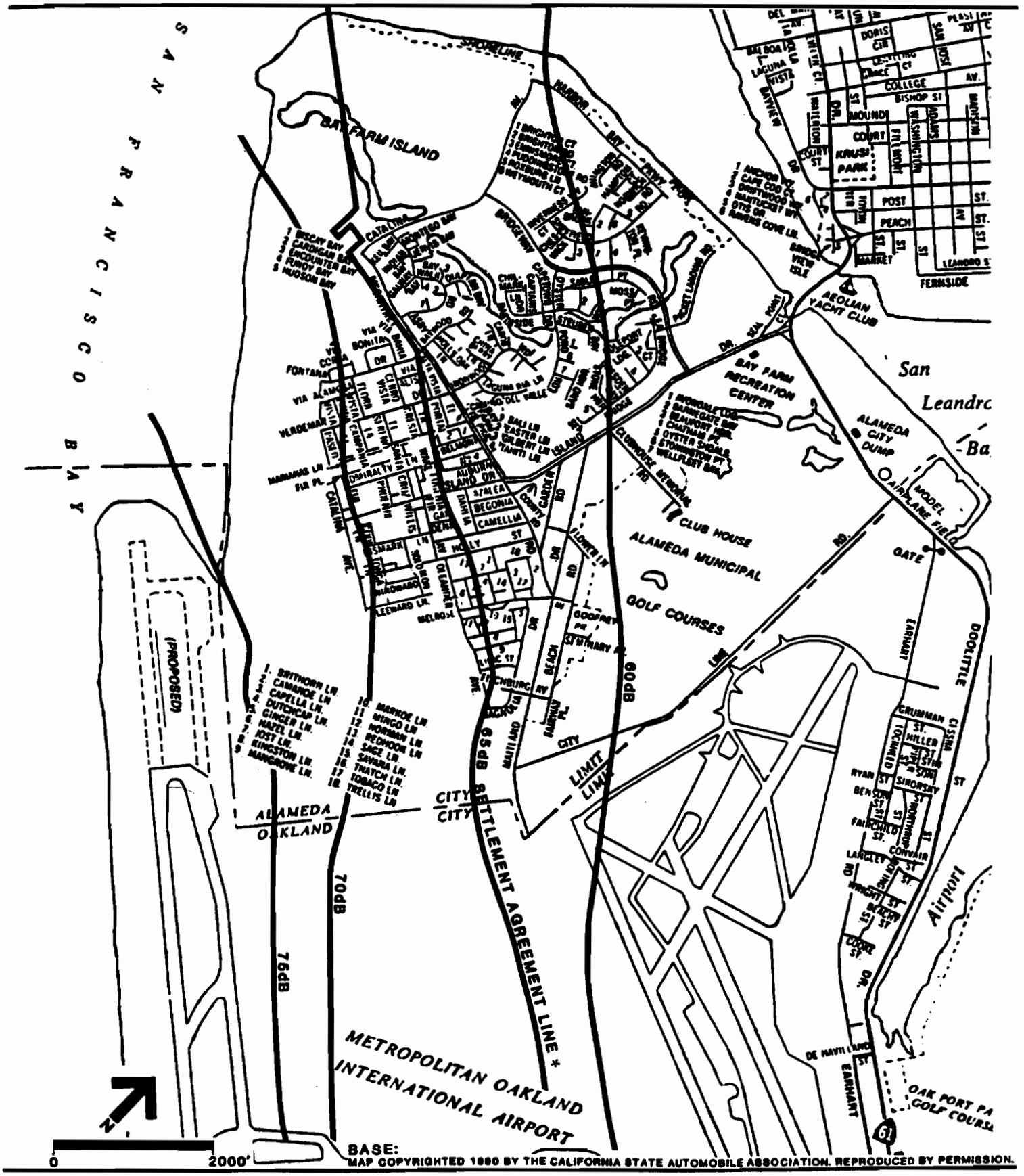
MAP III
OAKLAND NORTH AIRPORT ALUC NOISE ZONE



Source: Oakland North Airport Master Development Plan (Draft Supplement to FEIR) April 1982 (Year 2000 case)

MAP IV

OAKLAND SOUTH AIRPORT ALUC NOISE ZONE (BAY FARM ISLAND)

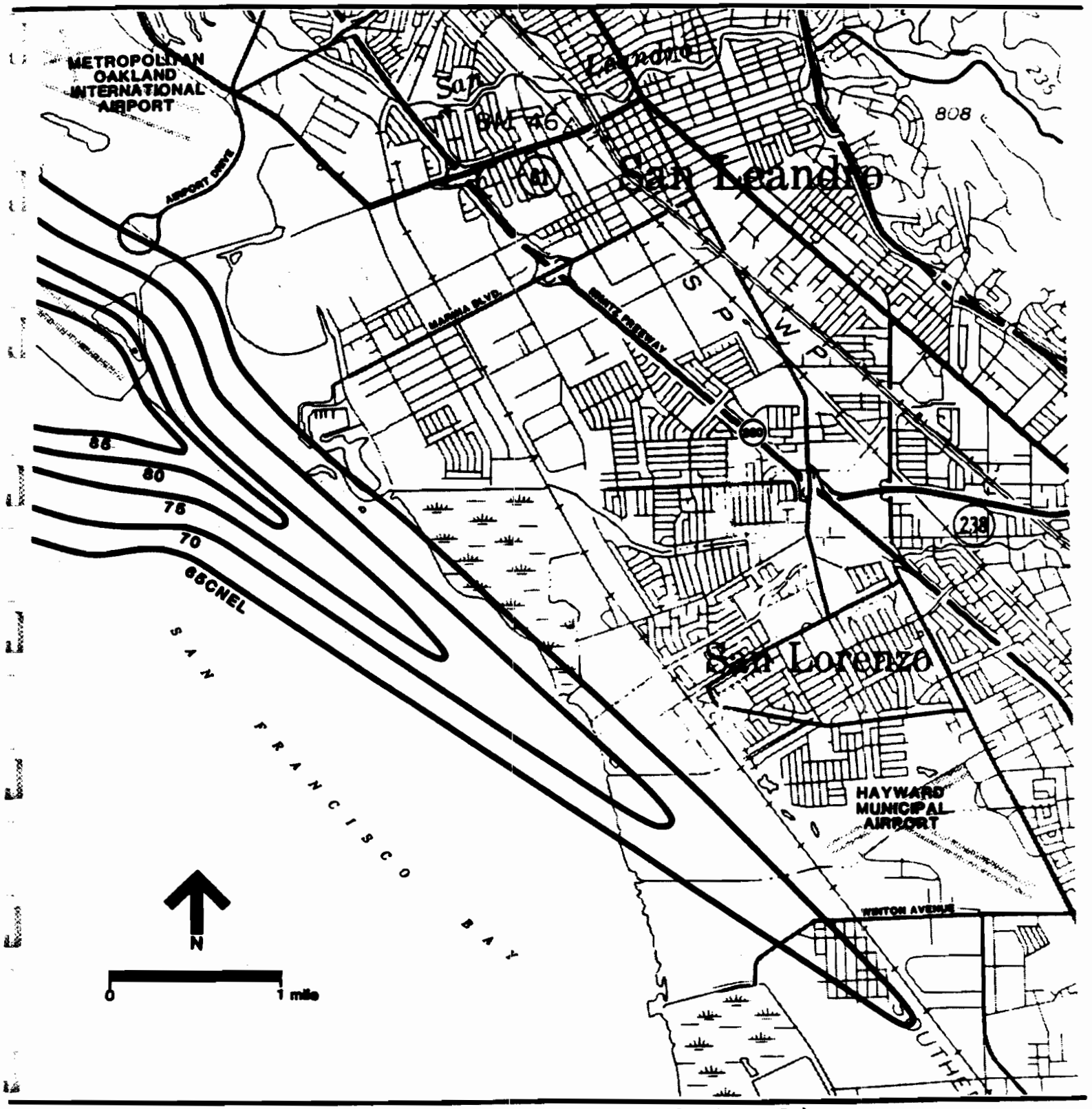


Source: City of Alameda Noise Element, and Settlement agreement, July 1976

Approximate location *

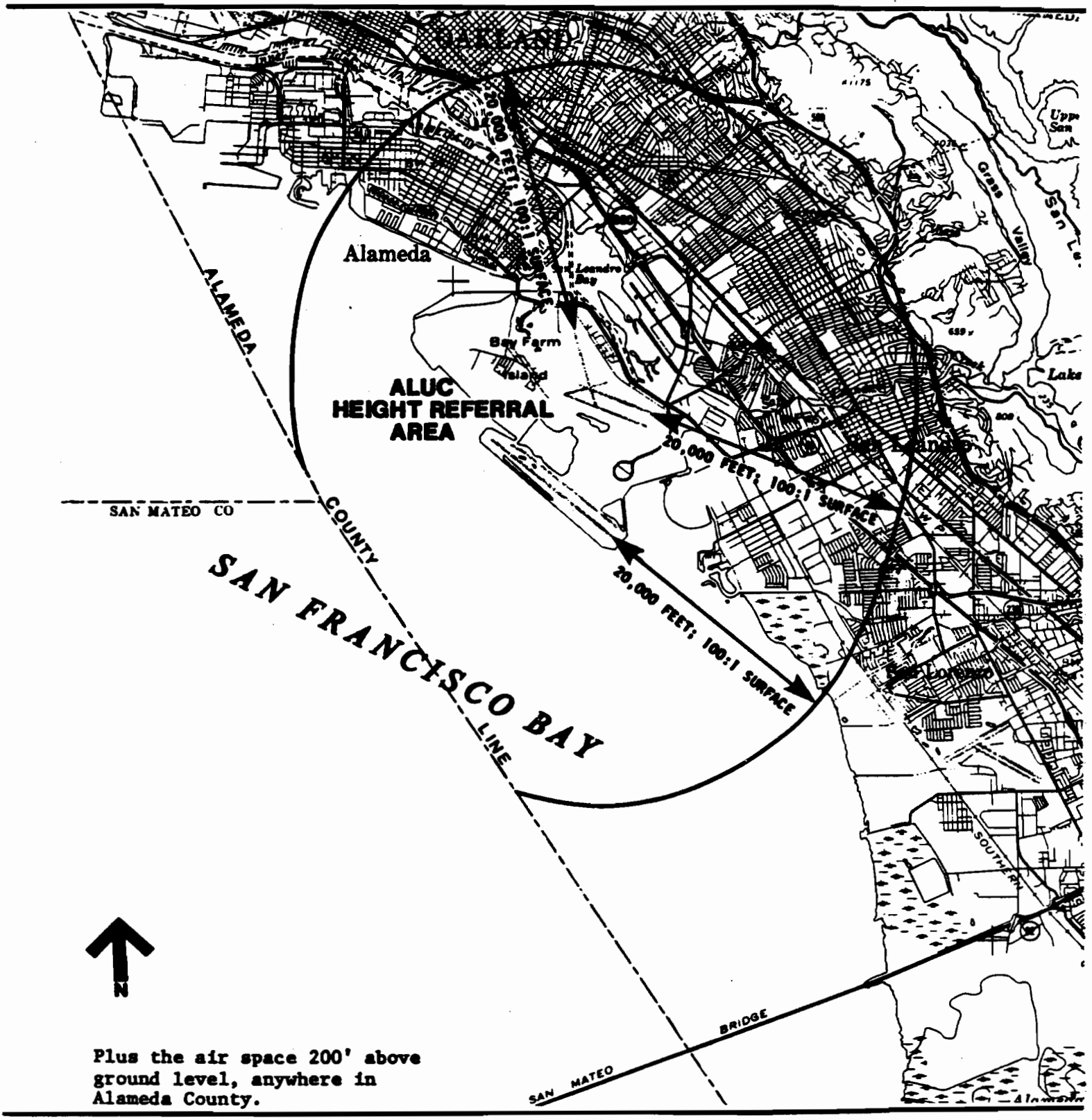
MAP V

OAKLAND SOUTH AIRPORT ALUC NOISE ZONE (SAN LEANDRO)



Source: MOIA Draft Master Plan, 1977 (Noise Contours for 4 M.A.P.)

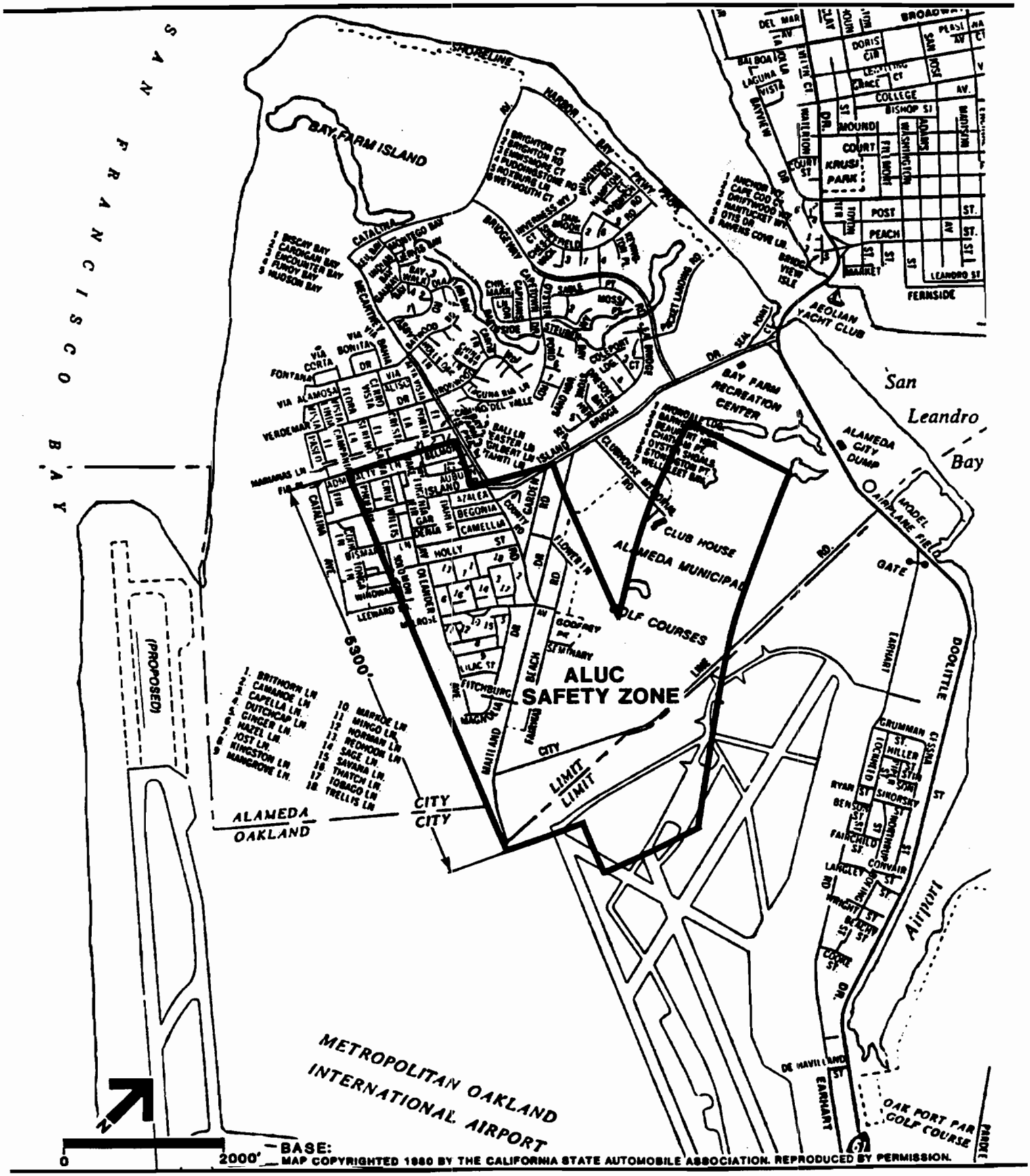
MAP VI
METROPOLITAN OAKLAND INTERNATIONAL AIRPORT
ALUC HEIGHT REFERRAL AREA



Plus the air space 200' above ground level, anywhere in Alameda County.

MAP VII

OAKLAND NORTH AIRPORT ALUC SAFETY ZONE (BAY FARM ISLAND)



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MAP VIII
OAKLAND NORTH AIRPORT ALUC SAFETY ZONE (SAN LEANDRO)

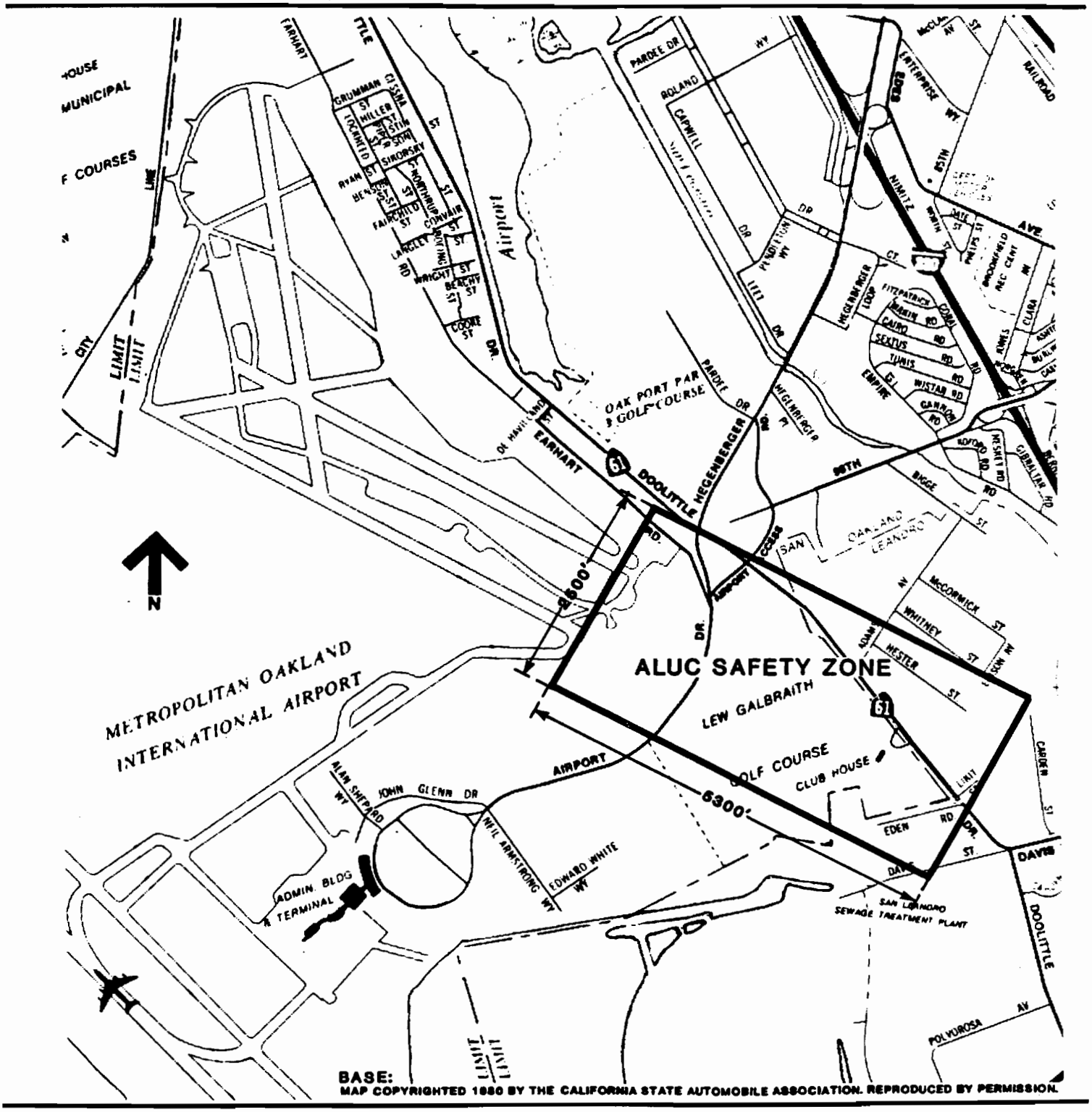
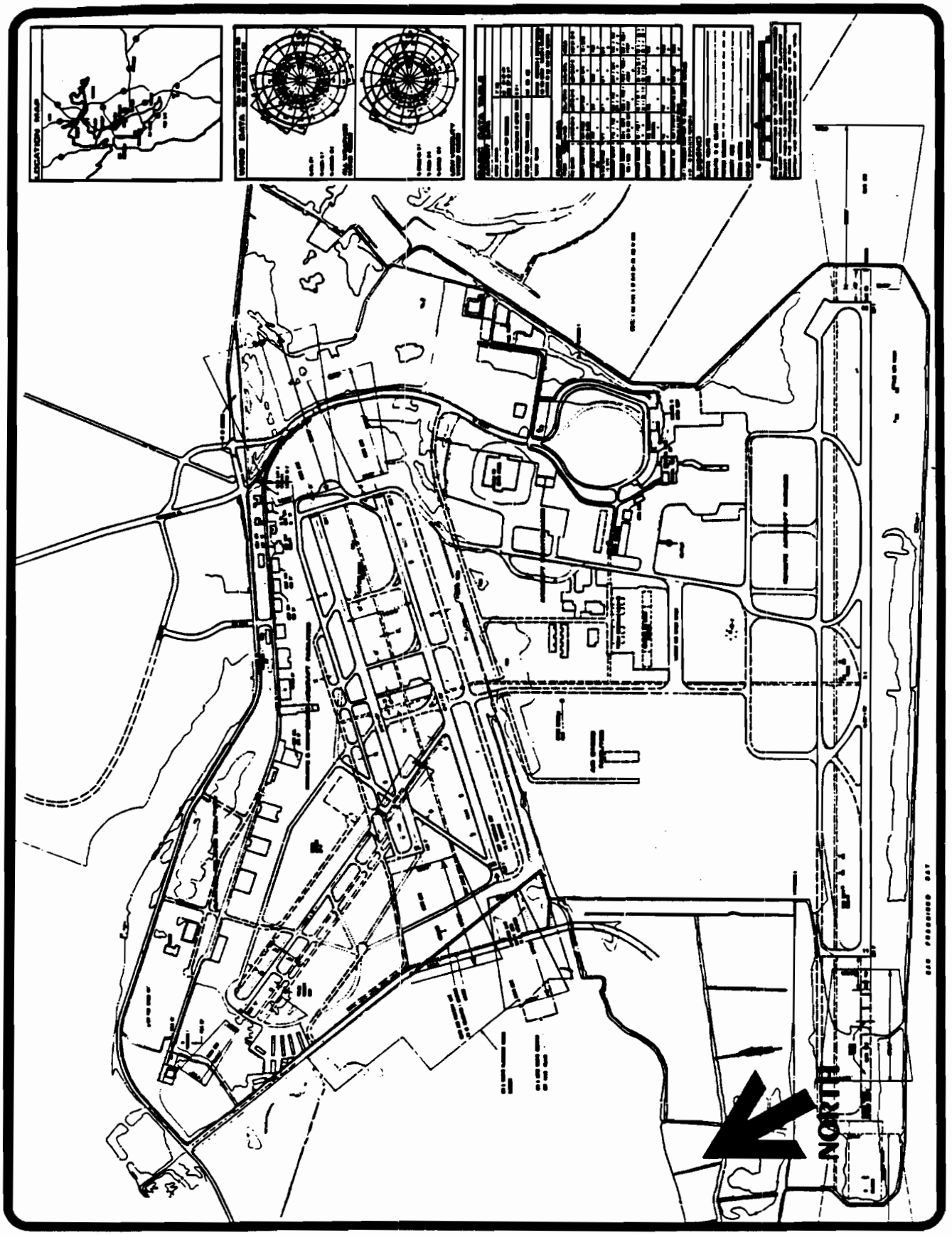
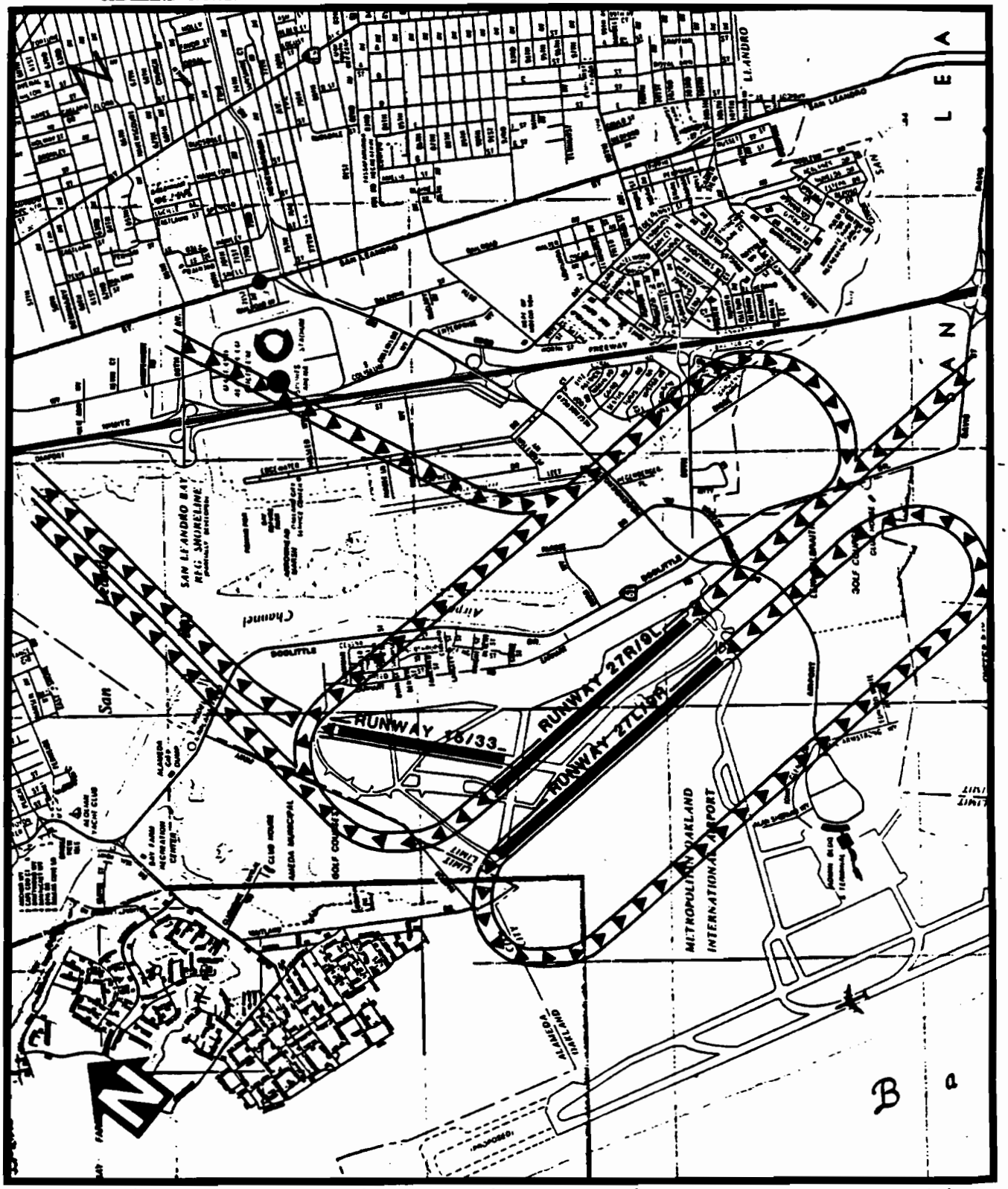


FIGURE II
METROPOLITAN OAKLAND INTERNATIONAL AIRPORT
AIRPORT LAYOUT PLAN



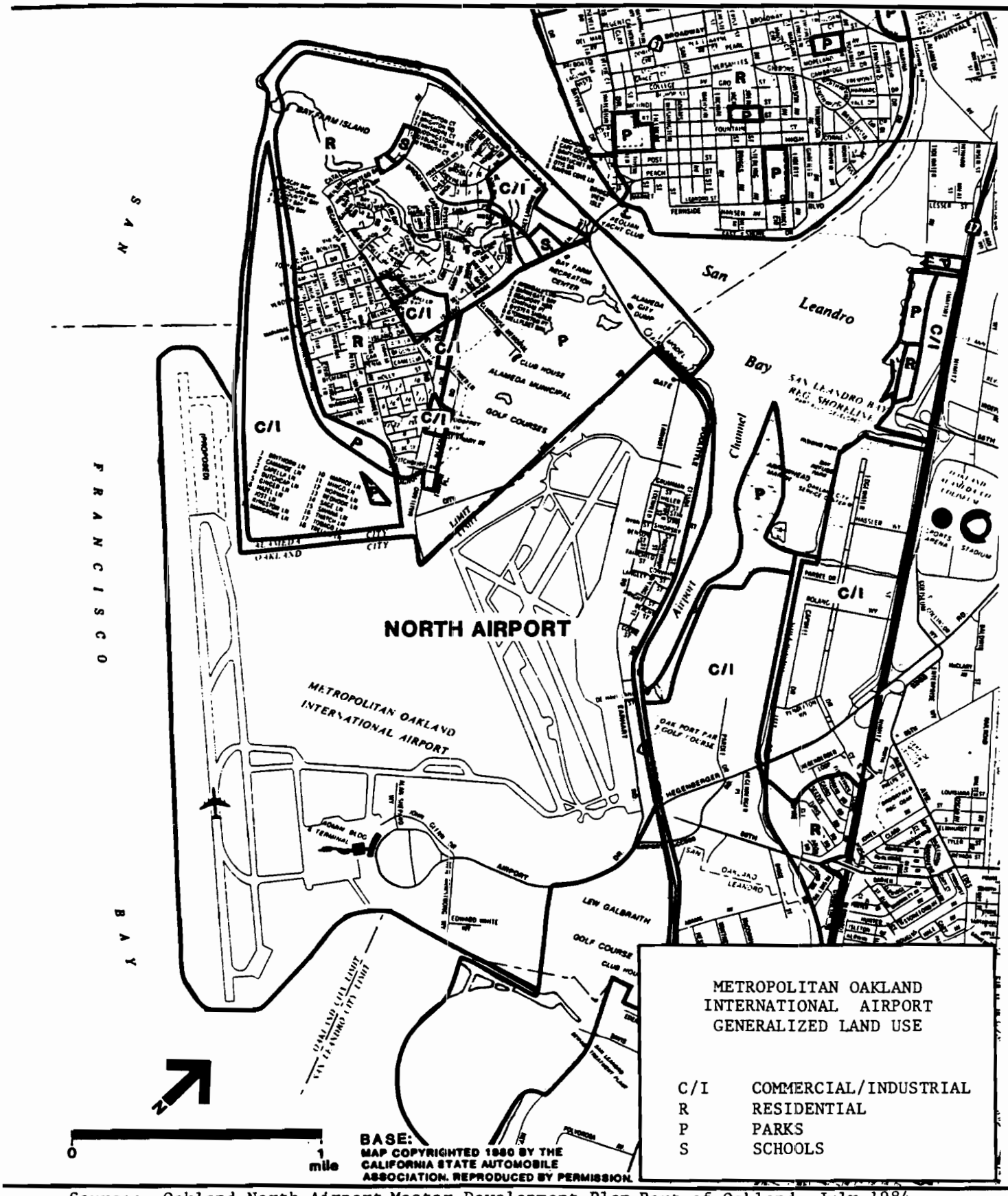
Source: Oakland North Airport Master Development Plan, July 1984

FIGURE III
OAKLAND NORTH AIRPORT VFR AIRCRAFT NOISE ABATEMENT TRAFFIC PATTERNS



Source: Oakland North Airport Master Development Plan (Supplemental Noise Analysis), August 1983

FIGURE IV
METROPOLITAN OAKLAND INTERNATIONAL AIRPORT
GENERALIZED LAND USE



Source: Oakland North Airport Master Development Plan Port of Oakland, July 1984

B. ALAMEDA NAVAL AIR STATION (NAS ALAMEDA)

General Referral Area

Map IX shows the ALUC General Referral Area. It encompasses ALUC safety and noise impact zones and the primary "dogleg" approach to Runway 25 over the Webster Street corridor (an area with significant numbers of noise complaints in the past). Within the referral area, all projects subject to review by ALUC must be referred to the ALUC (see Policy #26).

Height Referral Area

The ALUC Height Referral Area is shown in Map X. For a site outside the General Referral Area but within the Height Referral Area, only projects which would permit a structure to protrude into the height referral area need to be reviewed by the ALUC (see Policy #26).

To evaluate proposed projects, ALUC has adopted the height standards in FAR Part 77 (see Appendix C).

Maps XI and XII show the fixed wing flight tracks for NAS Alameda. Runway 31 approach and departures are over water. Runway 25 departures are also over water. One approach to Runway 25 is over the Oakland Hills, the Oakland Inner Harbor, Jack London Square and The Shipyard; the other approach follows a "dogleg" pattern northward above Webster Street in Alameda, then westward over The Shipyard. Cranes in The Shipyard penetrate the standard approach-departure surface. Ships may also penetrate the surface. A military waiver permits 3.5 degree approaches to Runway 25.

Safety Zones

Safety zone dimensions for Runways 13, 31 and 7 are consistent the U.S. military's Air Installation Compatible Use Zone (AICUZ) Accident Potential Zones (APZs) I and II, as shown in Map IX.

For Runway 25, the ALUC safety zone modifies the standard dimensions of an APZ I, taking into account the level of operations on that runway and geographic features. Except for The Shipyard, the major portion of land within this safety zone is within the NAS boundary (Map XIII).

The ALUC safety zone for Runway 25 is as follows:

- a rectangular clear zone, 1,500' wide and 3,000' in length, centered on the extended runway centerline.
- a rectangular safety zone, 3000' wide and 5,000' in length, centered on the extended runway centerline. The northern boundary of this zone follows the pierhead line along the northern shore of the Oakland Estuary.

Within the clear zones (CZs) shown in Maps IX and XIII, ALUC land use intensity standards in Policies #2 and #4 apply. Within the APZs shown in Map IX and the 5,000' "safety zone" shown in Map XIII, land use standards in Policies #3 and #4 apply.

Hazard Prevention Zone:

Within the General Referral Area for NAS Alameda (Map IX), ALUC land use standards in Policy #11 apply, prohibiting uses that would cause hazards to avigation such as electrical interference, smoke, glare, disorienting lighting, and uses that would attract concentrations of birds.

Noise Impact Zone:

Map XIV depicts Noise Impact Zones taken from the October 1981 Alameda NAS AICUZ study. Within these contours, ALUC noise zone standards in Policies #14-20 apply, based on California Airport Noise Standards.

Noise from NAS Alameda has been a source of complaint from residents of Alameda and throughout the East Oakland and Oakland hill area. Much of the area that is potentially affected by noise is over water or in NAS or Port of Oakland industrial areas and other Army and Navy facilities.

In recent years, the NAS has taken steps toward abatement of noise:

- Raising the crosswind threshold for Runway 31/13 to reduce traffic on the Webster Street approach to Runway 25.
- Completed modernization of Test Cell 15, which is near a residential neighborhood; modernization is now underway to Test Cell 16.
- Programmed construction of an Aircraft Acoustical Enclosure (Hush House) at Naval Air Rework Facility for high power in-frame run-ups.

The ALUC has requested the Chief of Naval Operations to give a high priority to noise reduction, to provide funding for such work and a timetable for implementation.

The ALUC recommends that the Navy develop a program similar to the Administrative Code, "Airport Noise Standards" (Appendix B) which calls for reduction of aircraft noise to 65 dB CNEL by January, 1986.

Background Information

NAS Alameda was commissioned on November 1, 1940. It serves as a home port for aircraft carriers of the Pacific Fleet; it is a rework facility for the overhaul and maintenance of aircraft operated by the Navy and is the base of operations for a Naval Air Reserve Unit.

The "Air Installation Compatible Use Zone Study" (AICUZ), August 1978, and subsequent updates are source material providing background information on noise, safety and land use as it relates to the NAS.

The AICUZ study is part of a nationwide program to address noise, safety and land use problems in and around military airports. At NAS Alameda, most of the noise, safety and land use problems occur within station confines. A large number of aircraft operations are over water and accordingly reduce noise and safety problems.

Aircraft types based at or serviced at NAS are designated as attack, cargo, trainer, helicopter, patrol, search and utility. Total operations have declined from 139,000 in 1969 to approximately 64,000 in 1984. Any significant military activity in the Pacific area could increase the level of operations.

The air station has two bisecting airstrips which create four runway operational directions: Runway 13/31 (northwest-southwest) is 8,000 feet long and Runway 7/25 (east-west) is 7,200 feet long. Both are 200 feet wide. All runway operational directions, except for 7, are served by Ground Control Approach (GCA) radar.

Total operations for all runways average 5,313 per month. Total operations for Runway 25 average 1,188 per month. However, operations by fixed wing aircraft on Runway 25 for all of 1984 were 1,510.[1] Historical weather patterns dictate use of Runway 25 in both visual and instrument conditions. For a yearly average of 185 days, prevailing winds favor use of Runway 25. Under instrument conditions, prevailing winds historically indicate Runway 25 to be favored 62.9% of the time.

The NARF occupies 68 buildings totalling over 2,200,000 square feet and uses an additional 157 acres of outside area for testing and parking. The NARF maintains and operates facilities for performing a complete range of depot-level rework operations.

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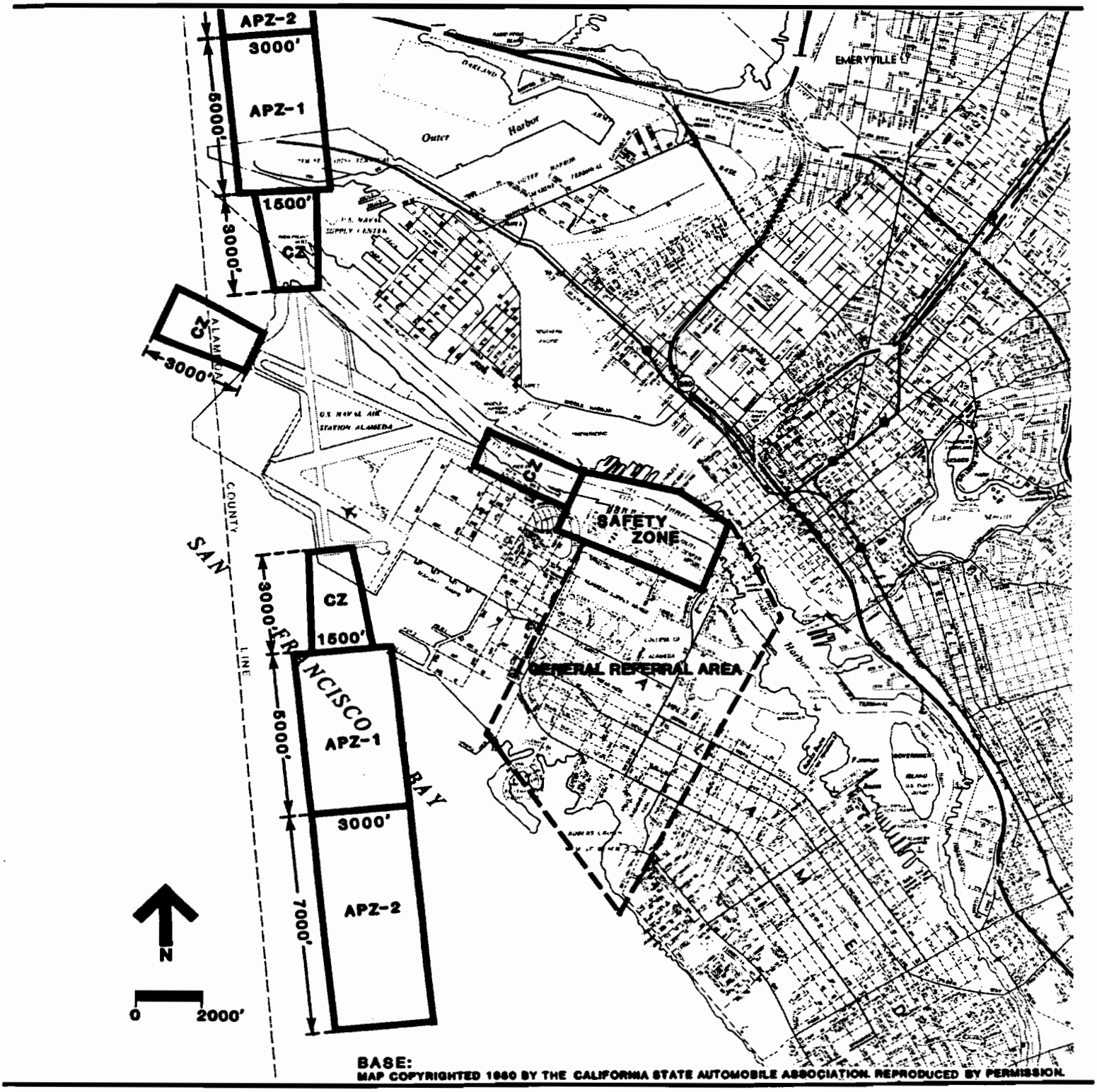
1 In July, 1986 the Navy reported to ALUC that total fixed wing operations on Runway 25 during 1985 increased to 3,722. According to the Navy, operations on Runway 25 were severly restricted from late-1984 through mid-1985, due to unsafe operational conditions caused by the temporary mooring of a ship at The Shipyard with a 195-foot crane that penetrated the approach slope to Runway 25 by 111 feet. With departure of the ship in mid-1985, the Navy reports increased usage of Runway 25 and predicts further increases due increasing Navy activity in the Bay Area.

MAP IX
GENERAL REFERRAL AREA
NAS ALAMEDA



BASE:
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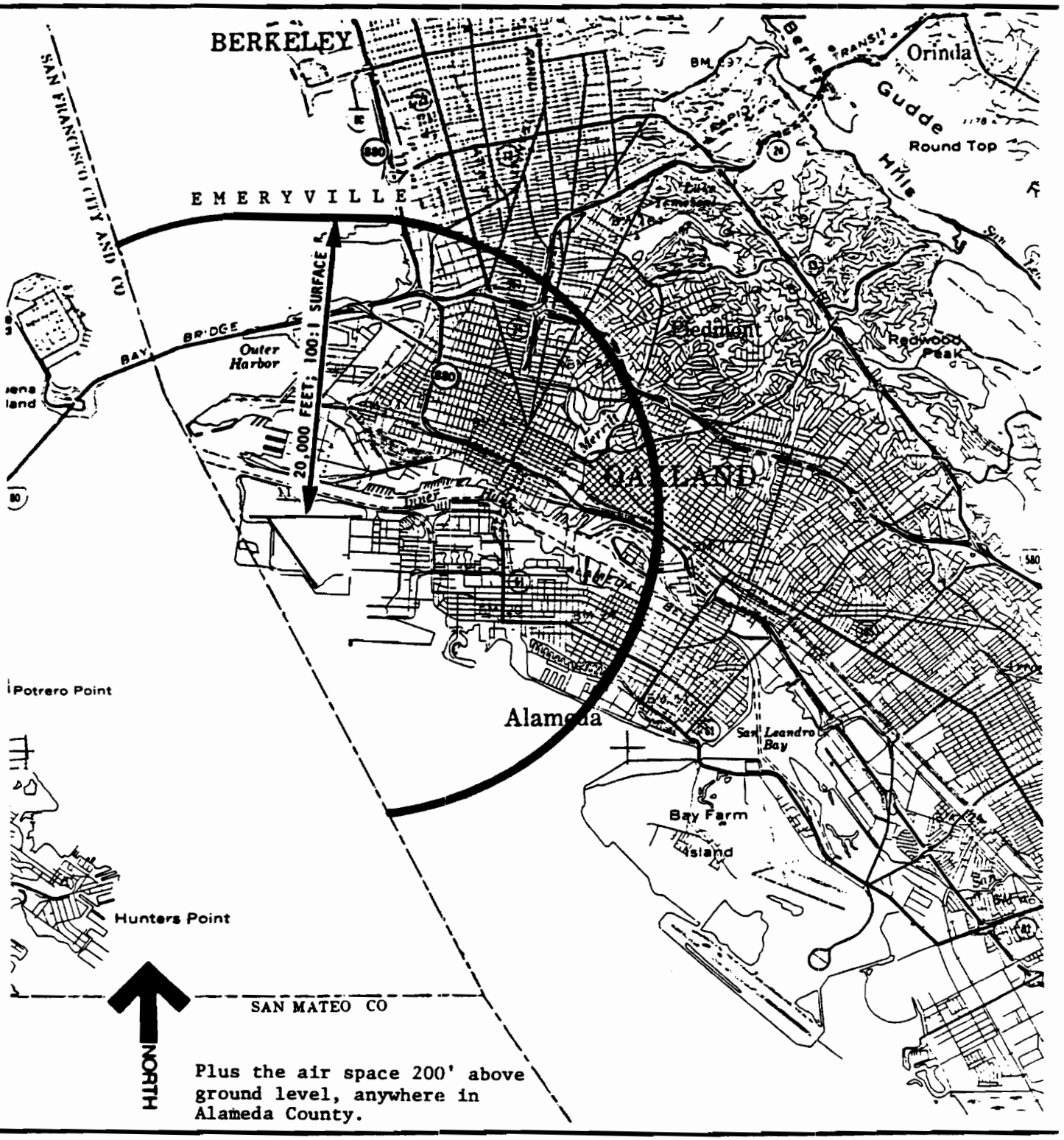
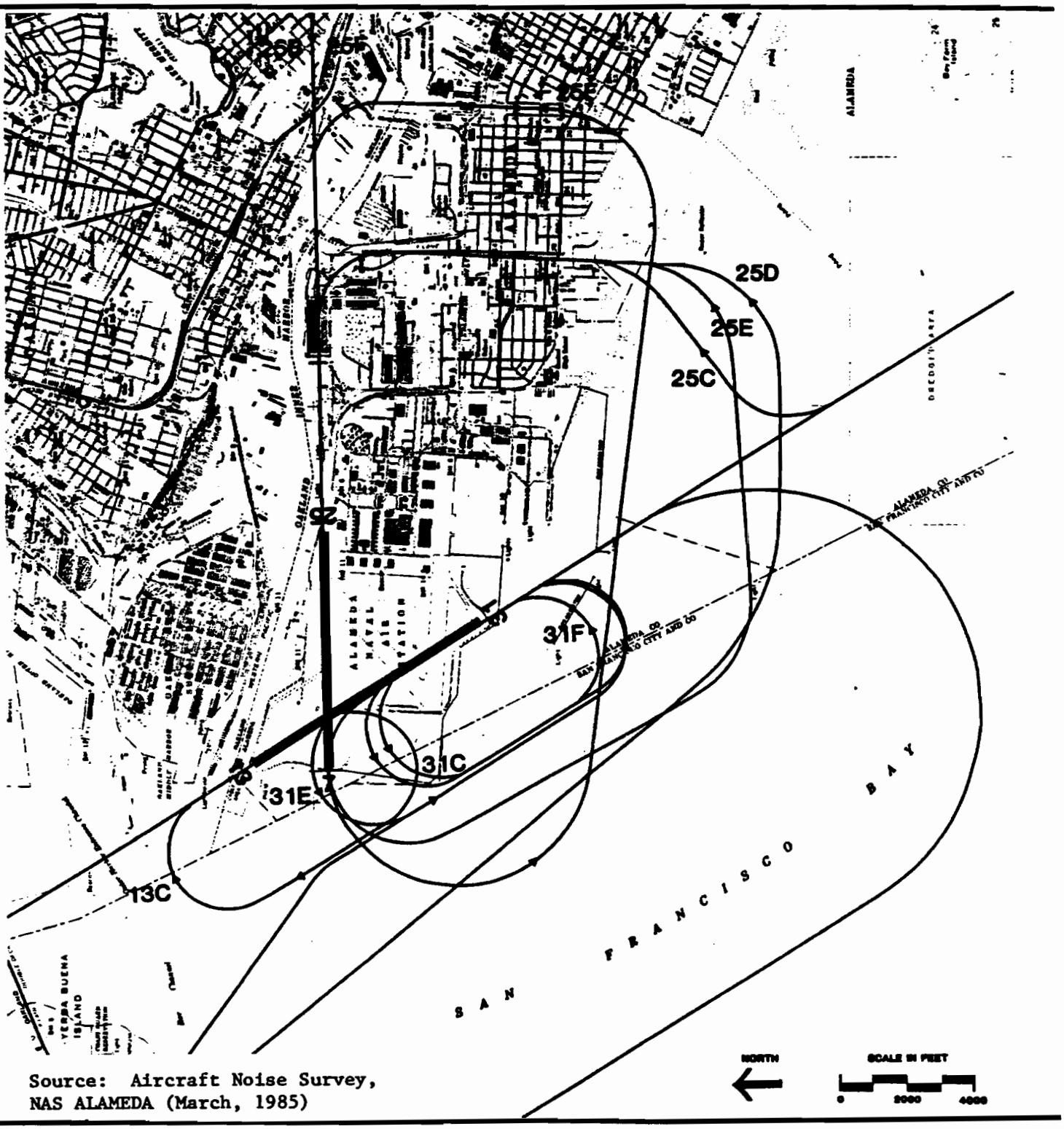
MAP X
HEIGHT REFERRAL AREA
NAS ALAMEDA



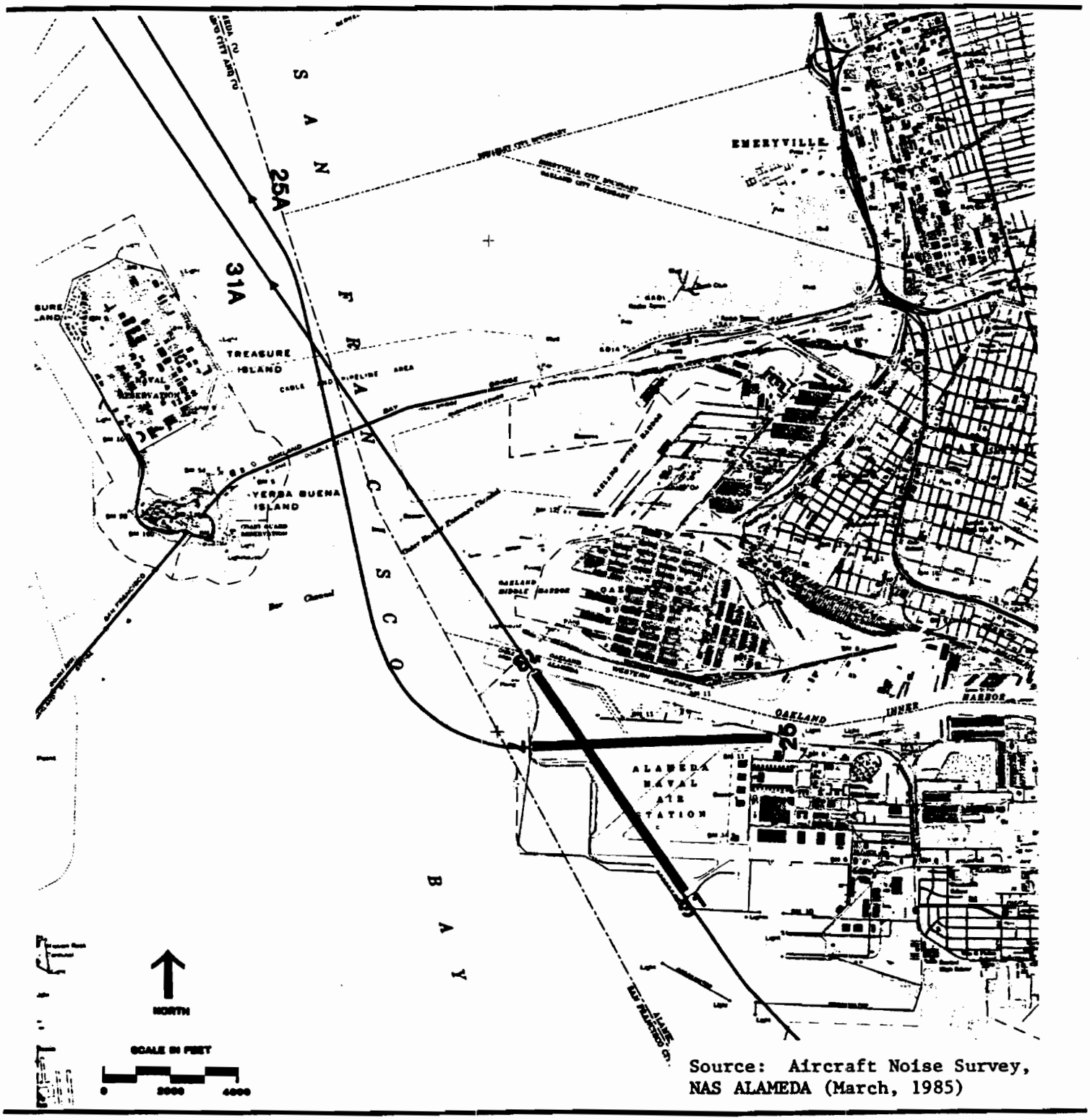
Plus the air space 200' above ground level, anywhere in Alameda County.

MAP XI
FIXED WING APPROACH
NAS ALAMEDA



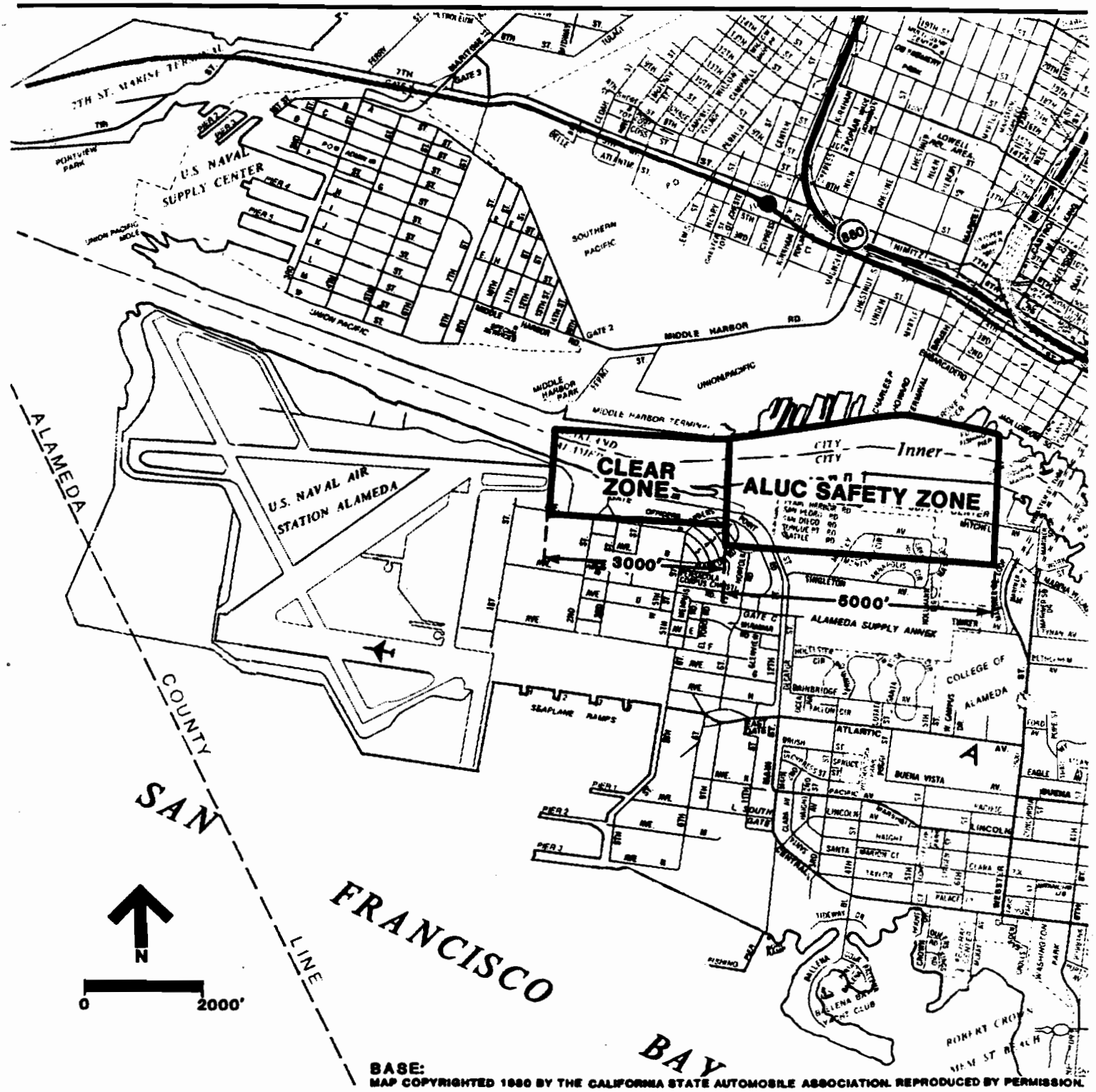
Source: Aircraft Noise Survey,
NAS ALAMEDA (March, 1985)

MAP XII
FIXED WING DEPARTURE
NAS ALAMEDA



Source: Aircraft Noise Survey, NAS ALAMEDA (March, 1985)

MAP XIII
SAFETY ZONE
NAS ALAMEDA



BASE:
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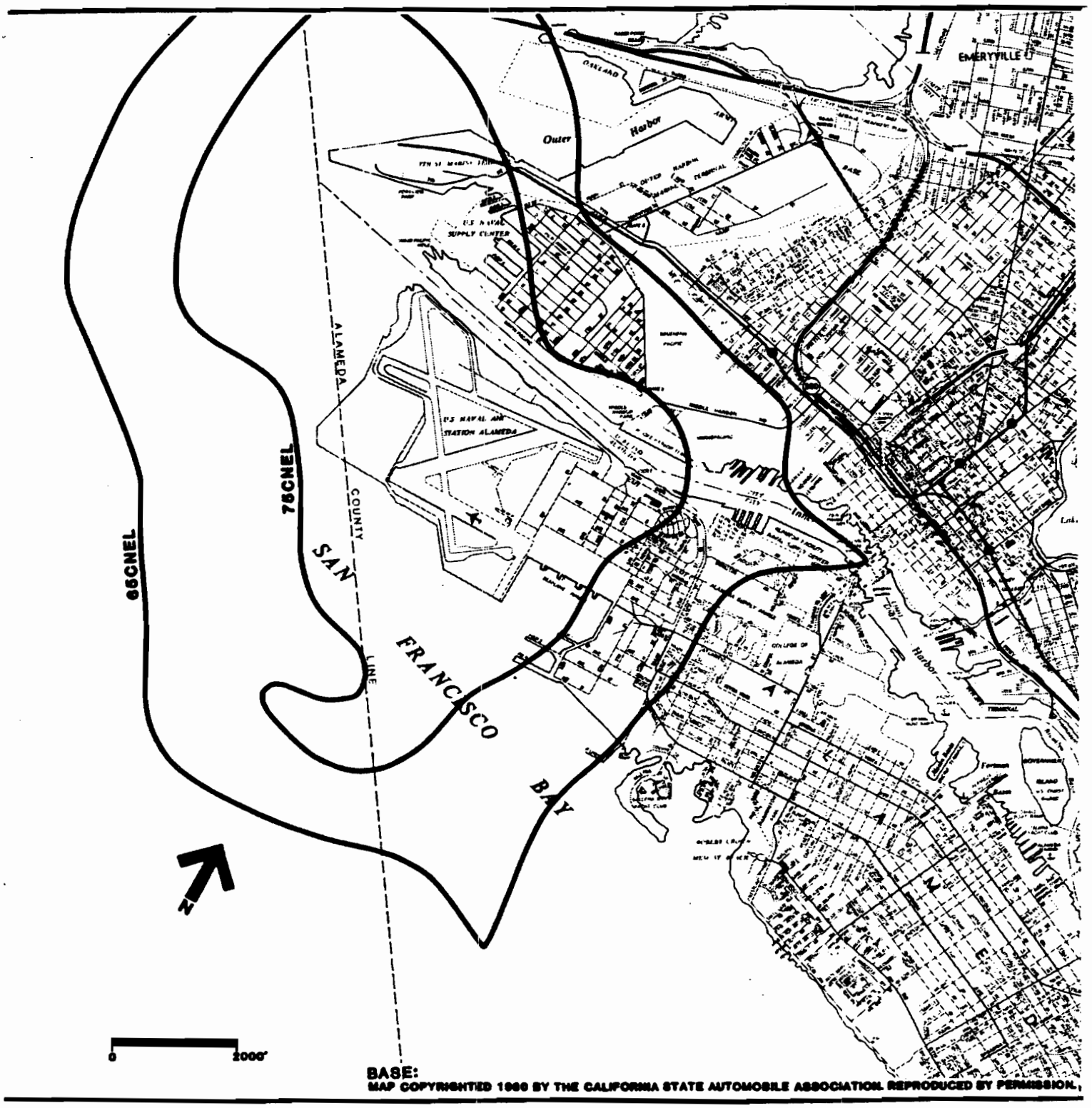
MAP XIV
NOISE IMPACT ZONE
NAS ALAMEDA



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C. HAYWARD AIR TERMINAL

General Referral Area

Due to the proximity of the Hayward and Oakland airports, their referral areas are combined (Map XV). All proposed projects within the General Referral Area boundary which are subject to ALUC review must be referred to the ALUC for Determination of Plan Consistency (see Policy #26).

Height Referral Area

The ALUC Height Referral Area is shown on Map XVI. Within this area, standards in ALUC Policy #8 apply, based on FAR Part 77.

Within the City of Hayward, height limits are enforced by an "Airport Approach Zoning Plan."[1] Additionally, the City holds a perpetual air navigation easement over commercial land immediately southeast of Runway 10R/28L at the Winton/Hesperian intersection. Land outside Hayward City Limits is under County jurisdiction. The County has adopted height restriction zoning consistent with FAR Part 77.

Safety Zones

Adopted ALUC safety zones are depicted on Map XVII, based on forecast aircraft operations and frequently-used flight tracks (flight tracks are shown on Map XVIII). Due to a possible increase of flights by jets and other aircraft over 12,500 pounds, safety zones of 5,300 feet in length, rather than 3,500 feet, are adopted. However, because the area beyond 3,500 feet is already substantially developed, this extension is not of practical importance. Only the zone based on a left turn after take-off from 10R/28L has extensive undeveloped land beyond 3,500 feet.

ALUC safety zone Policies #2 and #3 require that land within one-quarter mile of the runway end be kept clear and that new uses beyond one-quarter mile be low-density, non-residential.

Beyond the north ends of the runways, airport property and part of Skywest golf course occupy the first one-quarter mile of the safety zone. A proposed extension of "A" Street would traverse this area. Land use in the outlying portions of the safety zone is a mixture of residential (San Lorenzo Village), open space (golf course), and undeveloped land. The latter is planned to form part of an industrial corridor - expressway.[2]

---

1 City of Hayward Ordinance 64-038, September 15, 1964.

2 This land is partly within Hayward, partly unincorporated. However, both the Hayward and County general plans recognize this use.

At the south ends of the runways, the inner portion of the safety zone - approximately 1,000 feet - falls within the Air Terminal. Beyond the airport, commercial development and close to 60 acres of residences, some of them mobile homes, are within the safety zone.

The Air Terminal has established clear zones approved by the FAA: beyond Runway 10L/28R -- trapazoidal zones beginning 200 feet from the runway thresholds, 250 x 450 x 1000 feet; beyond Runway 10R/28L -- zones 500 x 900 x 2000 feet. In accord with FAA instructions that the area be free of obstructions to air navigation, clear zones off the north ends of the runways encompass undeveloped airport land and Skywest Golf Course. To the south, the clear zone for 10L/28R falls within the airport, but the clear zone for Runway 10R/28L takes in residences, the Hesperian-Winton intersection, and commercial buildings. The Air Terminal holds avigation easements over some of the latter.

Noise Impact Zone

The ALUC adopts two maps with noise contours developed for the City of Hayward Air Terminal Master Plan Study (January, 1984):

Map XIX- Hayward Air Terminal Noise Impact Area - 1983
Map XX- Hayward Air Terminal Noise Impact Area - 2005

A portion of the City of Hayward is also affected by noise related to Metropolitan Oakland International Airport. This noise impact is shown in Map V (page 37), under the airport plan for MOIA.

Hazard Prevention Zone:

Within the adopted General Referral Area for Hayward Air Terminal (Map XV), ALUC land use standards in Policy #11 apply, prohibiting uses that would cause hazards to air navigation such as electrical interference, glare, smoke, disorienting lighting and uses which would attract a concentration of birds. Hazard prevention policy is currently enforced by the City of Hayward Airport Approach Zoning Plan.

Background Information: Hayward Air Terminal

The municipally-owned Hayward Air Terminal is one of the busiest general aviation facilities in the region. The Terminal is about five miles south of Oakland Airport. Because of this proximity, Oakland Airport affects the airspace capacity and type of operations at the Air Terminal.

The Air Terminal has two parallel runways: 10L/28R (3543 feet in length) and 10R/28L (5156 feet). Hayward Air Terminal has a control tower and non-precision approach to Runway 28. Current runway capacity is 490,000 annual operations. The cumulative effect of certain physical and operational changes, such as installing additional runway exits, and the occurrence of an increased percentage of movements during off-peak hours,

indicates that the Air Terminal has an ultimate annual capacity of nearly 690,000 operations, according to the Master Plan study.

There are currently 665 based aircraft at Hayward. The Master Plan forecasts that nearly 400 more aircraft parking spaces will be required to accommodate a based aircraft demand forecast of 1,050 aircraft by the year 2005. The airport's importance as a business aircraft/corporate jet and air cargo center is increasing, while recreational use is gradually declining. Helicopter activity is expected to become prominent and commuter airline service may eventually be established at Hayward.[1]

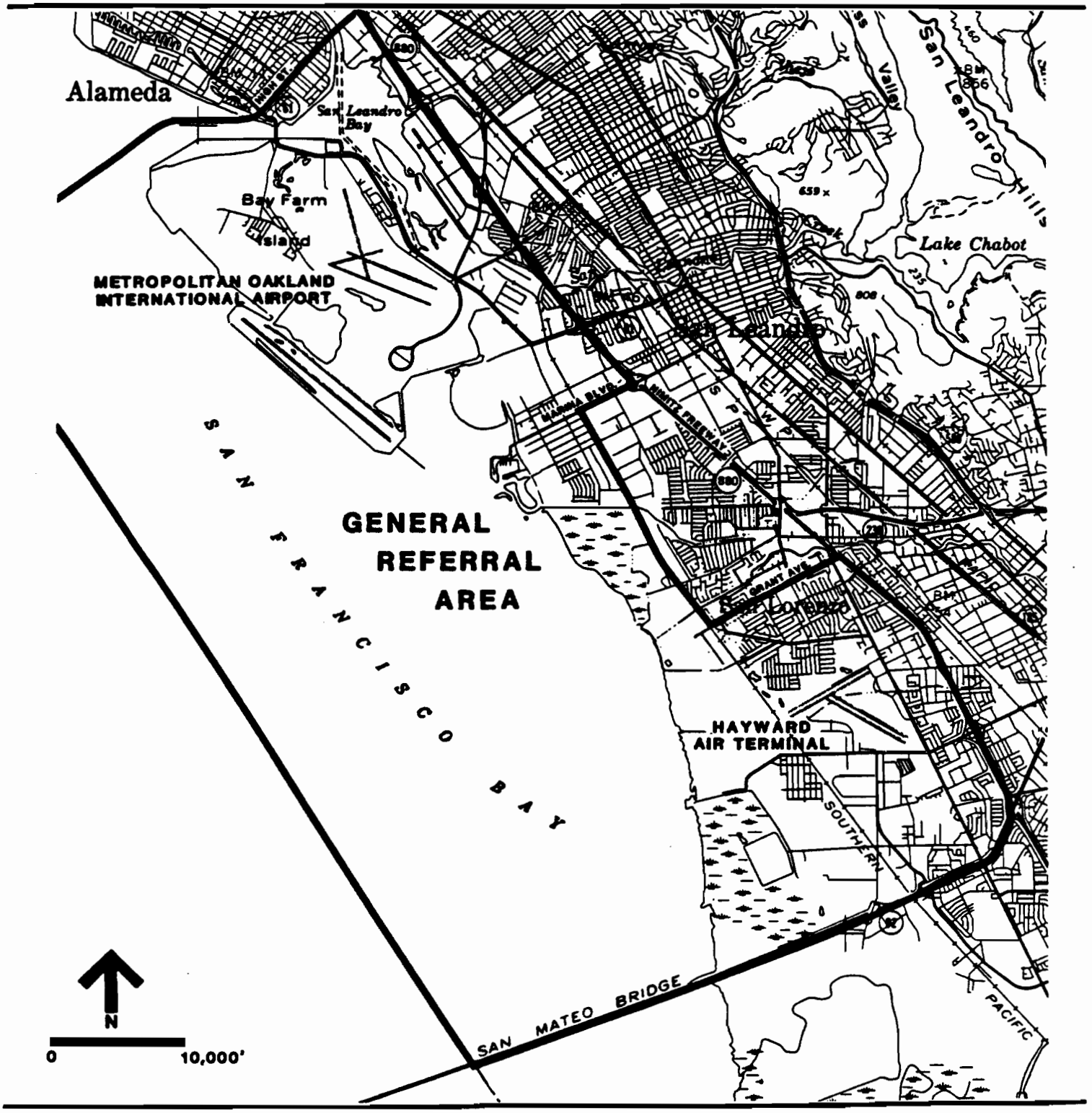
Of the three public general aviation airports in Alameda County, the Hayward facility is most hemmed in by existing urban development, particularly at both ends of the runways. As a result, there is a greater possibility that surrounding land uses will constrain future operations. This is reflected to some degree in the airport plan, as there is no intent to make a major facility expansion. The City is, however, encouraging industry and airport-related activities immediately west of the airport and commercial/industrial along Winton Avenue and Hesperian Boulevard. Development of a road running east-west on the north edge of the airport is also contemplated. Future use of the National Guard site is not determined, but may include a heliport.

The City of Hayward Airport Department is embarking upon a comprehensive study to produce a noise management program, consisting of a noise management and noise control system specifically suited to the Hayward Airport, and a new position to administer the program.[1] The fact that most of the areas directly north of the Air Terminal lie outside Hayward City Limits complicates coordination of standards and policies for airport impact and land use.

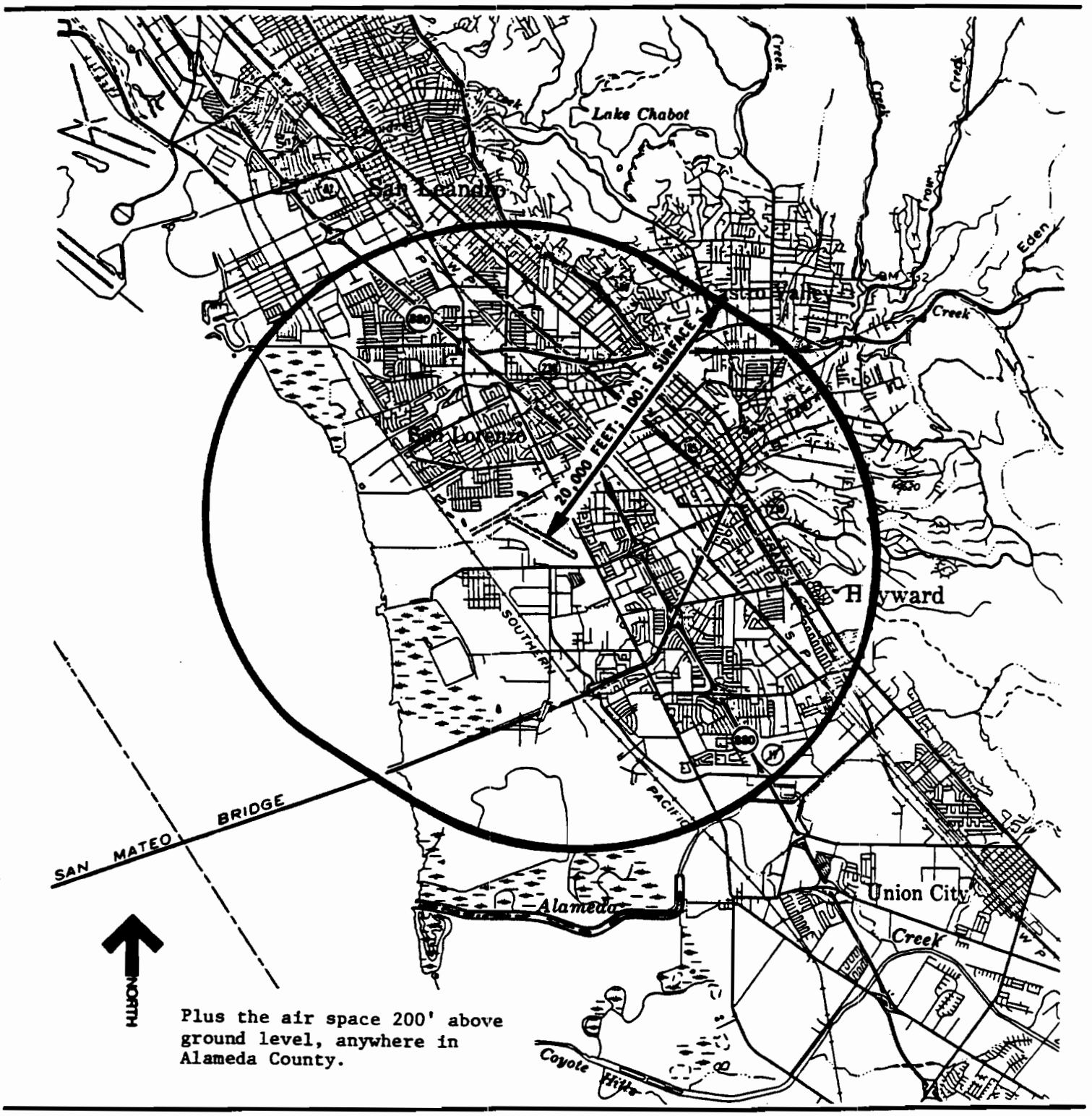
---

1 Joan Castaneda, Manager, Hayward Air Terminal, "Hayward Air Terminal Goals Approaching the Year 2000" (February 14, 1985)

MAP XV
HAYWARD AIR TERMINAL AND METROPOLITAN OAKLAND INTERNATIONAL AIRPORT
ALUC GENERAL REFERRAL AREA



MAP XVI
ALUC HEIGHT REFERRAL AREA
HAYWARD AIR TERMINAL



Plus the air space 200' above ground level, anywhere in Alameda County.

MAP XVII
ALUC SAFETY ZONES
HAYWARD AIR TERMINAL

Source: Hayward Air Terminal
staff, 1977

MAP XVIII
FLIGHT TRACKS
HAYWARD AIR TERMINAL

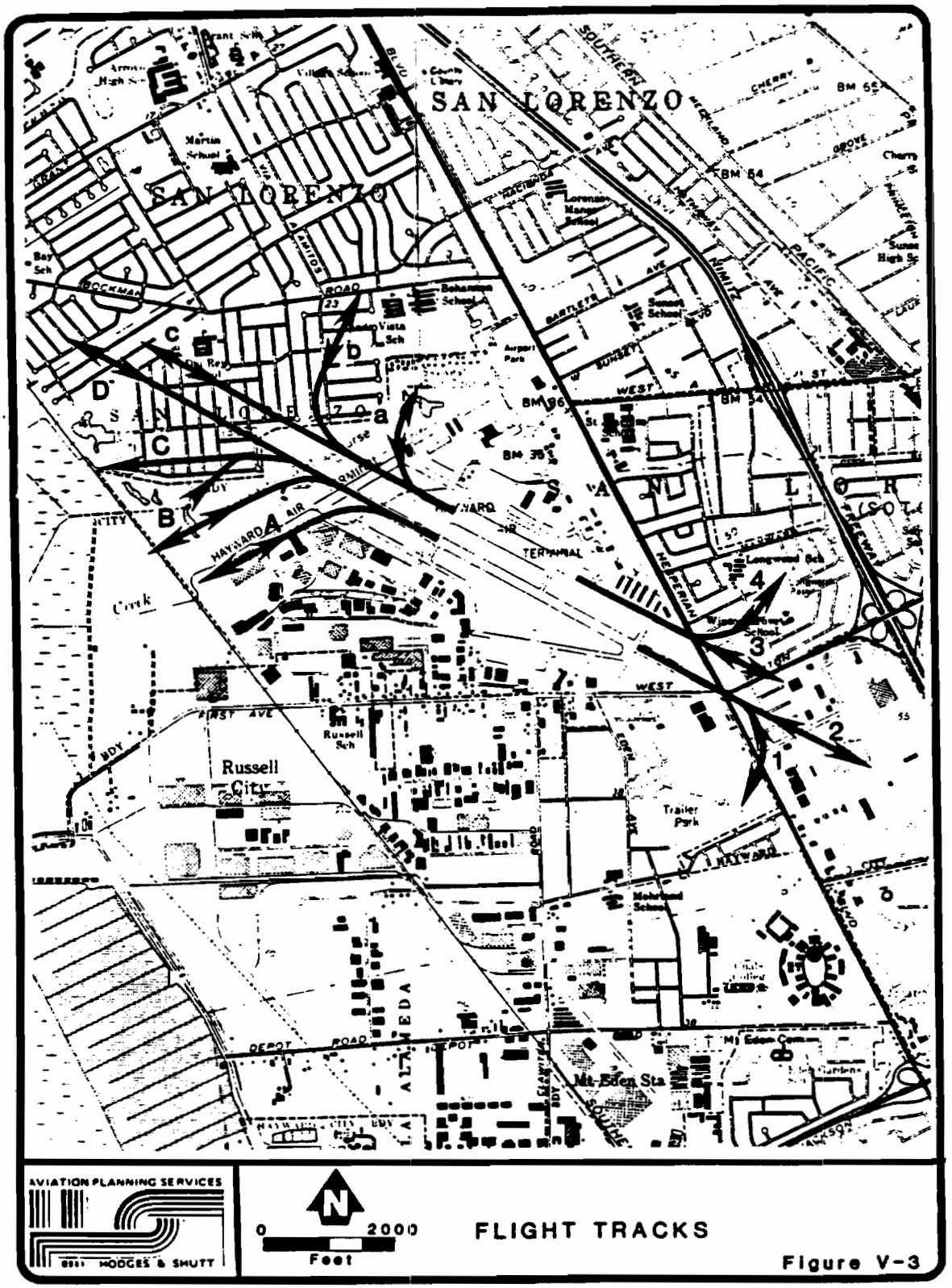
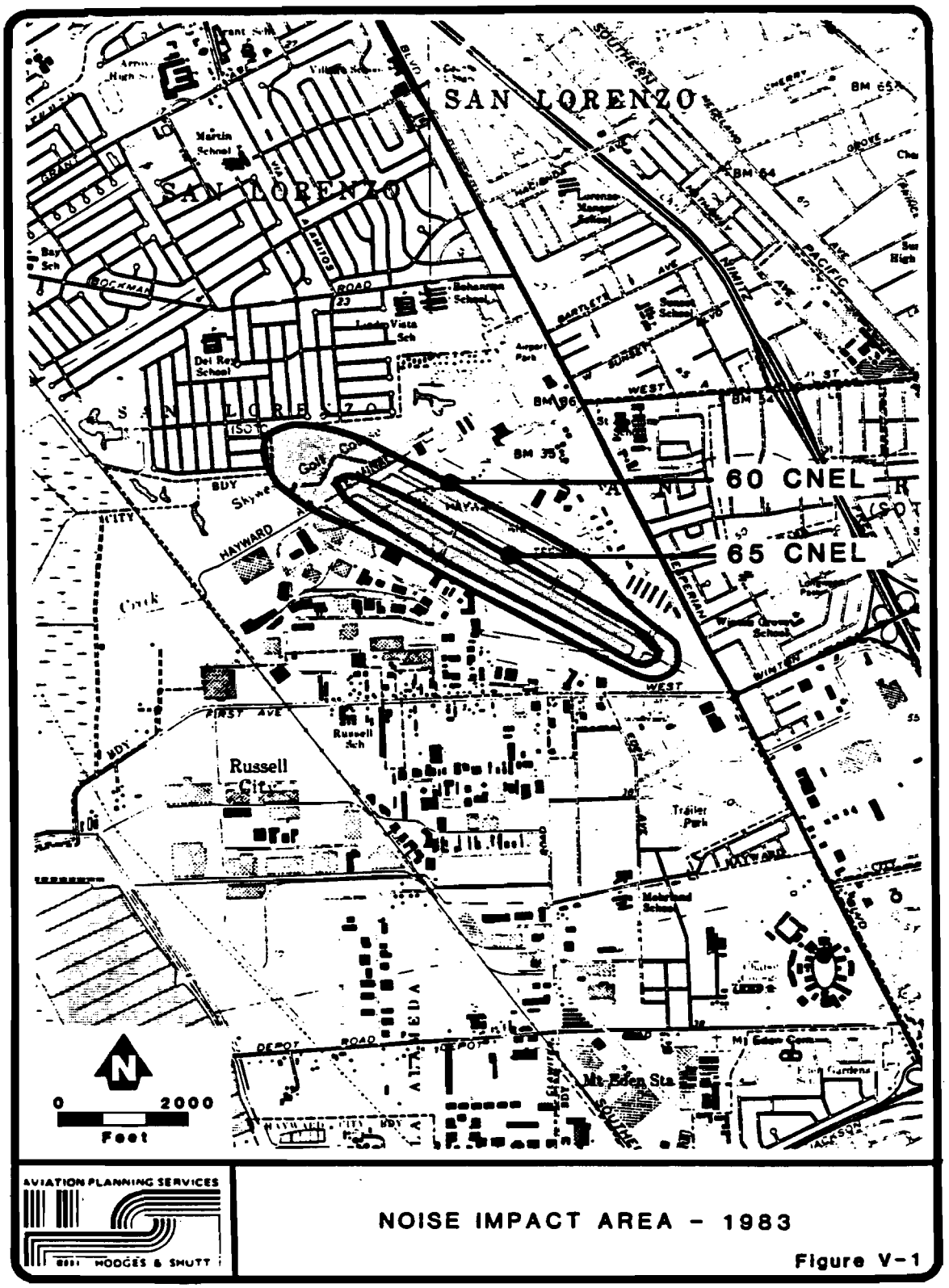


Figure V-3

MAP XIX
NOISE IMPACT AREA - 1983
HAYWARD AIR TERMINAL

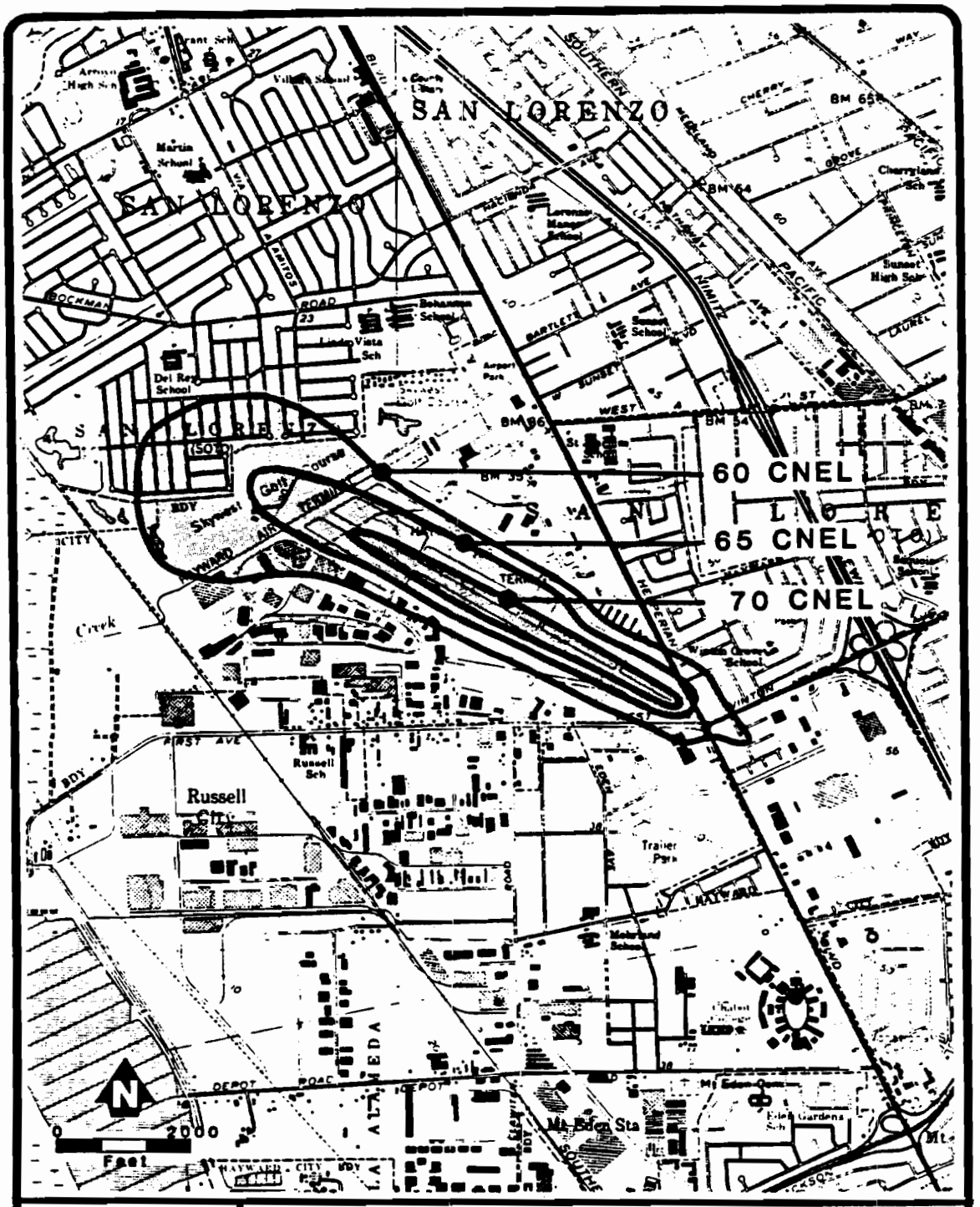


AVIATION PLANNING SERVICES
HODGES & SHUTT

NOISE IMPACT AREA - 1983

Figure V-1

MAP XX
NOISE IMPACT AREA - 2005
HAYWARD AIR TERMINAL



D. LIVERMORE MUNICIPAL AIRPORT

General Referral Area

Map XXI shows the ALUC General Referral Area for Livermore Airport. ALUC referral requirements are found under Policy #26. Map XXI corresponds to the plan area adopted by ALUC in 1971.[1] The Livermore Airport Master Plan recommends that a hill area northeast of the airport also be included in the referral area, since its highest elevation is only 12 feet below the 50:1 imaginary surface.[2] Although not included in the General Referral Area, the hill area is within the ALUC Height Referral Area (see below).

Height Referral Area

The ALUC Height Referral Area is shown in Map XXII. Within this area, ALUC height Policies #7 and #8 apply, based on FAR Part 77. For sites within a height referral area but outside a general referral area, only proposals which would affect the height of objects within the airspace identified by the height referral area must be referred to ALUC (see Policy #26).

The City of Livermore has adopted an ordinance limiting all structures within 5000' of an airport runway to a height of 40 feet.

Safety Zones

Map XXIII shows the adopted ALUC safety zones. Within these zones, ALUC safety Policies #2-4 apply. The west safety zone is measured from the end of the proposed runway extension, on the premise that the possible increased use by heavier aircraft and jets justifies the longer zone. Should City policy toward these aircraft change or a decision be made not to extend the runway, the length and placement of the western zone may be adjusted.

The ALUC safety zones encompass airport approach areas and clear zones identified in the Master Plan, but are not intended to supplant or conflict with them in any way. ALUC evaluation of new projects in the proposed approach areas and clear zones ensures compatibility of the project with airport operations and the Master Plan: land uses proposed within an "approach area" will be evaluated by approach area standards. Sites located outside approach areas and clear zones, but within the ALUC safety zones will be evaluated under the ALUC policies set forth in Chapter II.

---

1 ALUC Resolution 3, September 15, 1971.
2 Livermore Airport Master Plan p. 107.

Noise Impact Zone

Map XXIII shows the 60 and 65 CNEL contours forecast to 1995[1]. ALUC land use/noise compatibility and sound insulation standards apply to proposed projects within those zones (see Chapter II, Section D).

Livermore is considering adoption of sound insulation and noise/land use compatibility standards paralleling those in the ALUC Plan. The standards, applicable only to the airport plan area within city limits, set 60-65 CNEL as the allowed range for new residences, schools, and health-related facilities, if sealed windows and forced air ventilation are provided. Nevertheless, outdoor activity may be interrupted. New noise-sensitive uses would be prohibited in areas forecast for 65+ CNEL.

Background Information: Livermore Municipal Airport

Livermore is one of four general aviation airports in Alameda County. Located in the Livermore-Amador Valley about 15 miles east of the major Bay Area urban development, the airport has witnessed an expansion of activity paralleling the Valley's population growth: based aircraft show an increase from 305 in 1979 to 400 in 1984.[2]

The airport has been at its present site three miles west of central Livermore since 1965, having been pressured at a previous location by urban encroachment. Although the airport is within the Livermore City Limits, most lands on the south and west are unincorporated. Pleasanton City Limits begin approximately 2 miles west of the airport.

Livermore Airport is the nearest general aviation facility for a two-county service area that includes the Livermore-Amador and San Ramon Valleys, with a combined 1980 population of 161,000. According to the Livermore Airport, 69% of based-aircraft owners live within the service area. The nearest comparable airports are Hayward Air Terminal, about 16 miles to the west, and Tracy Municipal Airport, 20 miles east.[3]

The FAA classifies Livermore as a "general transport" airport. However, the Master Plan characterizes it as "physically and operationally a basic transport airport" that can accommodate turbojets under 60,000 pounds and general aviation aircraft of lesser weight and speed. Among the 400 based aircraft in 1985, only 37 were twin engine and of these only four were turbine-powered. The single 4000 foot runway has an estimated capacity of 235,000 annual operations, which can be boosted to about 255,000 with taxiway improvements.

---

1 Livermore Airport Master Plan; Environmental Impact Assessment, 1977.
2 Gene Maestas, Airport Manager, City of Livermore, 1985.
3 The Livermore Airport Master Plan states (p. 31) that the Tracy Municipal Airport Master Plan recommends that the facility remain a general aviation airport with minimum expansion and development.

Airport Master Plan

The airport Master Plan (1975-1995) adopted by the City of Livermore has two parts: first, a projection of future airport use and a facility development plan; second, a land use survey within the plan area with recommendations to keep nearby uses compatible with airport operations.

1. Airport Plan

At a future service area population of 245,000, the airport is forecast to have about 500 based aircraft and 340,000 annual operations. Although these figures are a 20-year forecast, growth may not occur at this rate. The effect of the Alameda County, Livermore, and Pleasanton general plans and plans for the San Ramon Valley in Contra Costa County may be to bring about growth at a rate other than that presumed in the airport Master Plan.[1]

According to the Master Plan, this would alter the timing but not the recommended sequence of airport development: the Master Plan does not propose airport development in anticipation of demand.

* The airport would remain a basic transport facility.
* Within the next five years a clear zone and approach area acquisition should be completed.
* At about 235,000 annual operations, taxiway improvements would be required to accommodate increasd use of Runway 7/25.
* Above 255,000 annual operations, a new 2700-foot runway would be built, expanding capacity to 385,000 operations.
* A 1250-foot expansion of Runway 7/25 (now 4000 feet in length) is contemplated for the longer range (15-20 years) if jet operations increase.

2. Noise Impact

The current 60 CNEL affects property within about 2,000 feet of the runway including a golf course, sewage treatment plant, industry and agriculture. The projected 60 CNEL increases the affected area to include existing residences in Livermore. The projected 65 CNEL does not fall on any existing noise-sensitive uses. The Master Plan calls for review of operations to prevent exceeding projected noise levels. However, a CNEL "line" is actually a band with a range of as much as 3 dB. Thus, while the airport might not be in violation of California noise standards,[2] the noise level over residences might prove objectionable.

---

1 To date, Livermore has adopted a growth policy which would lead to a city population below that presumed in the airport plan.

2 California Adm. Code, Section 5000 ff. An annual CNEL of 65 or above violates the standards if it takes in schools or most residential uses.

According to the airport Master Plan, the projected increase in business and corporate jets is responsible for the noise impact at greater distances from the airport. It is estimated that there will be approximately 10 jet aircraft based at the airport in 1995, with 3400-6800 annual turbine aircraft operations.[1]

3. Safety Impact

The Master Plan includes clear zones and approach areas for the proposed new basic utility runway and extension of the existing runway. Dimensions for these areas, which are recommended for purchase by the City, comply with FAA guidelines for non-precision instrument runways.[2] The western clear zone and approach area are measured from the end of the proposed extension. The distance from the end of the existing runway to the outer edge of the proposed western approach is almost 4900 feet.

Purchase of this property will depend on municipal finances and FAA funding. The City already owns the existing east clear zone and that portion of the western zone within the golf course. Beyond this point, the City holds an easement over the existing western clear zone. An application for funds to purchase over 100 acres in the western approach area is under consideration by the FAA. It is noteworthy that the western area beyond the golf course is outside the present City Limits.

If incorporated into the airport, these approach areas and clear zones, now primarily under open space, would be subject to FAA use standards: the clear zone is to be kept free of all structures and maintained "to ensure the safe and unrestricted passage of aircraft in and over the area."[3]

The Master Plan notes:

> Acquisition of clear zone land is mandatory for the safe and efficient operation of the airport, and necessary to comply for the receipt of future federal matching funds for projects.
>
> Approach areas are a recommended purchase for positive control of compatible land development within the airport

---

1 Master Plan, p. 81.

2 FAA Airport Development Aid Program guidelines specify dimensions up to 1500 feet wide and 3400 feet long for a nonprecision instrument runway; for airports serving turbojets the dimensions may be 2500 feet wide and 5000 feet long.

3 FAA, FAR, Part 152

> approach environs; at the minimum, all lands falling within the 65 CNEL contour should be acquired. Recommended land use within the approach areas but outside of clear zones, include agriculture, park and open space, light industry (warehousing, etc.) and roadside commercial, given that there are no buildings penetrating the approach surface or areas where there is a dense population.[1]

The clear zone and approach area land use standards are generally equivalent to the safety zone policies proposed in this ALUC Plan. ALUC land use policies recommend that land remain clear within one-quarter mile of the runway; beyond this distance uses shall be low density, non-residential.

The ALUC has adopted a west safety zone for the Livermore Municipal Airport measuring 2500 feet wide and 5400 feet long. This is represented on the map, "Livermore Municipal Airport Safety Zones and Noise Impact Zones."

With a safety zone length of 5400 feet, currently all "safety zone" properties beyond the golf course west of the airport are in an unincorporated area designated for light industrial or agricultural use in the County General Plan. East of the airport is a sewage treatment plant, industrial land, and unbuilt land designated as open space in the Livermore General Plan. Beyond this land, almost 60 acres of a residential subdivision fall within 5400 feet of the end of runway 7/25.

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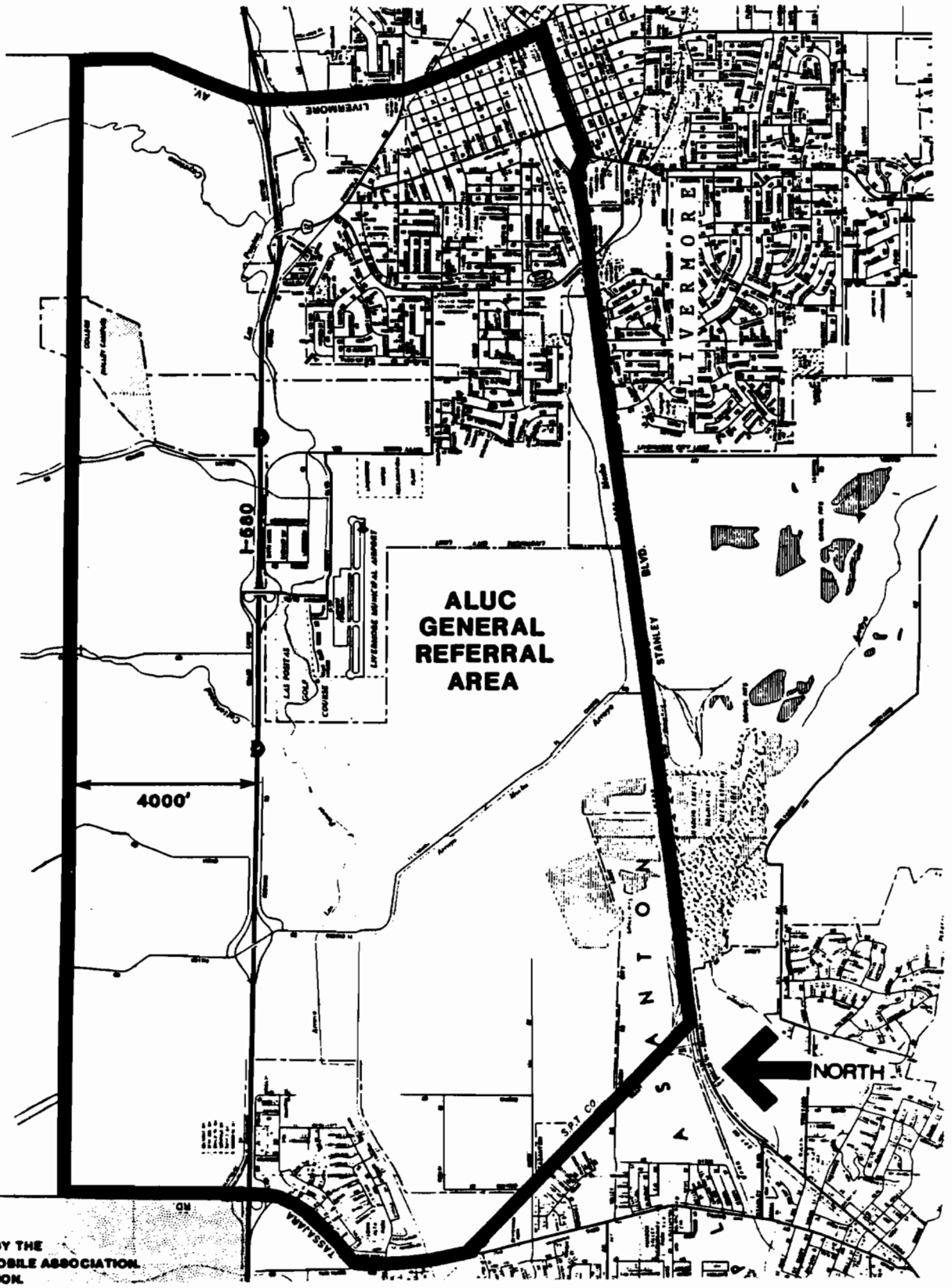
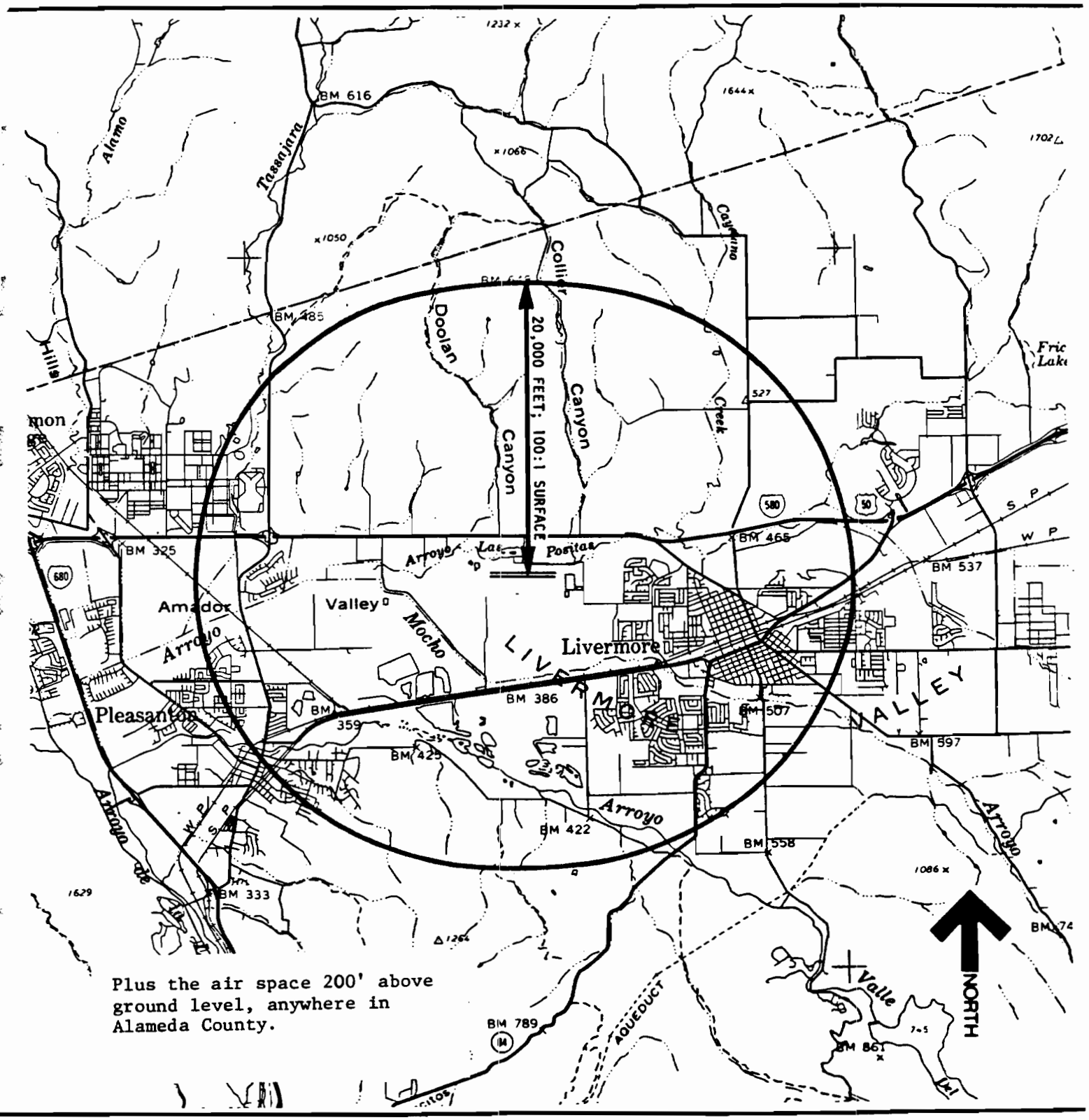
1 Master Plan, p. 106

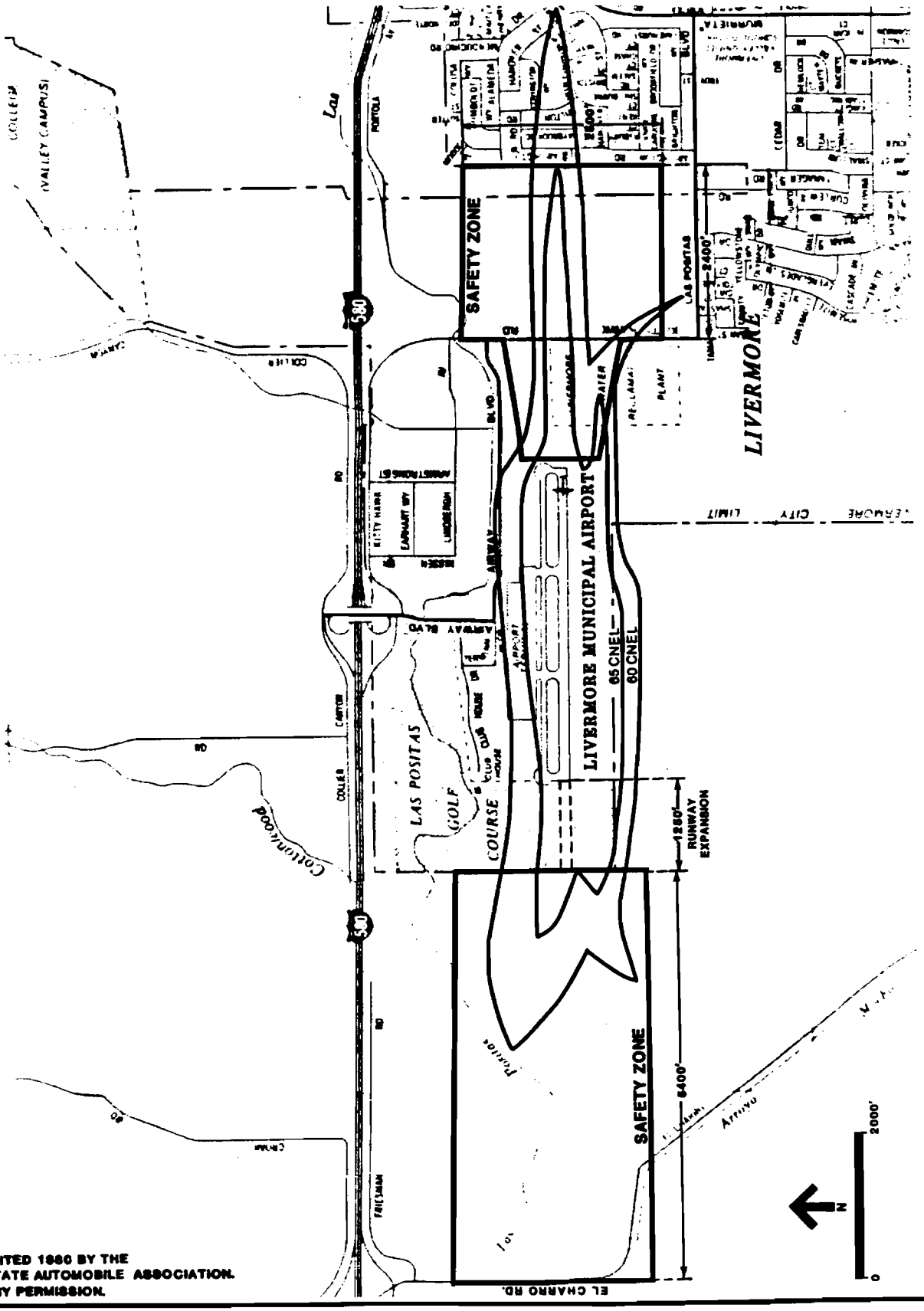
MAP XXI
ALUC GENERAL REFERRAL AREA
LIVERMORE MUNICIPAL AIRPORT



MAP XXII
ALUC HEIGHT REFERRAL AREA
LIVERMORE MUNICIPAL AIRPORT



MAP XXIII
ALUC SAFETY AND NOISE ZONES
LIVERMORE MUNICIPAL AIRPORT
(Contours Forecast to 1995)



Source: Livermore Municipal Airport Master Plan, 1975; and ALUC

E. FREMONT AREA AIRPORTS

There are two privately-owned airports located in the City of Fremont: the Fremont Airport at Dixon Landing Road and Sky Sailing Airport. A new general aviation reliever airport has also been proposed in Fremont.

The California Division of Aeronautics has advised the ALUC that the existing Fremont Airport at Dixon Landing Road and Sky Sailing Airport are public use airports under the jurisdiction of the ALUC.[1]

FREMONT AIRPORT (DIXON LANDING ROAD)

Background Information

The existing Fremont Airport is located on 89 acres west of the Nimitz Freeway, north of Dixon Landing Road and east of Coyote Creek. It is immediately north of the Santa Clara County line in Alameda County. The Fremont General Plan designates the site for airport use.

The privately-owned facility began operation in 1956. The site is leased on a month-to-month basis from the property owner.

There are two runways: 13L/31R at 2,200' x 40' (dirt) and 13R/31L at 2,310' x 40' (asphalt). Airport hours are 9 a.m. to dusk. There are more than 50,000 annual operations with a peak month of 15,000 operations. Based general aviation aircraft include: 137 single engine, 3 multi-engine, and 2 helicopters.

The property owner has indicated an intent to develop the site for industrial uses, thereby eliminating the Fremont Airport. The airport operator has stated to ALUC that they hope to have development of the site delayed until they are able to shift operations to the proposed new Fremont reliever airport.

ALUC jurisdiction ceases when the State Airport Permit for the facility is revoked, as provided under Section 21668 of the State Aeronautics Act. ALUC Policy Plan language relating to a closed airport would be removed by plan amendment.

General Referral Area

The ALUC General Referral Area for Fremont Airport at Dixon Landing Road is shown on Map XXIV.

---

1 Letter, August 1, 1984; Fred Stewart, Division of Aeronautics to Herbert Epstein, City of Fremont.
Letter, October 5, 1984; Fred Stewart, Division of Aeronautics to William H. Fraley, ALUC.

Safety Zones and Noise Impact Zone

No specific ALUC safety zone or noise impact zone is included for Fremont Airport at this time due to the interim nature of airport use at this location, the lack of jet aircraft and the relatively low number of operations. No data on airport noise contours and no airport layout plan or master plan are available.

Within the General Referral Area, ALUC will review plan amendments, rezonings and development plans[1] to determine whether proposed uses are consistent with applicable ALUC referral area policies including those policies contained in Chapter II Sections C, E and F.

In addition, any proposed residential use or other noise sensitive use within the General Referral Area will require submittal of a site noise study prior to action by ALUC. ALUC noise policies (Chapter II, Section D) shall apply within noise contours adopted by ALUC.

Also, the following ALUC safety policies are adopted: Residential use and hazardous installations (storage of flammable liquids without appropriate safeguards) shall not be consistent with the ALUC Plan if located within an area 750' wide from the centerline of each runway and 3500' long, measured from the end of the runway.

Height Referral Area

The ALUC Height Referral Area is shown on Map XXV. The Height Referral Area corresponds to the FAA referral area for a Notice of Construction: up to 10,000 feet from an airport runway[2] and exceeding one foot in height for each 50 feet (50:1) horizontally from the nearest point of the nearest runway. In addition, the ALUC Height Referral Area (and FAA referral area) applies throughout Alameda County where a proposed use would exceed 200 feet above ground level at its location.

Within the ALUC Height Referral Area, general policies in ALUC Policy Plan Chapter II relating to height restrictions shall apply. ALUC has adopted the standards and imaginary surfaces, including approach surfaces, contained in Federal Aviation Regulations Part 77 (see Appendix C).

---

1 In 1981, pursuant to rezoning of property adjacent to the airport (Tract 5187), the City of Fremont adopted a Tentative Map Condition that the developer covenants to refer proposals to ALUC "if and to the extent required by the laws and regulations pertaining to that Commission." Review of individual projects is additionally permitted under Public Utilities Code Section 21675.5.

2 This FAA referral area is for a runway no more than 3,200 feet in length.

Hazard Prevention Zone

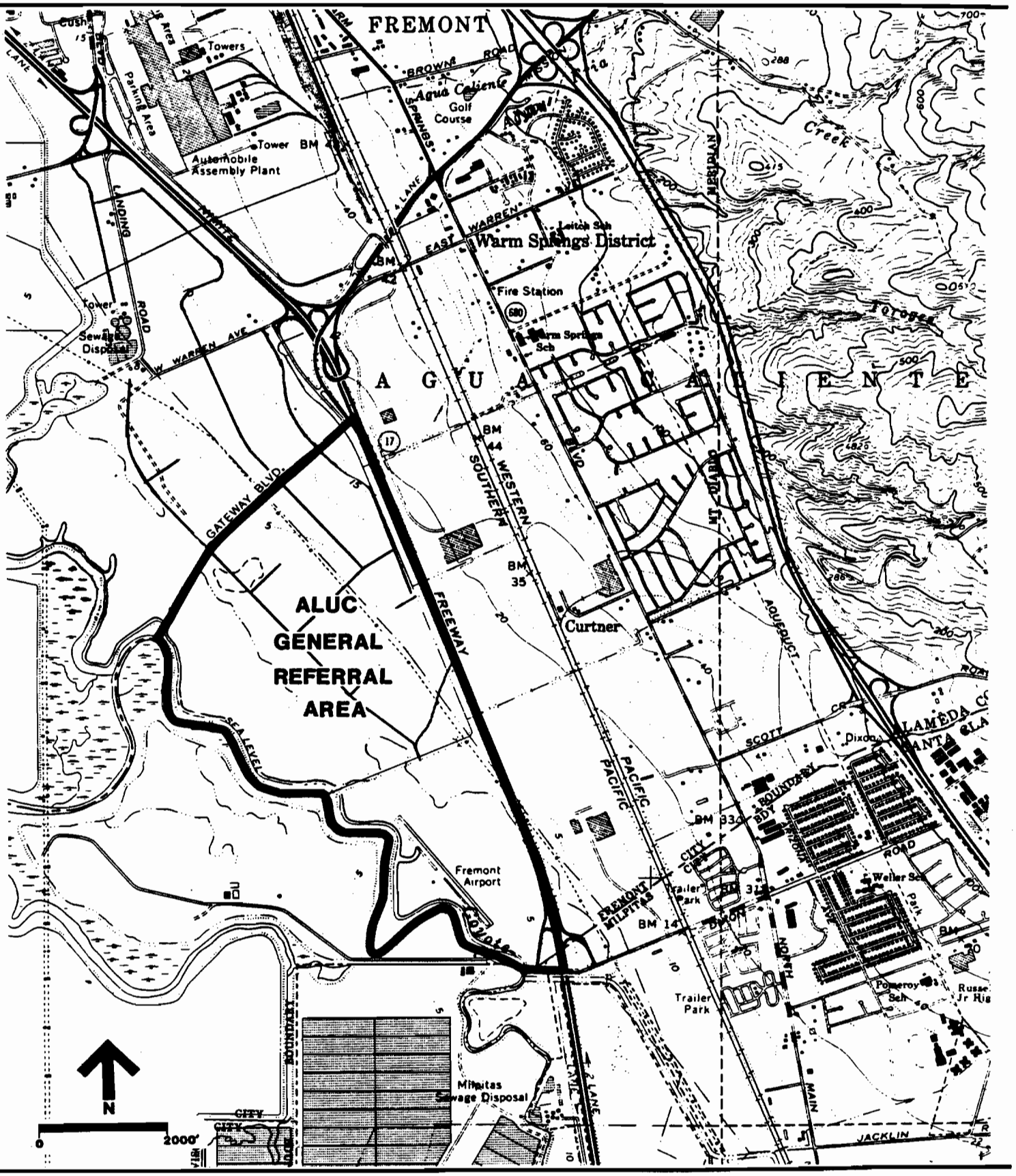
ALUC hazard prevention policies from Policy Plan Chapter II Section C shall apply within the General Referral Area boundary.

Other Considerations

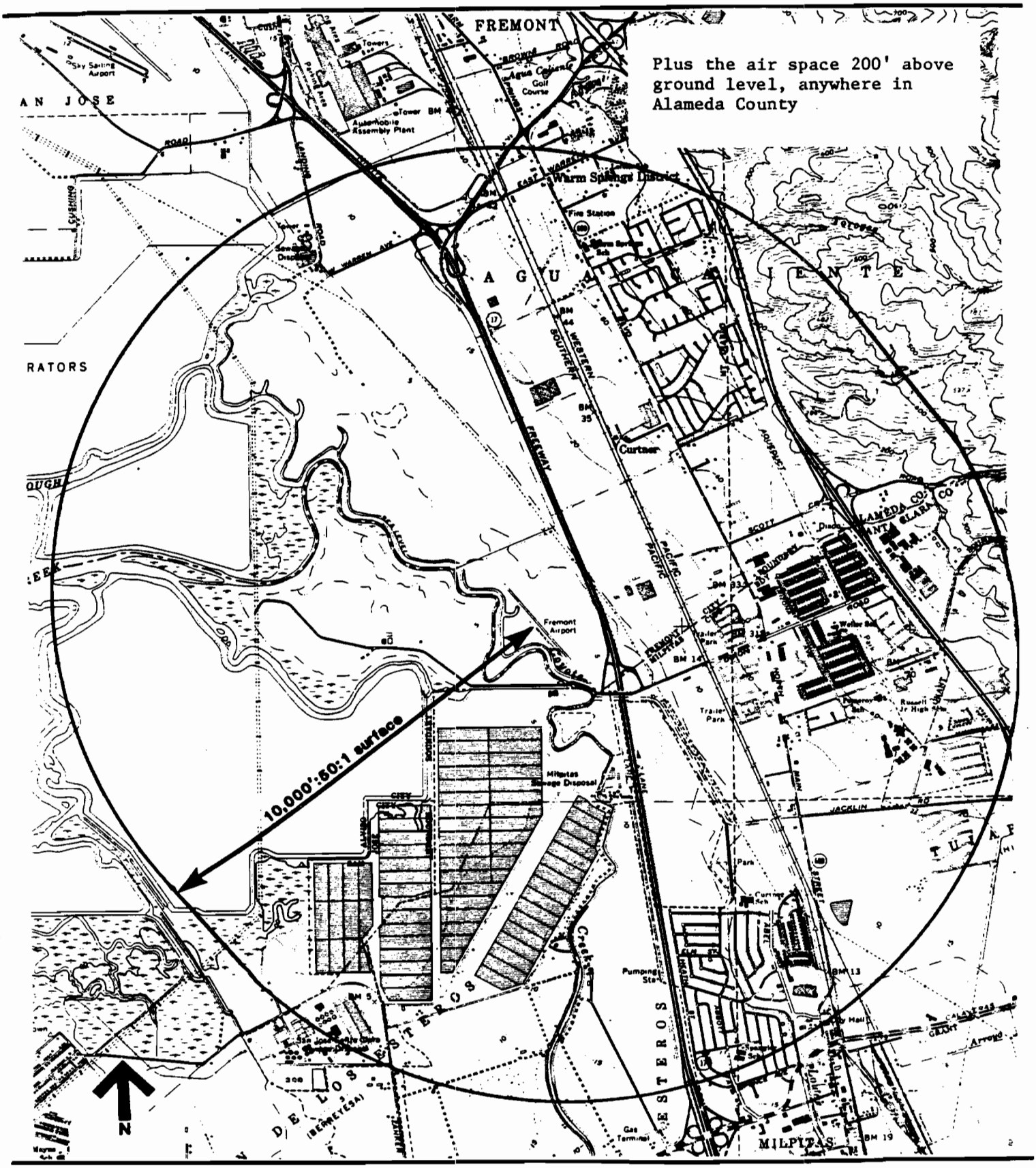
The ALUC does not have jurisdiction over land use in adjacent counties. For this reason, ALUC planning boundaries are limited to Alameda County. However, it is recommended that the Santa Clara County ALUC adopt appropriate planning boundaries and policies, including especially height restrictions and hazard prevention policies, relating to the Fremont Airport.

MAP XXIV

FREMONT AIRPORT GENERAL REFERRAL AREA



MAP XXV
FREMONT AIRPORT HEIGHT REFERRAL AREA



SKY SAILING AIRPORT

Background Information

Sky Sailing Airport is a privately-owned gliderport located south of Durham Road in Fremont, immediately west of the Fremont Raceways Drag Strip. The property is leased from Southern Pacific Land Company. Operations began at the facility in 1960.

Sky Sailing Airport has a single 1,840' runway. The operator states that the facility has approximately 80,000 movements annually (a towing operation consists of two movements on approach and departure).

Sky Sailing Airport has operated under a Fremont Use Permit granted in 1959. The Fremont General Plan and Zoning Ordinance designate the property and all adjacent properties for industrial use. The City of Fremont stated to ALUC that it regards the airport as an interim use until planned industrial development of the site occurs.

Southern Pacific Land Company, property owner, stated to ALUC that it can legally terminate the lease on Sky Sailing Airport in 1986 but at present it is not their intent to do so. The Company stated that in no event will the gliderport continue to exist after June 30, 1989.

ALUC jurisdiction ceases when the State Airport Permit for the facility is revoked, as provided under Section 21668 of the State Aeronautics Act. ALUC Policy Plan language relating to a closed airport would be removed by plan amendment.

General Referral Area

The ALUC General Referral Area for Sky Sailing Airport is shown on Map XXVI attached.

Safety Zones and Noise Impact Zone

No specific ALUC safety zones or noise impact zone is included for Sky Sailing Airport at this time due to the possible interim nature of the airport use at this location, the lack of jet aircraft and the relatively low number of operations. No data on airport noise contours and no adopted airport layout plan or master plan are available.

Within the General Referral Area, ALUC will review plan amendments and rezonings to determine whether proposed uses would be consistent with applicable referral area policies in the ALUC plan including those policies contained in Chapter II Sections C, E and F.

In addition, any proposed residential use or other noise sensitive use within the General Referral Area will require submittal of a site noise study prior to action by ALUC. ALUC noise policies (Chapter II, Section D) shall apply within noise contours adopted by ALUC.

Also, the following ALUC safety policies are adopted: Residential use and storage of flammable liquids without appropriate safeguards shall not be consistent with the ALUC Plan if located within an area 750' wide from the centerline of the runway and 3500' long measured from the runway end.

Height Referral Area

The ALUC Height Referral Area is shown on Map XXVII. The Height Referral Area corresponds to the FAA referral area for a Notice of Construction: up to 10,000 feet from an airport runway[1] and exceeding one foot in height for each 50 feet (50:1) horizontally from the nearest point of the nearest runway. In addition, the ALUC Height Referral Area (and FAA referral area) applies anywhere in Alameda County where a proposed use would exceed 200 feet above ground level at its location.

Within the ALUC Height Referral Area, general policies in ALUC Policy Plan Chapter II relating to height restrictions shall apply. ALUC has adopted the standards and imaginary surfaces, including the approach surfaces, contained in Federal Aviation Regulations Part 77 (see Appendix C).

Hazard Prevention Zone

ALUC hazard prevention policies from Policy Plan Chapter II Section C shall apply within the General Referral Area boundary.

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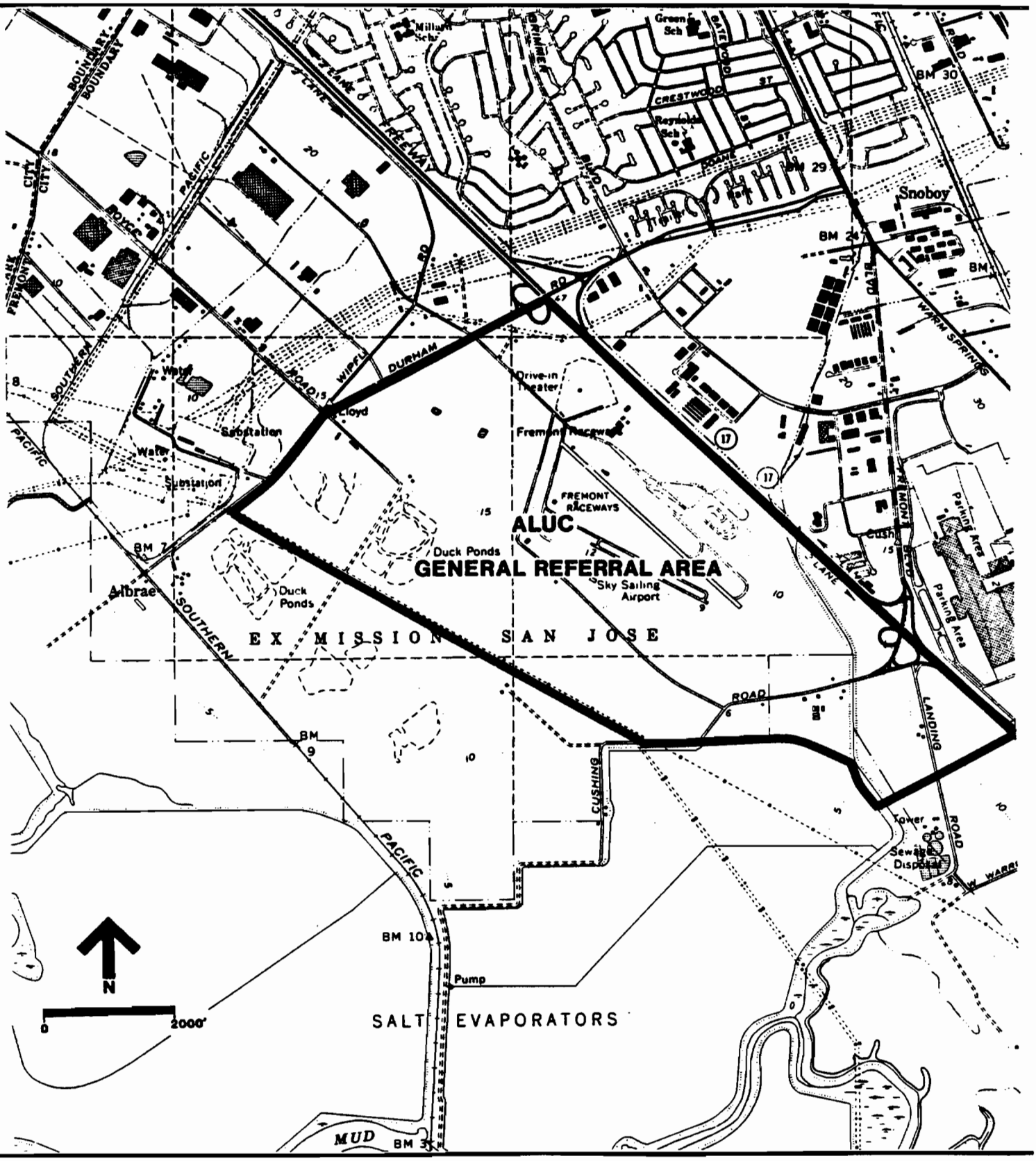
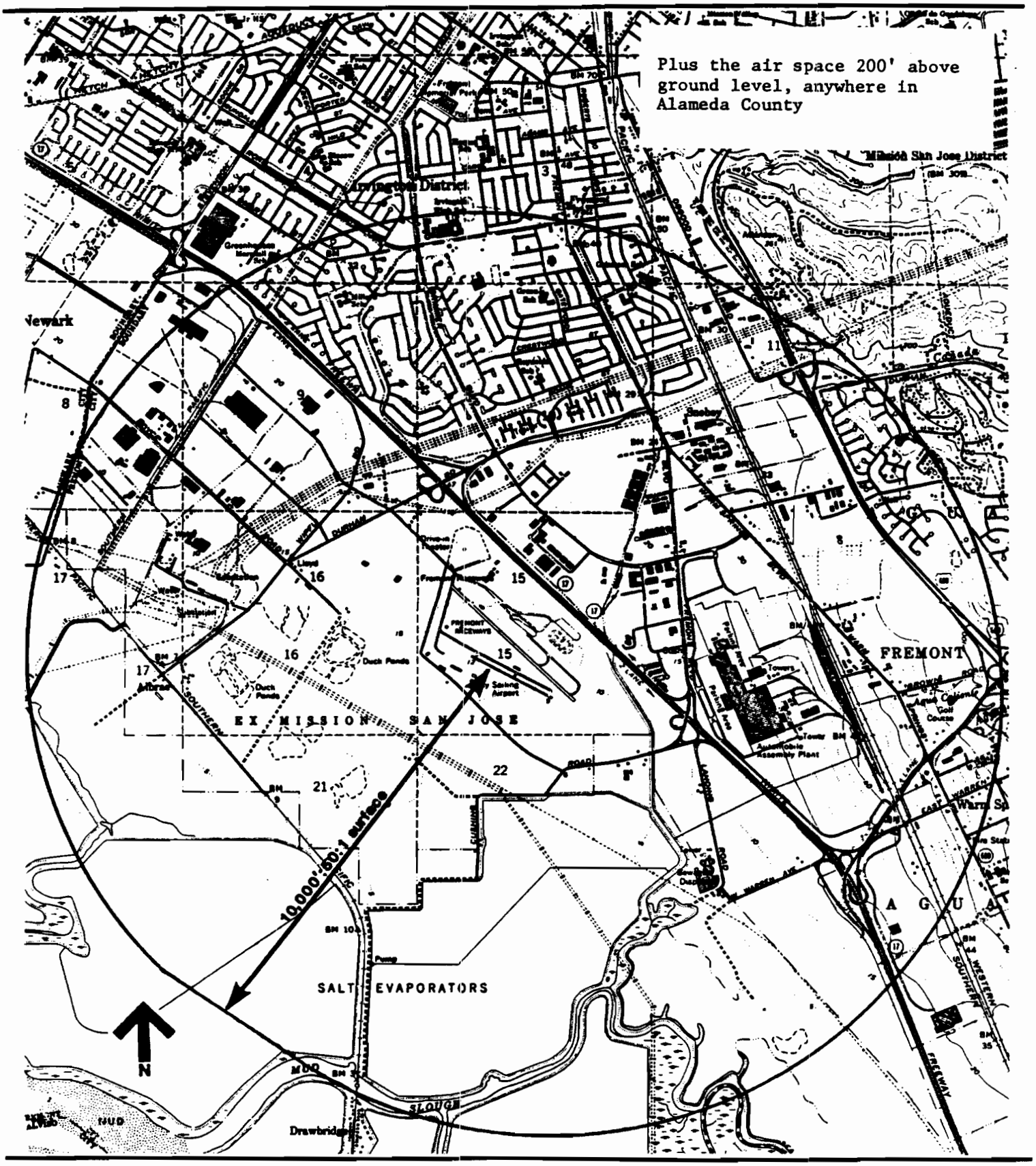
1 This FAA referral area is for runways no more than 3,200 feet in length.

MAP XXVI

SKY SAILING AIRPORT GENERAL REFERRAL AREA



MAP XXVII
SKY SAILING AIRPORT HEIGHT REFERRAL AREA



FREMONT RELIEVER AIRPORT (PROPOSED)

Background Information

A general aviation reliever airport for San Jose International Airport has been proposed at "Site G" in Fremont. Site G consists of about 286 acres of undeveloped property between Durham Road and Cushing Road, west of the PG&E tower lines and east of the San Francisco Bay National Wildlife Refuge and the Durham Road Sanitary Landfill.

An FAA funded project to prepare an environmental assessment, financial feasibility, airport layout plan, and an environmental impact statement is presently underway by the City of Fremont.

State law requires the City to submit plans for the proposed airport to the ALUC prior to applying for construction of the airport to any local, regional, state or federal agency.[1]

When the City submits plans for the proposed airport to ALUC, ALUC will consider a plan amendment to provide for appropriate policies and planning boundaries. Prior to that date, it is recommended that the city refer any development proposals in the vicinity of the proposed airport to ALUC for review and comment.

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1 Public Utilities Code Section 21661.5

HELIPORT GUIDELINES

Purpose

ALUC's role in reviewing heliport siting is to protect safe avigation and to prevent conflicts between land use and helicopter noise. As with airports, ALUC adopts criteria identifying heliport safety and noise impact zones. Along with an assessment of land use compatibility, ALUC will weigh evidence of the public interest and need for a heliport. Thus, ALUC may find that benefits of a facility exceed potential negative impacts, provided that public safety is not jeopardized.

Referral and Review Procedures

A. The ALUC staff will notify Alameda County and the cities within the County of these referral procedures and heliport siting guidelines.

B. For initial advisory review under ALUC guidelines, it is recommended that local jurisdictions notify ALUC staff of proposed heliports prior to final action. It is also anticipated that an environmental impact report will be prepared and referred to ALUC for review and comment.

Information needed for ALUC Determination for Plan Consistency includes:

Site Information

a. Site location: the environmental impact report should review site alternatives.
b. Location of residences, schools, and health-related facilities within the projected 60 CNEL.
c. Local evaluation in terms of general plan policies and zoning.
d. FAA response on airspace capacity.

Operational Information

e. Number of anticipated daily operations, broken down by daytime (7 a.m. - 7 p.m.) and nighttime. If possible, an estimate of the number of operations within 3-5 years should be included.
f. Noise evaluation: CNEL down to 60 dBA and ambient noise. SENEL information should be included if any residences or other noise-sensitive uses are within the 60 CNEL.
g. Proposed approach and departure flight paths.
h. Dust, rotor turbulence, and other operational impacts.

C. ALUC staff comments will be submitted to the referring jurisdiction prior to final action.

D. If the jurisdiction approves the heliport, the project and supporting information described in item B above must be referred to the ALUC for public hearing as required by State law. (see Policy #26, page 17).

E. An ALUC hearing is conducted, taking into account land use compatibility as established in the following guidelines and evidence of public need.

F. The ALUC report is submitted to the California Division of Aeronautics as required in the state permitting process.

Heliport Siting Guidelines

FAA Review

1. The ALUC requires documentation of FAA response indicating that the facility is acceptable in terms of airspace capacity.

Plan Consistency

2. The proposed heliport should be consistent with applicable general plans and zoning.

Safety

3. Heliport safety zones are recognized by ALUC based on FAA recommended Visual Flight Rules (VFR) approach zones,[1] as shown on Figures VI and VII.[2] Flight paths may be curved and safety zones adjusted accordingly.

4. Height limits within recognized safety zones shall be in accord with ALUC policies in Chapter II. Height Referral Areas shall be consistent with the FAA notification requirement for heliports (see Figure V).

Noise[3]

5. The ALUC recognizes a heliport noise impact zone down to 60 CNEL.

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1 FAA Advisory Circular 150/5390-1B, Heliport Design Guide: "Heliport sites and approach-departure paths should be selected to avoid areas of public concentration. The approach-departure paths should also be free, and capable of being maintained free, of objects that can interfere with helicopter movement to and from the heliport."(p. 33)

2 These safety zone dimensions and land use standards are taken from the Santa Clara County Airport Land Use Policy Plan.

3 FAA Advisory Circular: "The impact of heliport engine and rotor sounds upon populated areas is an important consideration in selecting a heliport site. Since helicopter sounds are greatest directly beneath the take-off and landing paths, these paths should be located over sparsely populated areas; over areas that have an already high level of background sounds; or over areas that would be expected to have a high tolerance level to helicopter sounds." (p. 33)

6. Within the noise impact zone, land use compatibility standards adopted in Table I shall be applied to evaluate the suitability of heliport siting. The ALUC discourages establishment of a heliport if existing or planned residences or other noise-sensitive uses would fall within the 60-65 CNEL range. Residences and other noise-sensitive uses should definitely not be located within the 65 CNEL.

7. No noise-sensitive uses should be exposed to 80+ dBA (single noise event).

8. For new uses within recognized heliport noise impact zones, insulation standards adopted in the Policy Plan will apply.

Public Interest and Need

9. The heliport proposal should identify evidence of public need (for example, an emergency heliport at a hospital).

10. The ALUC requires evidence that population within a noise impact zone and generally within 1/2 mile of a proposed site has been informed of the proposal and its potential impact through such actions as public notices, local public hearings, and test flights.[1]

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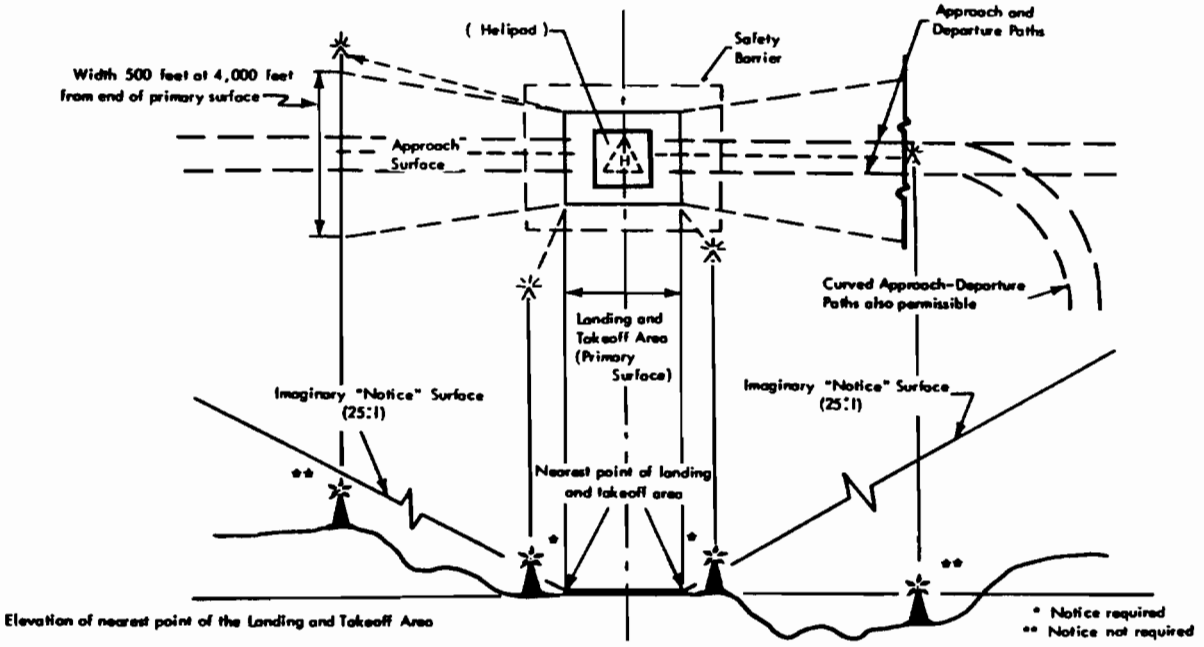
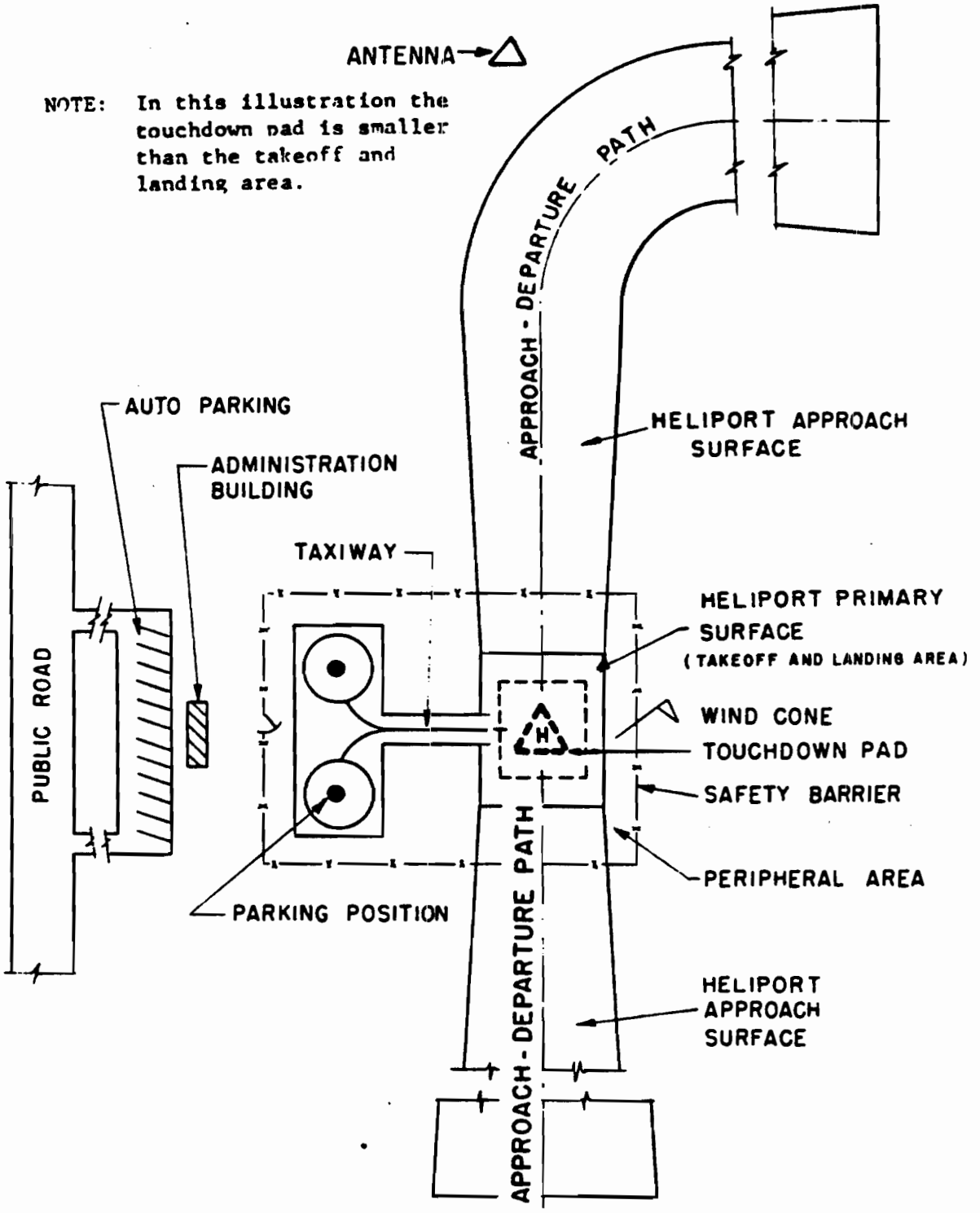
[1] Test flights were used in evaluation of the Emeryville heliport which was reviewed by the ALUC in 1973.

FIGURE V
FAA NOTICE REQUIREMENT RELATED TO HELIPORTS



Source: Federal Aviation Regulations, Part 77

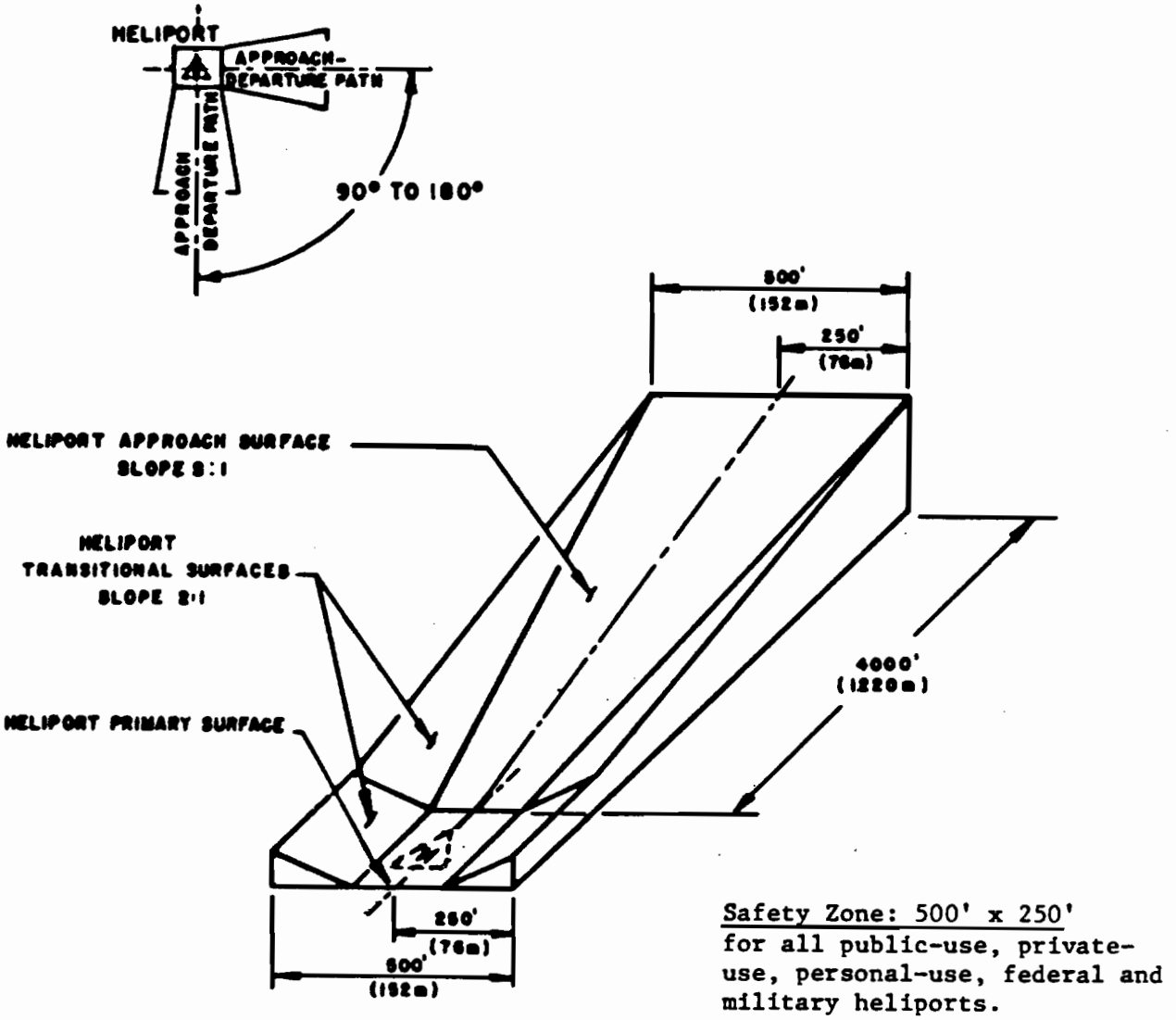
FIGURE VI
RELATIONSHIP OF HELIPORT SURFACES



Source: Federal Aviation Regulations, Part 77

FIGURE VII
PERSPECTIVE OF HELIPORT SURFACES

ACCEPTABLE RANGE OF ANGLES BETWEEN APPROACH-DEPARTURE PATHS WHEN MORE THAN ONE APPROACH-DEPARTURE PATH IS PROVIDED



Safety Zone: 500' x 250'
for all public-use, private-use, personal-use, federal and military heliports.

Source: Federal Aviation Regulations, Part 77

APPENDIX A

CALIFORNIA AIRPORT LAND USE COMMISSION LAW

§ 65302.3. (Effective until January 1, 1989) General plan to be consistent with airport land use plan

(a) The general plan, and any applicable specific plan prepared pursuant to Article 8 (commencing with Section 65450), shall be consistent with the plan adopted or amended pursuant to Section 21675 of the Public Utilities Code.

(b) The general plan, and any applicable specific plan, shall be amended, as necessary, within 180 days of any amendment to the plan required under Section 21675 of the Public Utilities Code.

(c) If the legislative body does not concur with any provision of the plan required under Section 21675 of the Public Utilities Code, it may satisfy the provisions of this section by adopting findings pursuant to Section 21676 of the Public Utilities Code.

This section shall remain in effect only until January 1, 1989, and as of that date is repealed, unless a later enacted statute, which is chaptered before January 1, 1989, deletes or extends that date.

Added Stats 1982 ch 1041 § 2; Amended Stats 1984 ch 1009 § 5.4.

Amendments:

1984 Amendment: (1) Substituted "Article 8 (commencing with Section 65450)" for "Section 65450" in subd (a); (2) amended subd (b) by (a) deleting "Notwithstanding the provisions of Section 65361," at the beginning; and (b) adding ", as necessary,"; (3) substituted "If" for "In the event that" at the beginning of subd (c); and (4) deleted "become operative January 1, 1984, and" before "remain in effect" in the last paragraph.

Former Section: Former § 65302.3, similar to the present section, was added by Stats 1982 ch 1041 § 1 and repealed effective January 1, 1984, by its own terms.

Submission of general plan to county airport land use commission and overruling of commission determination: Pub U C § 21676.

§ 21661.5. Approval of plan

No political subdivision, any of its officers or employees, or any person may submit any application for the construction of a new airport to any local, regional, state, or federal agency unless the plan for such construction is first approved by the board of supervisors of the county, or the city council of the city, in which the airport is to be located and unless the plan is submitted to the appropriate commission exercising powers pursuant to Article 3.5 (commencing with Section 21670) of Chapter 4 of Part 1 of Division 9, and acted upon by such commission in accordance with the provisions of such article.

Added by Stats 1970 ch 808 § 1.

9 Cal Jur 3d Aviation § 36.

§ 21670. (Effective until January 1, 1989) Purpose of article; Creation of county commissions; Membership; Proxies

(a) The Legislature hereby finds and declares that:

(1) It is in the public interest to provide for the orderly development of each public use airport in this state and the area surrounding these airports so as to promote the overall goals and objectives of the California airport noise standards adopted pursuant to Section 21669, and prevent the creation of new noise and safety problems.

(2) It is the purpose of this article to protect public health, safety, and welfare by ensuring the orderly expansion of airports and the adoption of land use measures that minimize the public's exposure to excessive noise and safety hazards within areas around public airports to the extent that these areas are not already devoted to incompatible uses.

(b) In order to achieve the purposes of this article, every county in which there is located an airport which is served by a scheduled airline shall establish an airport land use commission. Every county, in which there is located an airport which is not served by a scheduled airline, but is operated for the benefit of the general public, shall establish an airport land use commission, except that the board of supervisors of the county may, after consultation with the appropriate airport operators and affected local entities and after a public hearing, adopt a resolution finding that there are no noise, public safety, or land use issues affecting any airport in the county which require the creation of a commission and declaring the county exempt from that requirement. The board shall, in this event, transmit a copy of the resolution to the Director of Transportation. For purposes of this section, "commission" means an airport land use commission. Each commission shall consist of seven members to be selected as follows:

(1) Two representing the cities in the county, appointed by a city selection committee comprised of the mayors of all the cities within that county, except that if there are any cities contiguous or adjacent to the qualifying airport, at least one representative shall be appointed therefrom. If there are no cities within a county, the number of representatives provided for by paragraphs (2) and (3) shall each be increased by one.

(2) Two representing the county, appointed by the board of supervisors.

(3) Two representing the airports within that county, appointed by a selection committee comprised of the managers of all of the public airports within that county, except that one representative shall be appointed from an airport operated for the benefit of the general public.

(4) One representing the general public, appointed by the other six members of the commission.

(c) Public officers, whether elected or appointed, may be appointed and serve as members of the commission during their terms of public office.

(d) Each member shall promptly appoint a single proxy to represent him in commission affairs and to vote on all matters when the member is not in attendance. The proxy shall be designated in a signed written instrument which shall be kept on file at the commission offices, and the proxy shall serve at the pleasure of the appointing member. A vacancy in the office of proxy shall be filled promptly by appointment of a new proxy.

(e) This section shall remain in effect only until January 1, 1989, and as of that date is repealed, unless a later enacted statute, which is enacted before January 1, 1989, deletes or extends that date.

Amended by Stats 1970 ch 1182 § 1; Stats 1971 ch 687 § 1, effective August 23, 1971; Stats 1980 ch 725 § 9; Stats 1982 ch 1041 § 3; Stats 1984 ch 1117 § 2.

Amendments:

1970 Amendment: (1) Added "however, one such representative shall be appointed from an airport operated for the benefit of the general public" in subd (c); and (2) substituted the last sentence for the former last sentence which read: "If, however, a majority of the selection committee and of the board of supervisors in such county make a determination that adequate provision exists for a continuing review of land use surrounding airports, such commission shall not be created."

1971 Amendment: Added the third and fourth paragraphs.

1980 Amendment: (1) Added the comma after "hereby created" in the introductory clause; (2) amended subd (a) by adding (a) "city" before "selection"; and (b) the comma before "if there are"; and (3) deleted the former last sentence of the first paragraph which read: "Each commission shall file a certificate of formation with the Secretary of State on or prior to January 1, 1971."

1982 Amendment: (1) Added subd (a); (2) added subdivision designations (b)–(d); (3) redesignated former subds (a)–(d) to be subds (b)(1)–(b)(4); (4) amended the first sentence of subd (b) by (a) adding "In order to achieve the purposes of this article," at the beginning; and (b) substituting "certificated by" for "certified by the Public Utilities Commission or"; (5) substituted "paragraphs (2) and (3)" for "subdivisions (b) and (c)" in the last sentence of subd (b)(1); and (6) added the last paragraph of the section.

1984 Amendments: (1) Substituted "these airports so as to" for "such airports in such a manner among other things," after "surrounding" in subd (a)(1); (2) substituted "these" for "such" before "areas" in subd (a)(2); (3) substituted the first through fourth sentences of subd (b) for the former first sentence which read: "(b) In order to achieve the purposes of this article, there is hereby created, in each county subject to this article and containing at least one airport operated for the benefit of the general public and served by an air carrier certificated by the Civil Aeronautics Board, an airport land use commission, hereinafter referred to as the 'commission'.", (4) amended subd (b)(1) by (a) substituting ", except that" for "; provided, however, that," after "county"; and (b) deleting "such" before "representative"; (5) substituted ", except that one" for "; however, one such" after "county" in subd (b)(3); (6) substituted "appointing member" for "member who appointed him" at the end of the second sentence of subd (d); (7) designated the last paragraph to be subd (e); and (8) substituted "enacted" for "chaptered" in subd (e).

9 Cal Jur 3d Aviation § 41.

§ 21670. (Operative January 1, 1989) Creation of county commissions; Membership; Proxies

(a) Every county in which there is located an airport which is served by a scheduled airline shall establish an airport land use commission. Every county, in which there is located an airport which is not served by a

scheduled airline, but is operated for the benefit of the general public, shall establish an airport land use commission, except that the board of supervisors of the county may, after consultation with the appropriate airport operators and affected local entities and after a public hearing, adopt a resolution finding that these are no noise, public safety, or land use issues affecting any airport in the county which require the creation of a commission and declaring the county exempt from that requirement. The board shall, in this event, transmit a copy of the resolution to the Director of Transportation. For purposes of this section, "commission" means an airport land use commission. Each commission shall consist of seven members to be selected as follows:

(1) Two representing the cities in the county, appointed by a city selection committee comprised of the mayors of all the cities within that county, except that if there are any cities contiguous or adjacent to the qualifying airport, at least one representative shall be appointed therefrom. If there are no cities within a county, the number of representatives provided for by subdivisions (b) and (c) shall each be increased by one.

(2) Two representing the county, appointed by the board of supervisors.

(3) Two representing the airports within that county, appointed by a selection committee comprised of the managers of all of the public airports within that county, except that one representative shall be appointed from an airport operated for the benefit of the general public.

(4) One representing the general public, appointed by the other six members of the commission.

(b) Public officers, whether elected or appointed, may be appointed and serve as members of the commission during their terms of public office.

(c) Each member shall promptly appoint a single proxy to represent the member in commission affairs and to vote on all matters when the member is not in attendance. The proxy shall be designated in a signed written instrument which shall be kept on file at the commission offices, and the proxy shall serve at the pleasure of the appointing member. A vacancy in the office of proxy shall be filled promptly by appointment of a new proxy.

(d) This section shall become operative January 1, 1989.

Added Stats 1982 ch 1041 § 4, operative January 1, 1989; Amended Stats 1984 ch 1117 § 3.

Amendments:

1984 Amendment: (1) Substituted the first through fourth sentences of subd (a) for the former first sentence which read: "There is hereby created, in each county subject to this article and containing at least one airport operated for the benefit of the general public and served by an air carrier certified by the Public Utilities Commission or the Civil Aeronautics Board, an airport land use commission, hereinafter referred to as the 'commission.' "; (2) redesignated former subds (a)–(d) to be (a)(1)–(a)(4); (3) amended subd (a)(1) by (a) substituting ", except that" for "; provided, however, that," after "county"; and (b) deleting "such" before "representative"; (4) substituted ", except that one" for "; however, one such" after "county" in subd (a)(3); (5) designated the former second, third and fourth paragraphs to be subds (b), (c), and (d); and (6) amended subd (c) by (a) substituting "the member" for "him" after "represent" in the first sentence; and (b) substituting "appointing member" for "member who appointed him" at the end of the second sentence.

§ 21670.1. Alternative procedure: Designation of planning agency

Notwithstanding any provisions of this article, if the board of supervisors and the city selection committee of mayors in any county each makes a determination by a majority vote that proper land use planning can be accomplished through the actions of an appropriately designated body, then

such body shall assume the planning responsibilities of an airport land use commission as provided for in this article, and a commission need not be formed in that county.

Added by Stats 1970 ch 1182 § 2; Amended Stats 1980 ch 725 § 10.

Amendments:

1980 Amendment: (1) Added "city" before "selection committee"; and (2) deleted the former second sentence which read: "The Secretary of State shall be notified of such determinations by January 1, 1971."

9 Cal Jur 3d Aviation § 41.

§ 21670.2. Same: County of more than four million population

Sections 21670 and 21670.1 do not apply to counties of more than 4 million population. In such counties, the county regional planning commission has the responsibility for coordinating the airport planning of public agencies within the county. In instances where impasses result relative to this planning, an appeal may be made to the county regional planning commission by any public agency involved. The action taken by the county regional planning commission on such an appeal may be overruled by a four-fifths vote of the governing body of a public agency whose planning led to the appeal.

Added by Stats 1970 ch 1182 § 3.

9 Cal Jur 3d Aviation § 41.

§ 21671. (Effective until January 1, 1989) Appointment of commission representatives by mayors and board of supervisors

In any county where there is an airport operated for the general public which is owned by a city or district in another county or by another county, one of the representatives provided by paragraph (1) of subdivision (b) of Section 21670 shall be appointed by the mayors of the cities of the county in which the owner of that airport is located, and one of the representatives provided by paragraph 2 of subdivision (b) of Section 21670 shall be appointed by the board of supervisors of the county in which the owner of that airport is located.

This section shall remain in effect only until January 1, 1989, and as of that date is repealed, unless a later enacted statute, which is enacted before January 1, 1989, deletes or extends that date.

Amended Stats 1982 ch 1041 § 5; Stats 1984 ch 1117 § 4.

Amendments:

1982 Amendment: (1) Amended the first paragraph by (a) substituting "certificated by" for "certified by the Public Utilities Commission or" before "Civil Aeronautics Board"; (b) substituting "paragraph (1) of subdivision (b)" for "subdivision (a)"; and (c) adding "paragraph 2 of"; and (2) added the second paragraph.

1984 Amendment: (1) Deleted ", and served by an air carrier certified by the Civil Aeronautics Board," after "public" in the first paragraph; and (2) substituted "enacted" for "chaptered" after "which is" in the second paragraph.

§ 21671. (Operative January 1, 1989) Appointment of commission representatives by mayors and board of supervisors

In any county where there is an airport operated for the general public which is owned by a city or district in another county or by another county, one of the representatives provided by paragraph (1) of subdivision (a) of Section 21670 shall be appointed by the mayors of the cities of the county in

which the owner of that airport is located, and one of the representatives provided by paragraph (2) of subdivision (a) of Section 21670 shall be appointed by the board of supervisors of the county in which the owner of that airport is located.

This section shall become operative January 1, 1989.

Added Stats 1982 ch 1041 § 6, operative January 1, 1989; Amended Stats 1984 ch 1117 § 5.

Amendments:

1984 Amendment: Amended the first paragraph by (1) deleting ", and served by an air carrier certified by the Public Utilities Commission or the Civil Aeronautics Board," after "public"; (2) adding "paragraph (1) of" after "provided by"; and (3) substituting "paragraph (2) of subdivision (a)" for "subdivision (b)" after "provided by".

§ 21671.5. Tenure: Vacancies: Chairman: Compensation: Staff: Calling of meetings

Except for the terms of office of the members of the first commission, the term of office of each member shall be four years and until the appointment and qualification of his successor. The members of the first commission shall classify themselves by lot so that the term of office of one member is one year, of two members is two years, of two members is three years, and of two members if four years. The body which originally appointed a member whose term has expired shall appoint his successor for a full term of four years. Any member may be removed at any time and without cause by the body appointing him. The expiration date of the term of office of each member shall be the first Monday in May in the year in which his term is to expire. Any vacancy in the membership of the commission shall be filled for the unexpired term by appointment by the body which originally appointed the member whose office has become vacant. The chairman of the commission shall be selected by the members thereof.

Compensation, if any, shall be determined by the board of supervisors.

Staff assistance, including the mailing of notices and the keeping of minutes, and necessary quarters, equipment, and supplies shall be provided by the County. The usual and necessary operating expenses of the commission shall be a county charge.

Notwithstanding any other provisions of this article, the commission shall not employ any personnel either as employees or independent contractor without the prior approval of the board of supervisors.

The commission shall meet at the call of the commission chairman or at the request of the majority of the commission members.

Amended by Stats 1972 ch 419 § 1.

Amendments:

1972 Amendment: (1) Deleted "or reimbursement for necessary expenses, or both" after "if any" in the second paragraph; (2) added "and necessary quarters, equipment, and supplies" after "minutes," in the first sentence of the third paragraph; (3) added the last sentence in the third paragraph; and (4) added the fourth paragraph.

§ 21674. (Effective until January 1, 1989) Powers and duties of county commissions; Limitations on jurisdiction

The commission shall have the following powers and duties, subject to the limitations upon its jurisdiction set forth in Section 21676:

(a) To assist local agencies in ensuring compatible land uses in the vicinity of all new airports and in the vicinity of existing airports to the extent that

the land in the vicinity of such airports is not already devoted to incompatible uses.

(b) To coordinate planning at the state, regional and local levels so as to provide for the orderly development of air transportation, while at the same time protecting the public health, safety, and welfare.

(c) To prepare and adopt an airport land use plan pursuant to Section 21675.

(d) To review the plans, regulations, and other actions of local agencies and airport operators pursuant to Section 21676.

(e) The powers of the commission shall in no way be construed to give the commission jurisdiction over the operation of any airport.

This section shall remain in effect only until January 1, 1989, and as of that date is repealed, unless a later enacted statute which is chaptered before January 1, 1989, deletes or extends that date.

Amended by Stats 1970 ch 1182 § 4; Stats 1975 ch 1052 § 19; Stats 1982 ch 1041 § 7.

Amendments:

1970 Amendment: (1) Added "which shall conform as nearly as possible to the provisions applicable to hearings conducted by local agency formation commissions"; (2) deleted "be advisory only and shall" after "commission shall"; and (3) deleted "or jurisdiction over any matters relating to zoning or land use authority of any city or county" after "any airport."

1975 Amendment: Added subd (5).

1982 Amendment: Substituted the section for the former section which read:

"The commission shall have the following powers and duties, subject to the limitations upon its jurisdiction herein set forth:

"(1) To study conditions and make recommendations concerning the need for height restrictions on buildings near airports;

"(2) To make recommendations for the use of the land surrounding airports to assure safety of air navigation and the promotion of air commerce.

"(3) To hold public hearings regarding the subject matter in subdivisions (1) and (2) and make findings of fact thereon which would be advisory only to the involved jurisdiction.

"(4) To make and enforce rules and regulations for the orderly and fair conduct of such hearings which shall conform as nearly as possible to the provisions applicable to hearings conducted by local agency formation commissions.

"(5) To achieve by zoning compatible land uses in the vicinity of all new airports and in the vicinity of existing airports to the extent that the land in the vicinity of such airports is not already devoted to incompatible uses, and to this end the commissions shall require that all new construction in such areas shall conform to such standards as the department may from time to time adopt.

"The powers of the commission shall in no way be construed to give the commission jurisdiction over the operation of any airport."

9 Cal Jur 3d Aviation § 41.

55 Ops Atty Gen 284 (airport land use commissions not authorized to formulate comprehensive land use plans for area surrounding federal military airport).

§ 21674. (Operative January 1, 1989) Powers and duties of county commissions; Limitations on jurisdiction

The commission shall have the following powers and duties, subject to the limitations upon its jurisdiction herein set forth:

(a) To study conditions and make recommendations concerning the need for height restrictions on buildings near airports;

(b) To make recommendations for the use of the land surrounding airports to assure safety of air navigation and the promotion of air commerce.

(c) To hold public hearings regarding the subject matter in subdivisions (a) and (b) and make findings of fact thereon which would be advisory only to the involved jurisdiction.

(d) To make and enforce rules and regulations for the orderly and fair conduct of such hearings which shall conform as nearly as possible to the provisions applicable to hearings conducted by local agency formation commissions.

(e) To achieve by zoning compatible land uses in the vicinity of all new airports and in the vicinity of existing airports to the extent that the land in the vicinity of such airports is not already devoted to incompatible uses, and to this end the commissions shall require that all new construction in such areas shall conform to such standards as the department may from time to time adopt.

The powers of the commission shall in no way be construed to give the commission jurisdiction over the operation of any airport.

This section shall become operative January 1, 1989.

Added Stats 1982 ch 1041 § 8, operative January 1, 1989.

§ 21675. Formulation of comprehensive land use plan

(a) The commission shall formulate a comprehensive land use plan that will provide for the orderly growth of each public airport and the area surrounding the airport within the jurisdiction of the commission, and will safeguard the general welfare of the inhabitants within the vicinity of the airport and the public in general. The commission plan shall include a long-range master plan that reflects the anticipated growth of the airport during at least the next 20 years. In formulating a land use plan, the commission may develop height restrictions on buildings, may specify use of land, and may determine building standards, including soundproofing adjacent to airports, within the planning area. The comprehensive land use plan shall not be amended more than once in any calendar year.

(b) The commission may include, within its plan formulated pursuant to subdivision (a), the area within the jurisdiction of the commission surrounding any federal military airport for all the purposes specified in subdivision (a). This subdivision does not give the commission any jurisdiction or authority over the territory or operations of any military airport.

(c) The planning boundaries shall be established by the commission after hearing and consultation with the involved agencies.

Added by Stats 1970 ch 1182 § 5; Amended Stats 1973 ch 844 § 1, effective September 25, 1973; Stats 1980 ch 725 § 11; Stats 1981 ch 714 § 389; Stats 1984 ch 1117 § 5.5.

Amendments:

1973 Amendment: Added (1) subdivision designations (a) and (c); and (2) subd (b).

1980 Amendment: (1) Deleted the former third sentence which read: "This plan shall not be inconsistent with the State Master Airport Plan."; and (2) amended subd (b) by (a) adding the comma after "may include"; and (b) substituting the comma for "the" before "area within".

1981 Amendment: Routine code maintenance.

1984 Amendment: Added the last sentence to subd (a).

55 Ops Atty Gen 284 (airport land use commissions not authorized to formulate comprehensive land use plans for area surrounding federal military airport).

§ 21676. (Effective until January 1, 1989) Submission of general plans, proposed amendments thereto, and proposed modifications in airport master plans; Inconsistencies with commission plans; Authority to overrule commission

(a) Each local agency whose general plan includes areas covered by an airport land use commission plan, shall, by July 1, 1983, submit a copy of its plan or specific plans to the airport land use commission. The commission shall determine by August 31, 1983, whether the plan or plans are consistent or inconsistent with the commission's plan. If the plan or plans are inconsistent with the commission's plan, the local agency shall be notified and that local agency shall have another hearing to reconsider its plans. The local agency may overrule the commission after such hearing by a two-thirds vote of its governing body if it makes specific findings that the proposed action is consistent with the purposes of this article stated in Section 21670.

(b) Prior to the amendment of a general plan or specific plan, or the adoption or approval of a zoning ordinance or building regulation within the planning boundary established by the airport land use commission pursuant to Section 21675, the local agency shall first refer the proposed action to the commission. If the commission determines that the proposed action is inconsistent with the commission's plan, the referring agency shall be notified. The local agency may, after a public hearing, overrule the commission by a two-thirds vote of its governing body if it makes specific findings that the proposed action is consistent with the purposes of this article stated in Section 21670.

(c) Each public agency owning any airport within the boundaries of an airport land use commission plan, shall, prior to modification of its airport master plan, refer such proposed change to the airport land use commission. If the commission determines that the proposed action is inconsistent with the commission's plan, the referring agency shall be notified. The public agency may, after a public hearing, overrule the commission by a two-thirds vote of its governing body if it makes specific findings that the proposed action is consistent with the purposes of this article stated in Section 21670.

(d) Each commission determination pursuant to subdivision (b) or (c) shall be made within 60 days from the date of referral of the proposed action. If a commission fails to make the determination within that period, the proposed action shall be deemed consistent with the commission's plan.

This section shall remain in effect only until January 1, 1989, and as of that date is repealed, unless a later enacted statute, which is chaptered before January 1, 1989, deletes or extends that date.

Added by Stats 1970 ch 1182 § 6; Amended Stats 1982 ch 1041 § 9.

Amendments:

1982 Amendment: Substituted the section for the former section which read:

"Each public agency having representation on the commission shall assist in the development of an area plan. All such plans must be filed with the commission for its approval. If in the determination of the commission, an action or regulation of any public agency within the boundaries of the area plan is inconsistent with the commission plan, then the commission shall hold a hearing to determine whether or not the proposed action is in the best interest of the airport and the adjacent area. If it is determined that the action would be harmful, then the public agency shall be notified and the public agency shall have another hearing to reconsider its action. The public agency proposing the action or regulation, however, may overrule the commission after such hearing by a four-fifths vote of its governing body.

"Each public agency owning any airport within the boundaries of the area plan shall file any substantive change in development plans with the commission for its approval. If such plans are inconsistent with

the commission plan, then the public agency shall be notified and shall have another hearing to reconsider its action. Such public agency, however, may overrule the commission by a four-fifths vote of its governing body."

General plans to be consistent with commission plans: Gov C § 65302.3.

55 Ops Atty Gen 284 (airport land use commissions not authorized to formulate comprehensive land use plans for area surrounding federal military airport).

§ 21676. (Operative January 1, 1989) Development and approval of area plans; Inconsistencies with commission plans; Changes in development plans; Authority to overrule commission

Each public agency having representation on the commission shall assist in the development of an area plan. All such plans shall be filed with the commission for its approval. If in the determination of the commission, an action or regulation of any public agency within the boundaries of the area plan is inconsistent with the commission plan, then the commission shall hold a hearing to determine whether or not the proposed action is in the best interest of the airport and the adjacent area. If it is determined that the action would be harmful, then the public agency shall be notified and the public agency shall have another hearing to reconsider its action. The public agency proposing the action or regulation, however, may overrule the commission after such hearing by a four-fifths vote of its governing body.

Each public agency owning any airport within the boundaries of the area plan shall file any substantive change in development plans with the commission for its approval. If such plans are inconsistent with the commission plan, then the public agency shall be notified and shall have another hearing to reconsider its action. Such public agency, however, may overrule the commission by a four-fifths vote of its governing body.

This section shall become operative January 1, 1989.

Added Stats 1982 ch 1041 § 10, operative January 1, 1989

§ 21676.5. Failure of local agency to revise local plan or overrule commission; Commission review of subsequent actions

(a) If the commission finds that a local agency has not revised its general plan or specific plan or overruled the commission by a two-thirds vote of its governing body after making specific findings that the proposed action is consistent with the purposes of this article as stated in Section 21670, the commission may require that the local agency submit all subsequent actions, regulations, and permits to the commission for review until its general plan or specific plan is revised or the specific findings are made. If, in the determination of the commission, an action, regulation, or permit of the local agency is inconsistent with the commission plan, the local agency shall be notified and that local agency shall hold a hearing to reconsider its plan. The local agency may overrule the commission after the hearing by a two-thirds vote of its governing body if it makes specific findings that the proposed action is consistent with the purposes of this article as stated in Section 21670.

(b) Whenever the local agency has revised its general plan or specific plan or has overruled the commission pursuant to subdivision (a), the proposed action of the local agency shall not be subject to further commission review, unless the commission and the local agency agree that individual projects shall be reviewed by the commission.

Added Stats 1984 ch 1117 § 6.

§ 21677. Marin County: Majority vote

Notwithstanding Section 21676, any public agency in the County of Marin may overrule the Marin County Airport Land Use Commission by a majority vote of its governing body.

Added Stats 1975 ch 934 § 1; Amended Stats 1984 ch 144 § 173.

Amendments:

1984 Amendment: Routine code maintenance.

Note—Stats 1975 ch 934 also provides: § 2. The Legislature finds and declares that this bill is necessary since special facts and circumstances applicable to the County of Marin, and not generally applicable make the accomplishment of this purpose impossible by any general law. Such facts and circumstances include the relatively few airports within the County of Marin and the relatively few public agencies affected by such airports. The Legislature further finds and declares that the County of Marin is the only county involved, that the purpose of this act is impossible to accomplish by any general law, and that special legislation applicable only to the County of Marin is therefore necessary.

§ 21678. (Effective until January 1, 1989) Damages resulting from public agency's decision to override commission; Immunity from liability

(a) With respect to a publicly owned airport that a public agency does not operate, if the public agency pursuant to Section 21676 or 21676.5 overrides a commission's action or recommendation, the operator of the airport shall be immune from liability for damages to property or personal injury caused by or resulting directly or indirectly from the public agency's decision to override the commission's action or recommendation.

(b) This section shall remain in effect only until January 1, 1989, and as of that date is repealed, unless a later enacted statute, which is chaptered before January 1, 1989, deletes or extends that date.

Added Stats 1982 ch 1041 § 11; Amended Stats 1984 ch 1117 § 7.

Amendments:

1984 Amendment: (1) Designated the former first and second paragraphs to be subds (a) and (b); and (2) amended subd (a) by substituting (a) "Section 21676 or 21676.5" for "Section 21676"; and (b) "the" for "such" before "public agency pursuant" and before "airport shall be".

The regulations established by this subchapter are not intended to set noise levels applicable to litigation arising out of claims for damages occasioned by noise. Nothing herein contained in these regulations shall be construed to prescribe a duty of care in favor of, or to create any evidentiary presumption for use by, any persons or entity other than the State of California, the counties and airport proprietors in the enforcement of these regulations.

5005. Findings. Citizens residing in the vicinity of airports are exposed to the noise of aircraft operations. There have been numerous instances wherein individual citizens or organized citizen groups have complained about airport noise to various authorities. The severity of these complaints has ranged from a few telephone calls to organized legal action. Many of these cases have been studied by acoustics research workers under sponsorship of governmental and private organizations. These studies have generally shown that the severity of the complaint is principally associated with a combination of the following factors:

(a) Magnitude and duration of the noise from aircraft operations;
(b) Number of aircraft operations; and
(c) Time of occurrence during the day (daytime, evening or night).

There are many reasons given by residents for their complaints; however, those most often cited are interference with speech communication, TV, and sleep. A number of studies have been made related to speech interference and hearing damage, and some studies have been made related to sleep disturance and other physiological effects. These studies provide substantial evidence for the relationship between noise level and its interference with speech communication and its effect relative to hearing loss. Significantly less information is available from the results of sleep and physiological studies.

In order to provide a systematic method for evaluating and eventually reducing noise incompatibilities in the vicinity of airports, it is necessary to quantify the noise problem. For this purpose, these regulations establish a procedure for defining a noise impact area surrounding an individual airport. The criteria and noise levels utilized to define the boundaries of the noise impact area have been based on existing evidence from studies of community noise reaction, noise interference with speech and sleep and noise induced hearing loss.

One of the fundamental philosophies underlying the procedures in these regulations is that any noise quantity specified by these regulations be measurable by relatively simple means. Therefore, these regulations utilize as their basic measure the A-weighted noise level, which is the most commonly accepted simple measure. To insure consistency between criteria and measurement, the units for the criteria are also based on the A-weighted sound level rather than one of the several more complex perceived noise levels.

These regulations provide a procedure to limit the allowable noise for an individual aircraft flyby measured at specified points in the vicinity of the airport. The noise limits are specified in terms of the class of aircraft and measurement location.

The level of noise acceptable to a reasonable person residing in the vicinity of an airport is established as a community noise equivalent level (CNEL) value of 65 dB for purposes of these regulations. This criterion level has been chosen for reasonable persons residing in urban residential areas where houses are of typical California construction and may have windows partially open. It has been selected with reference to speech, sleep and community reaction.

It is recognized that there is a considerable individual variability in the reaction to noise. Further there are several factors which undoubtedly influence this variability and which are not thoroughly understood. Therefore, this criterion level does not have a degree of precision which is often associated with engineering criteria for a physical phenomenon (e.g., the strength of a bridge, building, et cetera). For this reason, the state will review the criterion periodically, taking into account any new information which may become available.

5006. Definitions. (a) Sound Pressure Level (SPL): The sound pressure level, in decibels (dB), of a sound is 20 times the logarithm to the base of 10 of the ratio of the pressure of this sound to the reference pressure. For the purpose of these regulations, the reference pressure shall be 20 micronewtons/square meter (2×10^{-4} microbar).

(b) Noise Level (NL): Noise level, in decibels, is an A-weighted sound pressure level as measured using the slow dynamic characteristic for sound level meters specified in ASA S1.4--1961, American Standard Specification for General Purpose Sound Level Meters, or latest revision thereof. The A-weighting characteristic modifies the frequency response of the measuring instrument to account approximately for the frequency characteristics of the human ear. The reference pressure is 20 micronewtons/square meter (2×10^{-4} microbar).

(c) Noise Exposure Level (NEL): The noise exposure level is the level of noise accumulated during a given event, with reference to a duration of one second. More specifically, noise exposure level, in decibels, is the level of the time-integrated A-weighted squared sound pressure for a stated time interval or event, based on the reference pressure of 20 micronewtons per square meter and reference duration of one second.

(d) Single Event Noise Exposure Level (SENEL): The single event noise exposure level, in decibels, is the noise exposure level of a single event, such as an aircraft flyby, measured over the time interval between the initial and final times for which the noise level of a single event exceeds the threshold noise level. For implementation in this subchapter of these regulations, the threshold noise level shall be at least 30 decibels below the numerical value of the single event noise exposure level limits specified in Section 5035.

(e) Hourly Noise Level (HNL): The hourly noise level, in decibels, is the average (on an energy basis) noise level during a particular hour. Hourly noise level is determined by subtracting 35.6 decibels equal to 10 $\log_{10}$ 3600) from the noise exposure level measured during the particular hour, integrating for those periods during which the noise level exceeds a threshold noise level.

For implementation in this subchapter of these regulations, the threshold noise level shall be a noise level which is 10 decibels below the numerical value of the appropriate criterion CNEL which is specified in Section 5012. At some microphone locations sources of noise other than aircraft may contribute

to the CNEL. Where the airport proprietor can demonstrate that the accuracy of the CNEL measurement will remain within the required tolerance in Section 5045, the department may grant a waiver to increase the threshold noise level.

(f) Daily Community Noise Equivalent Level (CNEL): Community noise equivalent level in decibels, represents the average daytime noise level during a 24-hour day, adjusted to an equivalent level to account for the lower tolerance of people to noise during evening and night time periods relative to the daytime period. Community noise equivalent level is calculated from the hourly noise levels by the following:

$$\text{CNEL} = 10 \log \frac{1}{24}\left[\sum \text{antilog} \frac{\text{HNLD}}{10} + 3 \sum \text{antilog} \frac{\text{HNLE}}{10} + 10 \sum \text{antilog} \frac{\text{HNLN}}{10} \right]$$

Where
HNLD are the hourly noise levels for the period 0700-1900 hours;
HNLE are the hourly noise levels for the period 1900-2200 hours;
HNLN are the hourly noise levels for the period 2200-0700 hours;
and $\sum$ means summation.

(g) Annual CNEL: The annual CNEL, in decibels, is the average (on an energy basis) of the daily CNEL over a 12-month period. The annual CNEL is calculated in accordance with the following:

$$\text{Annual CNEL} = 10 \log_{10} \left[\frac{1}{365} \sum \text{antilog} \left(\frac{\text{CNEL}(i)}{10} \right) \right]$$

Where
CNEL(i) = the daily CNEL for each day in a continuous 12-month period,
and $\sum$ means summation

When the annual CNEL is approximated by measurements on a statistical basis, as specified in Section 5022, the number 365 is replaced by the number of days for which measurements are obtained.

(h) Noise Impact Boundary: Noise impact boundary around an airport consists of the locus of points for which the annual CNEL is equal to the criterion value.

(i) Noise Impact Area: Noise impact area, in square statute miles, is the total land area within the noise impact boundary less that area deemed to have a compatible land use in accordance with Section 5014.

(j) Airport Proprietor: Airport proprietor means the holder of an airport permit issued by the department pursuant to Article 3, Chapter 4, Part 1, Division 9, Public Utilities Code.

(k) Aircraft Operator: Aircraft operator means the legal or beneficial owner of the aircraft with authority to control the aircraft utilization; except where the aircraft is leased, the lessee is the operator.

(l) Air Carrier: Air carrier is any aircraft operating pursuant to either a federal or a state certificate of public convenience and necessity, including any certificate issued pursuant to 49 U.S.C. Section 1371 and any permit issued pursuant to 49 U.S.C. Section 1372.

(m) General Aviation: General aviation aircraft are all aircraft other than air carrier aircraft and military aircraft.

(n) Department: Department means the Department of Aeronautics of the State of California.

(o) County: County, as used herein, shall mean the county board of supervisors or its designee authorized to exercise the powers and duties herein specified.

Article 2. Airport Noise Limits

5010 Purpose. The purpose of these regulations is to provide a positive basis to accomplish resolution of existing noise problems in communities surrounding airports and to prevent the development of new noise problems. To accomplish this purpose, these regulations establish a quantitative framework within which the various interested parties (i.e., airport proprietors, aircraft operators, local communities, counties and the state) can work together effectively to reduce and prevent airport noise problems.

5011. Methodology for Controlling and Reducing Noise Problems. The methods whereby the impact of airport noise shall be controlled and reduced include but are not limited to the following:

(a) Encouraging use of the airport by aircraft classes with lower noise level characteristics and discouraging use by higher noise level aircraft classes;

(b) Encouraging approach and departure flight paths and procedures to minimize the noise in residential areas;

(c) Planning runway utilization schedules to take into account adjacent residential areas, noise characteristics of aircraft and noise sensitive time periods;

(d) Reduction of the flight frequency, particularly in the most noise sensitive time periods and by the noisier aircraft;

(e) Employing shielding for advantage, using natural terrain, buildings, et cetera; and

(f) Development of a compatible land use within the noise impact boundary.

Preference shall be given to actions which reduce the impact of airport noise on existing communities. Land use conversion involving existing residential communities shall normally be considered the least desirable action for achieving compliance with these regulations.

5012. Airport Noise Criteria. Limitations on airport noise in residential communities are hereby established.

(a) The criterion community noise equivalent level (CNEL) is 65 dB for proposed new airports and for vacated military airports being converted to civilian use.

(b) Giving due consideration to economic and technological feasibility, the criterion community noise equivalent level (CNEL) for existing civilian airports (except as follows) is 70 dB until December 31, 1985, and 65 dB thereafter.

(c) The criterion CNEL for airports which have 4-engine turbojet or turbofan air carrier aircraft operations and at least 25,000 annual air carrier operations (takeoffs plus landings) is as follows:

Date	CNEL in decibels
Effective date of regulations to 12-31-75	80
1-1-76 to 12-31-80	75
1-1-81 to 12-31-85	70
1-1-86 and thereafter	65

5013. Noise Impact Boundary. The noise impact boundary at airports which have a noise problem as determined in accordance with Section 5050 shall be established and validated by measurement in accordance with the procedures given in Article 3 of this subchapter. For proposed new airports, or for anticipated changes of existing airports, the noise impact boundary shall be estimated by applicable acoustical calculation techniques.

The area of land which is within the noise impact boundary and which has incompatible land use is utilized as a measure of the magnitude of the noise problem at an airport. The concepts of noise impact boundary and noise impact area are illustrated in Figure 1. [Omitted]

5014. Compatible Land Uses Within the Noise Impact Boundary. The criterion for the noise impact boundary was established for residential uses including single-family and multiple-family dwellings, trailer parks, and schools of standard construction. Certain other land uses may occur within the boundary but be compatible with the community noise equivalent level and hence be excluded in the calculation of noise impact area. For this purpose, the following land uses are deemed compatible:

(a) Agricultural;
(b) Airport property;
(c) Industrial property;
(d) Commercial property;
(e) Property subject to an avigation easement for noise;
(f) Zoned open space;
(g) High-rise apartments in which adequate protection against exterior noise has been included in the design and construction, together with a central air conditioning system. Adequate protection means the noise reduction (exterior to interior) shall be sufficient to assure that interior community noise equivalent level in all habitable rooms does not exceed 45 dB during aircraft operations. Acoustical performance of the buildings shall be verified by calculation or measured by qualified officials of the building inspection agency of the city or county in which the buildings are situated;

(h) In the case of existing airports and existing homes only, residential areas in which existing homes have been acoustically treated need not be subject to exterior noise limits quite as strict as those for normal residential construction. For this purpose, the community noise equivalent level on the boundary of such a residential area may be increased by as much as 15 dB over the community noise equivalent level criterion for nonacoustically treated homes. The amount of the increase allowed on the boundary is the difference between the noise level reduction of the treated home and the value 20 decibels which is assumed to be the noise level reduction of an average normal residence. The noise level reduction of a home is defined as the average difference between aircraft noise levels in free space outside of the home and the corresponding noise levels in rooms on the exposed sides of the home.

In carrying out this section, the actual use to which the land is put, not the classification for which the land is zoned, is determinative.

Article 3. Establishing and Validating Noise Impact Boundaries for Airports Required to Monitor

5020. Validation of the Noise Impact Boundary. For airports with a noise problem (in accordance with Section 5050), the noise impact boundary shall be validated by measurements made at locations specified in Section 5021 and according to frequency requirements specified in Section 5022. These measurements shall be utilized to calculate the daily community noise equivalent levels. These daily CNEL values will then be averaged (on an energy basis) to obtain the annual CNEL at each of the community measurement locations. The location of the noise impact boundary will be considered valid if the value of the annual CNEL lies within $\pm$ 1.5 dB of the criterion value.

5021. Community Measurement Locations. At least twelve (12) locations, approximately equidistant, but not exceeding one and one-half (1.5) statute miles separation, shall be selected along the noise impact boundary. The locations shall be selected such that the maximum extent of the boundary be determined with reference to the airport's flight patterns.

5022. Frequency of Measurement at Community Locations. (a) For airports with 1,000 or more homes within the noise impact boundary based on a CNEL of 70 dB, continuous monitoring is required at those monitoring positions which fall within residential areas. Measurement for at least 48 weeks in a year shall be considered as continuous monitoring.

(b) For all other locations and for all locations at other airports, an intermittent monitoring schedule is allowed. The intermittent monitoring schedule shall be designed so as to obtain the resulting annual CNEL as computed from measurements at each location which will correspond to the value which would be measured by a monitor operated continuously throughout the year at that location, within an accuracy of $\pm$ 1.5 dB.

Thus, it is required that the intermittent monitoring schedule be designed so as to obtain a realistic statistical sample of the noise at each location. As a minimum, this requires that measurements be taken continuously for 24-hour periods during four 7-day samples throughout the year, chosen such that for each sample, each day of the week is represented, the four seasons of the year are represented, and the results account for the effect of annual proportion

of runway utilization. At most airports, these intermittent measurements can be accomplished by a single portable monitoring instrument.

5023. Initial Establishment of the Noise Impact Boundary. The method to be used for initial establishment of the noise impact boundary of airports required to monitor will vary depending upon specific situations. The following guidelines represent one possible method:

(a) Calculate the approximate location of the noise impact boundary using applicable acoustic estimation techniques.

(b) Select convenient measurement locations on this estimated boundary according to Section 5021.

(c) Make a suitable series of CNEL trial measurements along lines perpendicular to the estimated noise impact boundary. For example, two to three measurements over a one-to-seven day period along a line perpendicular to the estimated noise impact boundary should provide sufficient data, to define within the required accuracy, the nominal position of the noise impact boundary.

Due consideration should be given to the number and time period of aircraft operations, mix of aircraft classes, average runway utilization and other measurable factors which would cause a difference between the trial measurements of CNEL and the expected annual average.

(d) Initiate validation measurements of the noise impact boundary following selection of permanent or intermittent monitoring locations to comply with the validation accuracy criterion specified in Section 5020. For permanent measurement locations at which the measured CNEL lies outside this accuracy criterion, suitable auxiliary measurements or analytical methods may be used to extrapolate the measured CNEL to determine the value on the noise impact boundary. Such extrapolation procedures are subject to approval by the department.

5024. Deviations from Specified Measurement Locations. Recognizing the unique geographic and land use features surrounding specific airports, the department will consider measurement plans tailored to fit any airport for which the specified CNEL monitoring locations are impractical. For example, monitors should not be located on bodies of water or at points where other noise sources might interfere with aircraft CNEL measurements, nor are measurements required in regions where land use will clearly remain compatible.

5025. Alternative Measurement Systems. The acquisition of measurement systems that are more extensive or scientifically more refined than those specified herein is encouraged, particularly at airports with a major noise problem, where compliance with the intent of Section 5075(a) (4) requires more comprehensive noise monitoring, particularly to monitor noise abatement procedures. Airports contemplating the acquisition of such monitoring systems may apply to the department for exemptions from specific monitoring requirements set forth in this subchapter of these regulations.

APPENDIX C

FEDERAL AVIATION ADMINISTRATION REGULATIONS

U.S. Department
of Transportation

**Federal Aviation
Administration**

Federal Aviation Regulations

Part 77
Objects Affecting Navigable Airspace

Published
January 1975

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Introductory Note

Part 77 is codified under Subchapter E, Airspace, of Title 14 of the CODE OF FEDERAL REGULATIONS.

This FAA publication of Part 77, revised effective May 1, 1965, incorporates Amendments 77-1 through 77-10 and any changes required by the Department of Transportation transition amendment.

Part 77—Objects Affecting Navigable Airspace

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Adoption of Revised Part 77

Adopted: February 3, 1965 Effective: May 1, 1965

(Published in 30 F.R. 1837, February 10, 1965)

This revision of Part 77 of the Federal Aviation Regulations relaxes and simplifies the requirements for notice to the Agency of certain proposed structures, consolidates obstruction standards for use in the several Agency programs, and streamlines the Agency procedures for determining the effect of proposed structures on air navigation.

The proposed revision was published in the Federal Register (28 F.R. 7788–7795) on July 31, 1963. Extensive comments were received from aeronautical and non-aeronautical sources which endorsed generally the changes under consideration. These comments were very constructive in nature and the Agency appreciates the cooperative spirit in which they were submitted. Since the discussion here must necessarily be a limited review and explanation of the principal actions being taken, the Agency is unable to give specific recognition to each comment. However, each person who participated may be assured that full consideration was given to his recommendations.

The first noteworthy departure in this amendment from the revisions originally proposed relates to the statement in Subpart A—General on the lack of application of Subparts B, D, and E to construction work begun before July 15, 1961. This has been deleted as unnecessary and possibly misleading. The extensive amendments made by this revision to all portions of Part 77 will take effect at the effective date provided herein. Notices received after this date will be processed under the provisions of Part 77 as revised. Aeronautical studies begun prior to this effective date will be continued under the new provisions.

Public reaction to the proposed revisions of the notice requirements disclosed a need for several adjustments. The first of these involves the requirement for notice to the Agency of any proposed structure which would pierce an imaginary slope of 100 to 1 extending from the property line of an airport listed in the "Airport Directory" of the *Airman's Information Manual*. The property line was selected as a point of beginning because of its greater availability to the public. This feature appears to be an inadequate substitute for the most appropriate point of beginning, that is, the nearest point of the runway nearest to the site of the proposed structure. The use of this point also fixes the elevation of the beginning of the pertinent imaginary slope at the elevation of that nearest point. In addition, the scope of the notice requirement has been substantially reduced. The horizontal distance of the 100 to 1 slope has been restricted to 20,000 feet and will now be applied only to airports with the longest runway more than 3,200 feet in length. For airports with the longest runway 3,200 feet or shorter, a 50 to 1 slope is prescribed for a horizontal distance of 10,000 feet. The FAA "Directory" furnishes the length of the longest runway at each airport. The notice requirement for helicopters now has a horizontal slope of 25 to 1 extending for 5,000 feet.

These notice requirements are made applicable for airports which are either listed in the "Directory" or are operated by a Federal military agency. We have determined that military airports need not be included in the "Directory" in view of their listing in military publications and the fact that their presence is generally well known to people living or owning property in their vicinity. In those cases where the boundaries of a runway of an airport, including a seaplane base, are not designated, the notice requirement of section 77.13(a)(2) will, obviously, not be applicable. However, the notice re-

quirement would apply to those airports which have large sod, or other unpaved areas designated for the takeoff and landing of aircraft. Those areas constitute the runways from which the notice slope is computed. Also, the "Directory" will not list those airports constructed after December 31, 1958, which were the subject of a determination by the Agency that their establishment was not acceptable and would have an adverse effect on the efficient use of airspace and the safety of aircraft.

While this amendment simplifies the current notice requirements, it is recognized that many construction proponents may nevertheless experience difficulty in ascertaining whether they are required to notify the Agency of their proposed structures. The Airspace Utilization Branch in each FAA regional office is staffed with technicians who are available to inform any interested person of the effect of these notice requirements on a specific construction proposal. These technicians will also describe the airspace assignments and aeronautical operations in the area of the construction site so that the proponent may make an informed decision on the feasibility of the site and the availability of other areas which may serve his purpose equally and without derogation of air safety.

The substantial number of comments on the shielding provision of section 77.15 which excuses certain construction and alteration proposals from the notice requirements indicates a further explanation would be in order. The shielding provision adopted here is more restrictive than the one previously employed. This limitation was found necessary because of the unjustified extension of the earlier provision by certain construction proponents. As adopted, the shielding exemption is applicable only in the congested areas of cities, towns, and settlements, and then only to structures so shielded that they could not possibly derogate the safety of air navigation. It should be emphasized that this provision does not represent the Agency shielding criteria. It only relates to the exception from the notice requirements. Upon receiving the required notice, the Agency conducts an appropriate aeronautical study of the proposed structure and, in the course of that study, determines whether it would be, in fact, shielded.

The provisions describing the Agency acknowledgment of notices of construction proposals have been further simplified. The acknowledgment will advise each construction sponsor on two subjects, the possible application of the Agency marking and lighting standards, and whether the proposed structure may be a hazard to air navigation. On the first, the acknowledgment advises whether the construction proposal would be of a type included under the provisions of the FAA Manual on "Obstruction Marking and Lighting" and, if so, how the structure should be marked and lighted. On the hazard question, the acknowledgment will generally state whether the construction or alteration would exceed any of the obstruction standards of Subpart C and will either include a determination on whether the structure would be a hazard to air navigation or advise that further study is required to resolve the question. In the relatively few cases where the structure would exceed an obstruction standard and, in addition, would be located within a runway clear zone or the part of the primary surface extending beyond the end of a runway, the acknowledgment advises that the structure would be a hazard to air navigation. As indicated by this discussion, we have determined not to substitute the phrase "adverse effect on air navigation" for "hazard to air navigation." The Agency review of this portion of the proposal and the comments received with respect to it have disclosed that the "hazard" terminology is preferable.

The obstruction standards adopted here differ in many respects from those originally proposed. Upon review of the comments, the Agency has determined that the obstruction criteria most appropriate for promulgation at this time for civil airports, including joint-use airports, should be drawn more directly from the existing Technical Standard Order TSO–N18, "Criteria for Determining Obstruction to Air Navigation." In view of the substantial length of time that the TSO–N18 criteria have been employed for civil aviation purposes, the adoption of these criteria as the consolidated Agency criteria for use in the performance of the statutory functions authorized by the Federal Aviation Act and the Federal Airport Act should result in the least possible disruption of the performance of those functions.

The obstruction standards now presented in Subpart C are less stringent than those contained in the Notice of Proposed Rule Making. The 200-foot limiting height of section 77.23(a) is now to be applied only within three statute miles of an airport with its longest runway more than 3,200 feet in length, rather than the proposed five statute miles.

While there is an additional limiting height, beginning at 100 feet within instrument approach areas within three miles of the end of the runway and increasing to a maximum of 250 feet within ten miles from the runway end, this height is largely duplicative of other limiting heights or surfaces and does not constitute a substantial addition to the standard previously considered. We might note, in explanation of the use of the term "runway" here, that this term is now used exclusively throughout the Part, and the term "landing strip" has been deleted to eliminate a possible ambiguity.

In sections 77.25 and 77.27, criteria are provided for all civil airports, including those constructed to "VFR Airports" standards. These standards are currently contained in the Advisory Circular 150/5300-1, "VFR Airports," and are prescribed for airports constructed to serve only aircraft operating under the Visual Flight Rules. The horizontal and conical airport imaginary surfaces provided in section 77.25 with respect to airport reference points are classified for (1) "VFR Airports," and (2) other airports in accordance with the planned length of the longest runway at each such airport.

The airport imaginary surfaces prescribed in section 77.27 based on runways, except those for "VFR Airports," have been reclassified so that their sizes depend upon whether the runway is equipped with a precision landing aid, such as an Instrument Landing System. Runways having instrument approach procedures based upon such facilities as a VOR, ADF, ASR, low frequency range, or TACAN are now provided with the same type surfaces as runways used only for VFR operations, except those on "VFR Airports."

The Department of Defense has forwarded obstruction criteria which differ from those applied here for civil airports. The Department has requested that the criteria be incorporated into Part 77 for application at military airports, except heliports, controlled by components of the Department of Defense, where the longest runway exceeds 5,000 feet. The Department advises that these separate criteria are required at military airports because of the operating characteristics of certain military aircraft, the necessity for low-altitude maneuvering and formation takeoffs, the more stringent aircrew training, and the armament and ordnance-carrying requirements of the military. Accordingly, these criteria are stated herein in section 77.28. The Department is developing criteria for application at military airports with shorter runways than 5,000 feet; and until these criteria are developed, civil airport criteria will apply at such military airports. Also, pending development of these criteria, the military standards for the 2,000-foot width of primary surface will apply only to runways longer than 5,000 feet. The Agency will study the military criteria to determine their potential adaptability to civil airports and their appropriate consolidation with the civil criteria.

The presence of two sets of criteria, applicable to civil and military airports, will not result in inconsistent conclusions in the aeronautical studies on whether a proposed structure would be a hazard to air navigation. These determinations are not controlled by the extent to which such a structure may exceed a civil or military obstruction standard but, rather, upon the possible hazardous effect of the structure on air navigation. A "hazard" or "no hazard" determination is reached after a review of the VFR and IFR operations and procedures involved, both present and prospective. Each study not only includes a review to determine whether the construction proposal might be so altered in location or height that it would not exceed an obstruction standard but, also, a review to ascertain if the structure could be accommodated by adjustment of the aeronautical procedures. Thus, there may be a substantial difference between a construction proposal which would exceed an obstruction standard and one which is determined, as the result of the aeronautical study, to be a hazard to air navigation.

The airport imaginary surfaces proposed for helicopters have been substantially revised for compatibility with the current "Heliport Design Guide." The primary surfaces coincide in size and shape with the takeoff and landing area of each heliport. The designated approach clearance surfaces begin at the edge(s) of the primary surface and extend outward and upward at a slope of 8 to 1. The approach surface is a trapezoid whose inner width is coincident with the width of the primary surface and which extends to the minimum enroute altitude where its width is 500 feet. Transitional surfaces extend outward and upward at a slope of 2 to 1 from the lateral boundaries of each primary surface and approach surface for a horizontal distance of 250 feet from the centerline of these surfaces.

One of the minor revisions of the obstruction standards made here might also be mentioned. The proposed addition of a 17-foot height to a highway prior to the application of the obstruction criteria evoked several protests. The 17-foot clearance was proposed as a compatible measure with current Federal policy for interstate highways. To avoid an unnecessary extension of this policy, the standard here has been adjusted to permit application of the current 15-foot figure to highways which will not be used by the higher vehicles. In addition, we have added a provision which removes the requirement for the addition of any figure, 15 feet or 17 feet, to a traverse way which is under the coordinated traffic control of the airport management or the air traffic control tower.

We might conclude this brief reference to some of the salient features of the obstruction standards of Subpart C by emphasizing this Subpart may be applied with respect to air navigation facilities planned for future installation or alteration and to planned uses of the navigable airspace by aircraft if that application would result in a lower limiting height or surface. This point is of particular significance in regard to an airport since it includes all runway extensions and other improvements which may be contained in the approved airport layout plan.

The revisions in the procedures for the conduct of aeronautical studies, public hearings on the effect of proposed structures on the navigable airspace, and the establishment of antenna farm areas have been adopted substantially as proposed. Section 77.37 has been broadened to make available a review by the Administrator of each decision by a Regional Director on the effect of a proposed structure on air navigation, including "no hazard" determinations made without notice to any possible interested aeronautical source. While decisions of this type are only made in cases where the available evidence clearly indicates that air safety would not be affected by the construction, this review procedure is nevertheless provided to insure against possible error. The effective period fixed in section 77.39 for a determination of no hazard has been extended in recognition of the time necessary for the processing by the Federal Communications Commission of an application for a construction permit and the issuance of that permit. Appropriate safeguards for the protection of air navigation have been attached to this extension of time.

The comments in response to the Notice of Proposed Rule Making included a number of recommendations for Agency action beyond the authority contained in the Federal Aviation Act of 1958. That Act does not contain a basis for the mandatory marking and lighting of structures to warn pilots of aircraft of those structures. Neither does it contain specific authorization for regulations which would limit the heights of structures. To date, no judicial decision has been issued on the extent to which ground structures may constitute an unlawful interference with the public right of freedom of transit through the navigable airspace recognized in Section 104 of the Act. Until authoritative guidance is received on that point or express legislative authority is conferred, the Agency measures in the field of ground hazards to air navigation will be limited to the areas presently covered in Part 77.

In consideration of the foregoing, Part 77 of Chapter I of Title 14 of the Code of Federal Regulations is revised, effective May 1, 1965, to read as hereinafter set forth.

This amendment is made under the authority of Sections 104, 307, 313, 1001, and 1101 of the Federal Aviation Act of 1958 (49 U.S.C. 1304, 1348, 1354, 1481, 1501).

Amendment 77–1*

Miscellaneous Amendments

Adopted: May 11, 1965 **Effective: May 11, 1965**

(Published in 30 F.R. 6713, May 18, 1965)

The purpose of this amendment is to make certain minor clarifying amendments to Part 77 of the Federal Aviation Regulations, which became effective on May 1, 1965.

Section 77.19, by reference to section 77.28(b) in the last paragraph, provides for application of the dimensions of clear zones for runways at civil airports to runways at all military airports. This was not intended. As currently written, section 77.28(b)(1)

states that the primary surface for military airports is "the same elevation as the centerline of the runway." The section is being revised to make it clear that the primary surface undulates with the underlying surface.

In the interest of timely correction of these discrepancies, in view of the May 1, 1965, effective date of revised Part 77, and since these amendments are clarifying in nature, I find that notice and public procedure are impracticable and contrary to the public interest and that this amendment may therefore be made effective immediately.

In consideration of the foregoing, Part 77 is amended, effective immediately, as follows.

This amendment is made under the authority of Sections 307, 313, and 1101 of the Federal Aviation Act of 1958 (49 U.S.C. 1348, 1354, and 1510), and Executive Order 10854 (24 F.R. 9565).

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* Included in the publication of Part 77.

Amendment 77-2

Form and Time of Notice

Adopted: July 6, 1966 **Effective: July 12, 1966**

(Published in 31 F.R. 9448, July 12, 1966)

The purpose of this amendment is to establish an Agency policy applicable to proposals filed under section 77.13 of the Federal Aviation Regulations for any construction or alteration in excess of 2,000 feet aboveground. This amendment is a general statement of policy and is procedural in nature. Therefore notice and public procedure hereon are unnecessary and the amendment may be made effective in less than 30 days after publication.

The Federal Aviation Agency has analyzed the recent trend of competitively taller television antenna towers to determine its effect on safety in air navigation. It has long been recognized by this Agency that antenna towers of adequate height are necessary to serve the public interest in a nation-wide broadcasting system. However, there has been a proliferation of antenna towers accompanied by a progressive increase in heights over 1,000 feet above the ground that now presents hazardous conditions to the safety of air navigation. The Agency is of the firm belief that the reasonable interests of the communications industry and the aviation community can be accomodated concurrently. To this end, the Federal Communications Commission recently declared in Public Notice FCC 65-455 that "the public interest in broadcast service, may in some instances call for an antenna tower higher than any particular maximum imposed." However, the FCC was "nevertheless convinced that the public interest requires a specific ceiling to halt the upward trend in antenna tower heights, and that 2,000 feet above ground is both realistic and appropriate."

The Federal Aviation Agency, within the limits of its jurisdiction, has attempted to find a remedy for air safety problems inherent in the conflicting demands for a fair and reasonable sharing of airspace by tall towers and aircraft. Part 77 of the Federal Aviation Regulations established procedures for reporting to the Agency proposed construction that may constitute potential obstructions or hazards to safe air navigation as determined by the application of criteria stated therein. Under these regulations, the FAA advises the construction proponent whether his proposal would constitute a hazard to air navigation. During the time the regulation has been in effect, hundreds of proposed television and radio towers have been considered. Procedures permitting such analysis by the Agency have been of considerable value to the aviation community and to the broadcasting industry in eliminating both geographic and airspace conflicts created by their competing requirements.

In spite of steps already taken to ensure the accommodation of these competing interests, it has been determined that the cumulative effect of heights and locations of towers, both actual and proposed, have created a situation that is hazardous to safe air navigation.

On February 18–19, 1965 the Agency made the following statement to the House Committee on Interstate and Foreign Commerce concerning H. J. Res. 261, which would limit the height of certain radio and television towers:

> The FCC has allocated the TV channels of the Nation on the basis of maximum power television broadcasting at a height of 2,000 feet. Whenever a television tower exceeds this 2,000-foot limitation in most areas (it is 1,000 feet for VHF TV stations in the eastern part of the United States) the power must be reduced to compensate for the increased height.
>
> Therefore, there is no compelling need for any tower to be in excess of 2,000 feet. Although there may be a need for 2,000-foot television towers, under some conditions we would be derelict in our duty as the allocator of the airspace if we permitted all towers to be constructed to a height of 2,000 feet wherever the broadcaster desired.
>
> The 2,000-foot tower with its problems of visibility is inherently hazardous to air navigation.

The Agency therefore considers that it is necessary to take steps to minimize the construction of any antenna tower to a height of more than 2,000 feet aboveground unless it is fully justified in accordance with this Part. This action applies equally to any other structure whose height is proposed to exceed 2,000 feet aboveground, even though the most pressing current problem relates to antenna towers. It is expected that this action will encourage proponents of tower or other type construction to formulate realistic plans, thereby avoiding unnecessary and costly proceedings before the Federal Aviation Agency. In addition, the regulation will be flexible enough to accommodate a proposal for a tower or other type construction more than 2,000 feet high in the event the proponent can demonstrate that it would not be a present or reasonably foreseeable hazard to safe air navigation.

It is of course recognized that towers or other structures with heights of *less* than 2,000 feet above the ground may be hazardous to air navigation, especially where they are located near airports, Federal airways or VFR routes. However, the problems engendered by these situations are totally different from the potential hazards precipitated by the taller towers. Proposed tall towers and other type structures of less than 2,000 feet will continue to be studied carefully on an individual basis to determine whether they present any adverse effects on safe air navigation or cause an inefficient utilization of navigable airspace. The Agency is convinced that from an air safety standpoint the designation of a specific ceiling is needed to halt the upward trend in heights of various type structures. As a general policy, this Agency considered 2,000 feet above the ground to be the maximum height of structures that may be acceptable for maintaining safe navigation. Any structure proposed in excess of 2,000 feet above the ground will be considered to be, inherently, a hazard to air navigation and an inefficient utilization of the airspace. It will be incumbent upon the proponent to overcome this technical assumption by demonstrating to the Agency that such a proposal will not create an inefficient use of airspace or constitute a hazard to air navigation.

In consideration of the foregoing, Part 77 of the Federal Aviation Regulations is amended, effective July 12, 1966.

This amendment is made under the authority of Sections 307, 313, and 1101 of the Federal Aviation Act of 1958 (49 U.S.C. 1348, 1354, and 1510).

Amendment 77-3

Alteration of Discretionary Review

Adopted: May 1, 1967 **Effective: June 5, 1967**

(Published in 32 F.R. 6970, May 6, 1967)

The purpose of this amendment is to exclude determinations of no hazard made under § 77.19(c)(1) from the applicability of discretionary review provided in § 77.37.

The FAA published a notice of proposed rule making in the Federal Register on August 23, 1966 (31 F.R. 11155), circulated as Notice 66-34, proposing to exclude no hazard determinations relating to those structures for which a notice must be filed under § 77.13 but which would not exceed any standard of Subpart C of Part 77, and therefore would be neither an obstruction nor a hazard. Under the FAA's published criteria the proponent of a structure in this category could be given only a no hazard determination. However, under § 77.37 the proponent should wait 30 days to allow any interested party the opportunity to petition for a discretionary review that could only result in a substantiation of the no hazard determination.

Comments received in response to the notice indicated a general understanding of the unneeded delay of 30 days preceding finality of the determination and generally endorsed the proposal. Objections were received to the proposal that were directed to procedural delays encountered in disseminating information concerning the proposed structure to airspace users.

The Air Line Pilots Association objected, stating that local authority would not have an opportunity to study a proposed construction with regard to local zoning ordinances, and to assess the "effects" of the proposal on aviation in that location. A proponent must, of course, obtain any necessary approval from local government authorities prior to construction, including zoning approval if any, which would consider the effects on local property interests. Elimination of the provision for discretionary review by the FAA would have no effect on any requirement local authorities may impose on the proponent.

The Department of the Air Force objected, stating that the elimination of a 30-day delay would not permit proper treatment of aviation considerations because of the length of time involved in obtaining and assessing the effect of the proposal. Particularly, the Air Force is concerned with training flights at very low levels for which a structure of moderate height could be a hazard, and which may be erected before the Air Force representatives would be aware of its existence. Part 77 was never intended to provide protection for very low level military training operations. If every structure that may be an obstruction to flights of this nature should be called a hazard, the public would be overburdened, and a hazard determination would be meaningless. The portion of the comment relating to the delay in obtaining information is pertinent, and coincidentally is similar to a comment received from the Department of the Navy in concurring with the proposal. The FAA will review its procedures to insure appropriate coordination and timely dissemination of information to appropriate parties, including military representatives.

Some comments, conceding that a delay of 30 days may be burdensome in particular circumstances, suggested that a provision be promulgated to waive the 30-day period in circumstances of hardship, or that the 30-day period be retained when an interested party specifically requests its retention to permit time for filing a petition for review. One comment suggested eliminating acknowledgments issued under § 77.19(c)(1). Retention of the 30-day period under normal circumstances while waiving it in cases of hardship would base the decision for discretionary review upon the circumstances of the proponent rather than the effect upon aeronautical operations. If under the standards of Part 77 a structure could be neither an obstruction nor a hazard, periods of delay and additional reviews could not alter the determination. Moreover, issuing waivers would be time-consuming and administratively inefficient where the necessity of review is nonexistent.

In consideration of the foregoing, § 77.37 of the Federal Aviation Regulations is amended, effective June 5, 1967.

This amendment is made under the authority of Secs. 307, 313, and 1101 of the Federal Aviation Act of 1958 (49 U.S.C. 1348, 1354, and 1501).

Amendment 77-4

Standards for Determining Obstructions

Adopted: September 6, 1967 Effective: November 12, 1967

(Published in 32 F.R. 12997, September 13, 1967)

The purpose of this amendment is to eliminate the requirement that the FAA must find any structure exceeding the applicable obstruction standard and located within an airport runway clear zone or the portion of a primary surface extending beyond the end of a runway to be a hazard to air navigation, regardless of any mitigating factor.

The FAA published a Notice of Proposed Rule Making in the Federal Register on March 9, 1967 (32 F.R. 3887), circulated as Notice No. 67-7 proposing the elimination of the mandatory finding of hazard, thereby permitting the FAA to study all factors involved and make a finding based on the particular situation. The response to the notice indicated a general endorsement of the proposal. Due consideration was given to all comments received.

The Air Line Pilots Association withheld endorsement because the FAA had not indicated what factors it presently considers before granting an exemption to a proposal for an obstruction in a clear zone. It stated it had difficulty in visualizing any mitigating factor relative to an obstruction within a clear zone, and making it easier to allow an obstruction would undoubtedly increase the number of obstructions and decrease the safety margin.

Under the present regulation, we have granted exemptions in cases, where among other matters, the proposed construction, though in a clear zone, was shielded from aircraft flight paths; or where the structure was of a temporary nature such as construction machinery or rigs used in constructing a public water system and erected for use only during daylight hours under VFR conditions.

With the deletion of § 77.19(c)(4), the FAA would subject any construction proposal within a clear zone that exceeded the applicable obstruction standards to an aeronautical study in accordance with § 77.19(c)(3). The study, which may be reviewed by all interested persons, would determine whether the proposed construction would be a hazard. Pending such a determination the construction would be presumed to be a hazard as provided in that section.

This amendment will not reduce the protection to runway approach areas presently afforded by § 77.19(c)(4), but would retain that protection through the application of § 77.19(c)(3). It is not the intent of this amendment to make it easier for obstructions to be based in approach areas or to relax the position of the FAA with regard to such obstructions. This amendment will permit the FAA to exercise its discretionary authority in determining whether the obstruction will in fact be a hazard after reviewing all of the relevant factors. In so doing, the public will be made more aware of the proposed obstruction through circularization and notice, and will be given an opportunity to present relevant comments. Additionally, it will make unnecessary the present practice of granting exemptions from the notice requirements of Part 77 through a procedure recognized as time consuming and inefficient.

In consideration of the foregoing, Part 77 of the Federal Aviation Regulations is amended, effective November 12, 1967.

These amendments are made under the authority of §§ 307, 313, and 1101 of the Federal Aviation Act of 1958 (49 U.S.C. 1348, 1354, 1501).

Amendment 77-5

Miscellaneous Amendments

Adopted: March 25, 1968 **Effective: May 2, 1968**

(Published in 33 F.R. 5255, April 2, 1968)

The purpose of these amendments is to make minor substantive changes and editorial corrections to Part 77.

The FAA published a notice of proposed rule making in the Federal Register on July 14, 1967 (32 F.R. 10373), circulated as Notice No. 67-29 which proposed a number of minor substantive amendments and editorial corrections to Part 77 that would clarify the intent or would make the part consistent with the FAA's current practice or organization.

Comments received to the notice indicated a general endorsement of the proposal. A number of comments suggested changes or improvements that have been incorporated herein. Due consideration was given to all comments received.

One comment raised a question on whether this proposal would increase the protection for airports with at least one runway of 3,200 feet. The proposed revision of § 77.13(a)(2) (i) and (ii) would make no change to the current notice requirement criteria. It would merely add the term "actual length" to clarify the intent that the runway length referred to in that section is the actual and not the "corrected" runway length. The actual runway length is selected because this is the measurement provided in the FAA Airport Directory, the Alaska and the Pacific Airman's Guides and Chart Supplements and is the length that the construction sponsor would see on the airport. The general public would have no means of readily determining a corrected runway length, as referred to in the proposed revision of § 77.23(a)(8), and which is used by the FAA in applying its standards for determining obstructions.

The notice proposed to revoke § 77.13(a)(5) which requires a notice, when requested by FAA, for any construction proposal that would be in an instrument approach area and available information indicates that it may be an obstruction to air navigation. Information from the FAA's regional offices indicates that this provision has been used in a number of cases to obtain specific data on height and location after general information on the construction became available. This provision is therefore retained but is redesignated as § 77.13(a)(4).

A new § 77.2, *Definition of terms*, is included to clarify the meaning of certain terms used in this amendment.

Several comments objected to § 77.13(a)(5)(ii) as redesignated herein, which included a planned or proposed airport within the category of airports for which the notice criteria applies, pointing out that frequently sponsors would have no way of ascertaining the sites of planned airports without an inquiry to the FAA each time, or consulting a currently maintained list of planned or proposed airports. There is merit to these comments and the amendment to that section has been revised to include only those airports under construction. Sponsors will be able to see work in progress on airports near the proposed construction and the benefits of this part will be available to those airports.

Some comments suggested that proposed § 77.15(c) should be revised to clarify the phrase "approved by the Administrator" and to list the facilities to which that paragraph applies. The amendment has been revised to reflect the intent that the types of facilities and devices that have been approved by the Administrator are the subject of the reference. "Air Navigation facility" is defined in section 101(8) of the Federal Aviation Act of 1958. Therefore, it is unnecessary to again list those facilities to which the notice requirements do not apply.

The Air Line Pilots Association objected to exempting any object or structure from the notice requirements and obstruction standards. It is recognized that some of the structures exempted from the notice requirement may be obstructions to air navigation. However, these exemptions are based on the need to provide a reasonable notice that can be applied and complied with by a construction proponent. A notice requirement similar to the obstruction criteria of Subpart C of this part would be impracticable in application. The exemption of certain structures, e.g. antenna structures of 20 feet or

less in height, and airport or FAA navigational aids, has been found advantageous to both the FAA and industry. Therefore, certain necessary structures, although they may be obstructions, are exempted because of their utility or the relative absence of any hazard associated therewith.

Editorial changes have been made to § 77.17 to reflect the current procedure of sending notices of proposed construction to the appropriate area office instead of a regional office. The identity and address of the appropriate FAA area or regional office may be obtained from any FAA facility, therefore a listing of the respective jurisdictions and addresses is omitted.

Editorial changes have been made to § 77.17(d) including the redesignation of paragraph (d) as paragraph (e), because of the intervening effectiveness of another amendment subsequent to the circularization of Notice No. 67–29.

Sections 77.11(b)(3) and 77.19 have been amended to refer to the current designation of the FAA advisory circular on "Obstruction Marking and Lighting".

The wording of § 77.21(a) has been rearranged for readability without making any substantive change. One comment made the same objection to § 77.21(c)(2) as to the notice criteria under § 77.13(a)(5)(ii) that the public would be unable to comply with that section since it could not be aware of airports existing ouly in the planning stage. This comment is not valid since the standards thereunder are applied by FAA specialists to whom this data would be available.

In consideration of the foregoing, Part 77 is amended, effective May 2, 1968, as hereinafter set forth.

(Secs 307, 313, 1101, Federal Aviation Act of 1958; 49 U.S.C. 1348, 1354, 1501)

Amendment 77–6

Objects Interfering With Air Navigation Facilities

Adopted: July 25, 1968 **Effective: August 31, 1968**

(Published in 33 F.R. 10842, July 31, 1968)

The purpose of this amendment to Part 77 of the Federal Aviation Regulations is to permit the Administrator to consider the effect a proposed construction or alteration would have upon the operation of an air navigation facility.

The substance of this amendment was published as a Notice of Proposed Rule Making in the Federal Register on December 21, 1967, (32 F.R. 20658) as NPRM 67–54. Many comments were received in response to the Notice. Generally, the comments were favorable and recommended adoption of the amendment as proposed.

Part 77 of the Federal Aviation Regulations establishes standards for determining obstructions in navigable airspace, sets forth the notice requirements of certain proposed construction or alteration, provides for aeronautical studies of obstructions to determine their effect on the safe and efficient use of airspace and provides for public hearings on the hazardous effect of proposed construction or alteration. In accordance with previous interpretations and practice, this part applies to the physical effect of an obstruction on the flight of aircraft through the navigable airspace.

The Federal Aviation Administration is encountering with increasing frequency, situations where construction or alteration has a deleterious effect on the operation of air navigation facilities without being a physical hazard in the flight path of aircraft. These situations have ranged from construction which partially blocked the view from an airport air traffic control tower of runways, taxi, and parking areas, to obstructions which blocked or reflected electromagnetic radiation in the vicinity of navigational aids like radio or radar installations. In some instances, the navigational aid could be moved to an interference-free location. In other situations, however, no interference-free locations were available, or the cost of razing and relocating facilities, because of their size or number, was exorbitant.

It appears desirable that when an aeronautical study is made, the Administrator should include in that study the effect that construction or alteration may have on the operation of air navigation facilities. It would be an unreasonable burden on the public to require a proponent to consider this effect because the public may not be aware of the existence or operational characteristics of an air navigation facility, and any effect thereon may not easily be ascertained by the proponent. Accordingly, the Administrator should have the authority of including in an aeronautical study the physical or electromagnetic effect of proposed construction on air navigation facilities. The study may enable the Administrator to recommend changes in the design, location, or construction material that would eliminate or reduce interference with the operation of the air navigation facility. A reduction or elimination of interference may permit the retention of existing approach minimums, use of existing runways or facility structures or avoid costly relocation expenses to the airport or the FAA.

All of the parties that submitted comments concurred in or endorsed the proposed amendment, except the Airport Operators Council International, the Department of Aviation, City of Atlanta, Georgia, and the Air Transport Association of America.

The Airport Operators Council International stated that it strongly opposed the proposed amendment primarily for the following reasons:

(1) The FAA already has sufficient authority to minimize critical encroachment upon airport control tower sight lines through its ability to NOTAM and therefore needs no additional authority.

(2) It is undesirable to use the proposed amendment to protect off-airport navaids from the deleterious effect on their operation by construction proposals over which the airport has no control.

Regarding the first comment, the FAA's present authority allows it to issue a Notice to Airmen to advise them concerning areas on an airport in which ground control of traffic cannot be maintained due to blocking of line-of-sight from the airport control tower. When such a condition exists, the derogation of air traffic control has already taken place and a NOTAM merely advises of that condition. The purpose of this rule is to prevent the condition from arising in the first place.

As far as the second comment is concerned, this amendment intends to include consideration of the physical or electromagnetic effect on the operation of air navigation facilities of any construction proposal for which a notice is required under Section 77.13(a), and would exceed any standard of Subpart C, regardless of whether the facilities are located on or off an airport.

The Department of Aviation, City of Atlanta, Georgia, opposed the proposed amendment primarily on the ground that it felt that this amendment would allow the location and functioning of an FAA air navigation facility to control all other airport development prospects. The Department also stated that it felt that the present Federal Aviation Regulations were adequate to handle obstructions to airport control towers and air navigation facilities.

The aeronautical study may enable the FAA to recommend changes in the design, location or construction material that may eliminate or reduce interference with the operation of the air navigation facility. These recommendations would be made to the construction sponsor and not to the airport operator unless the construction proposal was one over which the airport operator exercised control. Proposed construction or alteration subject to an aeronautical study under the proposed amendment would be limited to those proposals for which notice to the Administrator is now required under Section 77.13(a) of Part 77, FAR, and the proposal would exceed any standard of Subpart C. Proposed construction or alteration off airports that would not require notice under Section 77.13(a) would not come within the scope of the proposed amendment even though there may be a possibility that the proposed construction or alteration might adversely affect the operation of a nearby air navigation facility.

It is not the purpose of the proposed amendment to institute control over any aspect of airport development but (1) to consider the physical and electromagnetic effects of any proposed construction or alteration on air navigation facilities, during an aeronautical study; (2) to inform the construction sponsor, if necessary, of possible interference and how to avoid it; and (3) where the construction proposal would have a substantial adverse effect upon the operation of any air navigation facility to issue a determination of hazard. Current Federal Aviation Regulations do not provide the FAA with authority

to study proposed construction or alteration for the purpose of determining their physical and electromagnetic effect on the operation of air navigation facilities.

The Air Transport Association (ATA) did not oppose the proposed amendment, but made several suggestions. Among them ATA commented that FAA has published few guidelines for constructing facilities on or near airports and such guidelines should be published by FAA prior to amending Part 77 as proposed.

In addition, ATA felt it should be made clear that airport control towers are not air navigation facilities in the sense of the proposed rule. ATA comments are under careful consideration and the FAA at the present time is engaged in a project to develop new criteria to determine whether proposed construction would affect the operation of air navigation facilities. The intent of the amendment to Part 77, however, is not to revise or develop criteria but to provide the authority to consider possible interference with the operation of air navigation facilities during the aeronautical study of construction proposals. At such time as new criteria have been developed a determination will be made as to their adequacy and whether they should be incorporated in the regulation.

In consideration of the foregoing, Part 77 (§§ 77.31 and 77.35) of the Federal Aviation Regulations is amended effective August 31, 1968.

This amendment is made under the authority of sections 307, 313, and 1101 of the Federal Aviation Act of 1958 (49 U.S.C. 1348, 1354, 1501).

Amendment 77–7

Utility Airports

Adopted: October 25, 1968 **Effective: November 30, 1968**

(Published in 33 F.R. 16056, November 1, 1968)

The purpose of this amendment is to include in Part 77 of the Federal Aviation Regulations a reference to "Utility Airports," as appropriate, with each reference to "VFR Airports" standards.

Subpart C of Part 77 contains several references to airports constructed to "VFR Airports" standards. The "VFR Airports" standards and the Advisory Circular in which they were contained were canceled and replaced with Advisory Circular 150/5300–4, "Utility Airports—Design Criteria and Dimensional Standards." Since those airports built to VFR Airports standards continue in existence, Subpart C must be revised to refer to both VFR and Utility Airports.

Since this amendment merely includes in Part 77 a reference to publications and standards currently in use, I find that notice and public procedure hereon are unnecessary.

In consideration of the foregoing, Part 77 (§§ 77.25(a)(1) and (b)(1) and 77.27-(a)(1) and (c)(2)(i)) of the Federal Aviation Regulations is amended, effective November 30, 1968.

These amendments are made under the authority of Sections 307, 313, and 1101 of the Federal Aviation Act of 1958 (49 U.S.C. 1348, 1354, and 1510).

Amendment 77–8

Revision of Notice Form

Adopted: December 11, 1968 **Effective: February 1, 1969**

(Published in 33 F.R. 18614, December 17, 1968)

The purpose of this amendment to Part 77 of the Federal Aviation Regulations is to revise the reference to the form on which notices of proposed construction or alteration are filed to reflect the new form number that has been adopted and to correct an editorial error.

The FAA is adopting Form 7460–1 entitled, "Notice of Proposed Construction or Alteration" to replace Form 177. This form more adequately reflects informational re-

quirements concerning proposed construction or alteration of objects which might affect navigable airspace. Reference is made to FAA Form 117 in several places throughout Subpart B of Part 77. Therefore, an amendment is required to revise the references to this notice form.

Amendment 77–6, effective May 2, 1968, to § 77.11 erroneously identified FAA Advisory Circular AC 70/7460–1 as AC 70/7460. Therefore, this section is being changed to reflect the correct advisory circular number.

In consideration of the foregoing, Subpart B of Part 77 (§§ 77.11(b) (3) and 77.17 (a) and (d)) of the Federal Aviation Regulations is amended, effective February 1, 1969.

This amendment is made under the authority of §§ 307, 313 and 1101 of the Federal Aviation Act of 1958 (49 U.S.C. 1348, 1354, 1501), and of § 6(c) of the Department of Transportation Act (49 U.S.C. 1655(c)).

Amendment 77–9

Standards for Determining Obstructions to Air Navigation

Adopted: March 25, 1971 **Effective: May 16, 1971**

(Published in 36 F.R. 5968, April 1, 1971)

The purpose of these amendments to the Federal Aviation Regulations is to change the standards for determining obstructions to air navigation.

These amendments were proposed in Notice 70–11 and published in the Federal Register on March 14, 1970 (35 F.R. 4554).

Twenty-five public comments were received in response to the Notice. A substantial number of comments were directed to the application of the obstruction standards and to suggestions for improving notice requirements. Since the subjects of these comments were not part of Notice 70–11, they were not considered in the formulation of the rule. However, they will be given full consideration by the FAA in its continuing efforts to improve Part 77.

Numerous comments were received in response to the FAA's request for public comment on two possible future changes to § 77.25 which were not made part of the Notice. These two possible changes would revise § 77.25 to specify (1) that the approach surface would begin 200 feet beyond the end of the landing threshold, and (2) that the slope of the transitional surfaces extending outward and upward from the edges of the primary surface would be 4:1 instead of 7:1. The comments reflected many viewpoints pro and contra. Several commentators stated that the approach surface to a runway should be related to the end of the runway, or to the displaced threshold if the landing threshold had been relocated, without applying the current 200-foot buffer zone between the landing threshold and the beginning of the approach surface. Others felt that the beginning of the approach surface should not be moved to relate to a displaced threshold unless the displacement was the result of some irrevocably fixed obstruction. Some opposition was expressed to changing the slope of the primary surface related transitional surfaces from 7:1 to 4:1. It was felt that no factual data or rationale had been presented to justify such a change. Further, it was suggested that such a change would result in unsafe structures near runways and might also affect CAT II missed approach requirements. On the other hand, some commentators suggested that the relaxation of the transitional surface slope would have certain advantages for locating airport parking gates for large airplanes; would be practical and desirable; and would be more realistic in view of current land use concepts. All of these comments will be given careful consideration by the FAA in determining its future action in this area.

While some revision of the proposal was effected in the light of the comments received, the amendment as adopted follows the general form of the Notice.

Several commentators proposed modifications for the definitions of the several categories of runways. Concern was expressed as to the use of the phrase "or any other FAA or military planning document" in the proposed definition of a visual runway; that an airport operator might be obligated or under control of a document to which he does not have access. In response to these comments, the definition of a visual runway has been changed to clarify reference to a military approved airport layout plan as a plan for military airports only, and to amend the phrase referring to "any other FAA or military planning document" to specify any planning document submitted to the FAA by competent authority. This will include an airport layout plan or planning document submitted to the FAA by or through a state or local government.

Consideration was given to suggestions by commentators to include a variety of other definitions in § 77.2. However, since the suggested terms have common dictionary definitions or are otherwise defined in the Federal Aviation Regulations, it was determined not to include these terms in § 77.2. However, minor changes in the language of the proposed definitions in § 77.2 have been made to state more clearly their purpose and use.

One comment concerning the proposed change to § 77.13(a)(3) suggested that the railroad height adjustment should be modified so that the "highest possible or intended" object is considered, and that this should include all roads so that plans would not be based upon heights that are impractical. The FAA considers that the height adjustments prescribed are needed for guidance when applying the notice requirement criteria, and should have limited flexibility. It should be noted that 23 feet is the highest tunnel clearance required for railroads in the United States, and this height would be in consonance with the requirements of the various states.

Several commentators objected to the proposed changes in § 77.15(c) that would exclude from the notice requirement of § 77.13 any air navigation facility, airport visual approach or landing aid, aircraft arresting device, or meteorological device, the location and height of which is fixed by its functional purpose, if a type approved by "an appropriate military service." After careful consideration of the objections, the FAA decided that type approval of devices and equipment on civil airports should remain with the Administrator. Therefore, the change to § 77.15(c) as proposed, has been modified to exclude from the notice requirement of §77.13 any air navigation facility, airport visual approach or landing aid, aircraft arresting device, or meteorological device given type aproval by an appropriate military service only when such facilities, aids, or devices would be located on a military airport.

Several isolated comments directed attention to the intention of the FAA to use the applicable MOCA instead of the established MEA as the basis for determining obstructions within an en route obstacle clearance area of a Federal airway or approved off-airway route.

Even though some individuals or groups may consider this concept to be a new one, it is based on the rationale that through use of the MOCA alone and selectively applying the terms obstacle and obstruction to it, the application of the standards of Part 77 will be simplified and will result in bringing the entire system into conformity with international standards. In simplified terms, a MOCA is that minimum safe altitude that will permit an aircraft to traverse a designated area of airspace clear of obstacles below. Generally, the height of the highest or controlling obstacle in that airspace segment provides the imaginary obstacle reference line. The appropriate FAA personnel, applying established and specified standards then supply an additional amount of airsace above the obstacle reference line that forms the MOCA altitude level for that segment of flight.

In applying the standards of Part 77 to this airspace formulation, any proposed structure that does not exceed the obstacle reference line will be classified as an obstacle. However, if the proposed structure would penetrate this airspace above the obstacle reference line, it would be classified as an obstruction. Once a proposal is classified as an obstruction, under the procedures provided for in Part 77, it will be studied to determine whether it will or will not constitute a hazard to air navigation.

Accordingly, new § 77.23(a)(4) establishes that the MOCA instead of the MEA will be the basis for determining whether any object within any en route obstacle clearance

area, including turn and termination areas, of any Federal airway or approved off-airway route will be classified as an obstruction to air navigation.

One comment was received concerning the proposed new § 77.21(b). The new paragraph was added to ensure proper application of the imaginary surfaces outlined in § 77.25 at airports that have defined landing and takeoff strips, or pathways that are designated as runways but do not have specially prepared hard surfaces, or have a defined landing and takeoff area with no defined landing and takeoff strips or pathways designated as runways. For the purpose of Part 77, any clearly defined strip, pathway or lane designated by appropriate authority for the landing and takeoff of aircraft is considered to be a runway, even though its surface consists of water, turf, dirt or similar unprepared surface.

The application of new § 77.21(b) is based upon the philosophy that, at the thousands of airports having runways of various lateral dimensions without specially prepared hard surfaces, a factor common to each runway and its related primary surface is the centerline. This common factor permits application of the primary surface and the related transitional surfaces because the primary surface is longitudinally centered on the runway and the transitional surfaces extend outward and upward from the sides of the primary surface. Since the width of any primary surface is prescribed in § 77.25(c), the width of that portion of any runway over which its primary surface is superimposed is limited by the width of the related primary surface, regardless of the runway width; the length of the primary surface, however, in this case, is the same as the length of the runway. In applying § 77.21(b) to those airports, excluding seaplane bases, where the defined landing and takeoff area does not have any defined runways for the landing and takeoff of aircraft, the agency would, applying the standards of the regulation, make a determination as to which portions of the area were being regularly used by aircraft as runways for landing and take off. The appropriate primary surface prescribed in § 77.25(c) will then be centered on each portion of the landing and takeoff area determined to be used as a runway, with each end of the primary surface coinciding with the corresponding end of the determined runway.

Many commentators objected to the proposed amendment of § 77.23(a)(2). After careful consideration of all objections to the proposed change, the FAA is convinced that with one exception the proposed revision should not be made. That exception is, that nautical miles will be used in lieu of statute miles in § 77.23(a)(2) to conform to the units of horizontal measurement currently used in en route and terminal airspace configurations, and instrument procedures both nationally and internationally. Further study will be given to the need for relating the height of objects to the airport elevation where the terrain on which those objects are located exceeds the surfaces prescribed in § 77.25 or the heights prescribed in § 77.23(a)(2).

The Notice proposed new § 77.23(a) (3) and (4) to replace § 77.23(a) (4), (5), (6), and (7). Comments on this proposal were generally favorable. Two commentators requested clarification of an en route obstacle clearance area and suggested that definitions of en route and terminal obstacle clearance be included in the regulation. Since we have already discussed in some detail the en route obstacle clearance area that falls within the scope of § 77.23(a)(4), it only remains necessary to provide a brief explanation as to how obstacles and obstructions will relate to the terminal obstacle clearance area portion of the regulation provided for in § 77.23(a)(3) of this amendment.

All approved procedures for instrument approach and departure of aircraft to and from airports that are conducted within specified terminal obstacle clearance and departure areas are established in conformity to the applicable criteria set forth either in the United States Standard for Terminal Instrument Procedures (TERPS) or the FAA Handbook 8260.19, Flight Procedures and Airspace. In the establishment of these instrument approach and departure criteria, the involvement of existing obstacles on the type of instrument procedure proposed for adoption, is one of the primary considerations. Accordingly, the standards of Part 77 applicable in any terminal instrument procedure area must also be based on the same obstacle concept that was used to formulate the applicable criteria of TERPS and FAA Handbook 8260.19. A brief explanation of the interrelationship of obstacles and obstructions to this concept should aid materially in understanding the provisions of § 77.23(a)(3).

In the development of all types of instrument approach procedures under TERPS and departure procedures under FAA Handbook 8260.19, the method of establishing each such procedure is basically the same. The existing obstacles, including objects that are manmade, the terrain features, and the navigational facilities involving a particular approach or departure area are carefully analyzed, after which a prescribed plane, which is commonly referred to as an obstacle clearance plane, is established for that particular phase of flight. In order to insure maximum safety to all aircraft operators who may use that particular terminal instrument procedure, applicable FAA criteria is then applied to provide an additional layer of airspace above the prescribed obstacle clearance plane.

In applying the standards of Part 77 to this type of airspace structure, any object that does not exceed the obstacle clearance plane will be classified as an obstacle; but any object that penetrates the prescribed obstacle clearance plane will be classified as an obstruction, and subject to aeronautical study to determine whether or not it is a hazard to air transportation or air commerce.

Stated in another but in a more sophisticated way, any object that is located within an obstacle clearance area, including an initial approach segment, a circling approach area, or a departure area, is an obstruction to air navigation under the standards of Part 77, if it is of such height that the vertical distance between any point on it and any minimum instrument flight altitude established for any authorized instrument procedure within that area, is less than the obstacle clearance specified for that instrument procedure.

Several commentators addressed the proposed revision of § 77.23. One commentator suggested that runways on air carrier airports be categorized as "air carrier" and provided with equal protection at both ends. The FAA feels that the rationale for the new categorization of runways has been explained adequately previously, therefore, this suggestion was not adopted.

Concern was expressed by some commentators as to the availability of information regarding the category of each approach to each end of each runway of any airport under consideration. The FAA agrees that the success of this concept is dependent upon definite information concerning the category of each approach to each runway end being available to the agency and to the public. This information will be available from FAA regional area offices, and from agency computer readouts.

In response to the suggestion of one commentator, § 77.25(c) will be changed to include the words "or planned hard surface" after the words "has specially prepared hard surface." The FAA believes that this addition helps to clarify the intent of the section and does not modify the meaning.

Other minor changes of an editorial and technically clarifying nature have been made to the amendment. A minor change to the addresses under § 77.17 has been included.

Interested persons have been afforded an opportunity to participate in the making of these amendments. Due consideration has been given to all matter presented. In other respects, for the reasons stated in the preamble to the notice, the rule is adopted as prescribed herein.

In consideration of the foregoing, Part 77 of the Federal Aviation Regulations is amended, effective May 16, 1971.

Sections 307, 313 and 1101 of the Federal Aviation Act of 1958 (49 U.S.C. 1348, 1354, and 1501), and Section 6(c) of the Department of Transportation Act (49 U.S.C. 1655(c)).

Amendment 77-10

Miscellaneous Amendments

Adopted: February 28, 1972 **Effective: March 4, 1972**

(Published in 37 F.R. 4705, March 4, 1972)

The purpose of this amendment is to make certain minor editorial changes to Part 77 of the Federal Aviation Regulations.

Section 77.11(b) contains a reference to the sale of Advisory Circular 70/7460-1 entitled "Obstruction Marking and Lighting." Effective January 1, 1972, a revised edition of this Advisory Circular has become available free of charge from the Department of Transportation. Section 77.11(b) is revised to reflect this change.

Throughout Subpart B of Part 77 there are several references to FAA area offices and personnel. Since all area offices were eliminated April 2, 1971, and reference to them is deleted and replaced with reference to the appropriate regional office or personnel.

Section 77.73 provides for the establishment of antenna farm areas under the procedural requirements of Section 4 of the Administrative Procedure Act. This citation is no longer accurate since the recodification of the Act, and appropriate language is substituted therefor.

Since these amendments are minor and editorial in nature and no substantive change is effected, notice and public procedure thereon are not necessary and good cause exists for making them effective on less than 30 days notice.

In consideration of the foregoing, Part 77 of the Federal Aviation Regulations is amended, effective March 4, 1972.

This amendment is issued under the authority of sections 313 and 1101 of the Federal Aviation Act of 1958 (49 U.S.C. 1354, 1501), and section 6(c) of the Department of Transportation Act (49 U.S.C. 1655(c)).

Part 77—Objects Affecting Navigable Airspace

Subpart A—General

§ 77.1 Scope.

This Part—

(a) Establishes standards for determining obstructions in navigable airspace;

(b) Sets forth the requirements for notice to the Administrator of certain proposed construction or alteration;

(c) Provides for aeronautical studies of obstructions to air navigation, to determine their effect on the safe and efficient use of airspace;

(d) Provides for public hearings on the hazardous effect of proposed construction or alteration on air navigation; and

(e) Provides for establishing antenna farm areas.

§ 77.2 Definition of terms.

For the purpose of this Part:

"Airport available for public use" means an airport that is open to the general public with or without a prior request to use the airport.

"A seaplane base" is considered to be an airport only if its sea lanes are outlined by visual markers.

"Nonprecision instrument runway" means a runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance, or area type navigation equipment, for which a straight-in nonprecision instrument approach procedure has been approved, or planned, and for which no precision approach facilities are planned, or indicated on an FAA planning document or military service military airport planning document.

"Precision instrument runway" means a runway having an existing instrument approach procedure utilizing an Instrument Landing System (ILS), or a Precision Approach Radar (PAR). It also means a runway for which a precision approach system is planned and is so indicated by an FAA approved airport layout plan; a military service approved military airport layout plan; any other FAA planning document, or military service military airport planning document.

"Utility runway" means a runway that is constructed for and intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight and less.

"Visual runway" means a runway intended solely for the operation of aircraft using visual approach procedures, with no straight-in instrument approach procedure and no instrument designation indicated on an FAA approved airport layout plan, a military service approved military airport layout plan, or by any planning document submitted to the FAA by competent authority.

§ 77.3 Standards.

(a) The standards established in this Part for determining obstructions to air navigation are used by the Administrator in—

(1) Administering the Federal-aid Airport Program and the Surplus Airport Program;

(2) Transferring property of the United States under Section 16 of the Federal Airport Act;

(3) Developing technical standards and guidance in the design and construction of airports; and

(4) Imposing requirements for public notice of the construction or alteration of any structure where notice will promote air safety.

(b) The standards used by the Administrator in the establishment of flight procedures and aircraft operational limitations are not set forth in this Part but are contained in other publications of the Administrator.

§ 77.5 Kinds of objects affected.

This Part applies to—

(a) Any object of natural growth, terrain, or permanent or temporary construction or alteration, including equipment or materials used therein, and apparatus of a permanent or temporary character; and

(b) Alteration of any permanent or temporary existing structure by a change in its height (including appurtenances), or lateral dimensions, including equipment or materials used therein.

Subpart B—Notice of Construction or Alteration

§ 77.11 Scope.

(a) This subpart requires each person proposing any kind of construction or alteration described in § 77.13(a) of this chapter to give adequate notice to the Administrator. It specifies the locations and dimensions of the construction or alteration for which notice is required and prescribes the form and manner of the notice. It also requires supplemental notices 48 hours before the start and upon the completion of certain construction or alteration that was the subject of a notice under § 77.13(a).

(b) Notices received under this subpart provide a basis for—

(1) Evaluating the effect of the construction or alteration on operational procedures and proposed operational procedures;

(2) Determinations of the possible hazardous effect of the proposed construction or alteration on air navigation;

(3) Recommendations for identifying the construction or alteration in accordance with the current Federal Aviation Administration Advisory Circular AC 70/7460-1 entitled "Obstruction Marking and Lighting," which is available without charge from the Department of Transportation, Distribution Unit, TAD 484.3, Washington, D.C. 20590;

(4) Determining other appropriate measures to be applied for continued safety of air navigation; and

(5) Charting and other notification to airmen of the construction or alteration.

§ 77.13 Construction or alteration requiring notice.

(a) Except as provided in § 77.15, each sponsor who proposes any of the following construction or alteration shall notify the Administrator in the form and manner prescribed in § 77.17:

(1) Any construction or alteration of more than 200 feet in height above the ground level at its site.

(2) Any construction or alteration of greater height than an imaginary surface extending outward and upward at one of the following slopes:

(i) 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of each airport specified in subparagraph (5) of this paragraph with at least one runway more than 3,200 feet in actual length, excluding heliports.

(ii) 50 to 1 for a horizontal distance of 10,000 feet from the nearest point of the nearest runway of each airport specified in subparagraph (5) of this paragraph with its longest runway no more than 3,200 feet in actual length, excluding heliports.

(iii) 25 to 1 for a horizontal distance of 5,000 feet from the nearest point of the nearest landing and takeoff area of each heliport specified in subparagraph (5) of this paragraph.

(3) Any highway, railroad, or other traverse way for mobile objects, of a height which, if adjusted upward 17 feet for an Interstate Highway that is part of the National System of Military and Interstate Highways where overcrossings are designed for a minimum of 17 feet vertical distance, 15 feet for any other public roadway, 10 feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road, 23 feet for a railroad, and for a waterway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally

traverse it, would exceed a standard of subparagraph (1) or (2) of this paragraph.

(4) When requested by the FAA, any construction or alteration that would be in an instrument approach area (defined in the FAA standards governing instrument approach procedures) and available information indicates it might exceed a standard of Subpart C of this part.

(5) Any construction or alteration on any of the following airports (including heliports):

(i) An airport that is available for public use and is listed in the Airport Directory of the current Airman's Information Manual or in either the Alaska or Pacific Airman's Guide and Chart Supplement.

(ii) An airport under construction, that is the subject of a notice or proposal on file with the Federal Aviation Administration, and except for military airports, it is clearly indicated that that airport will be available for public use.

(iii) An airport that is operated by an armed force of the United States.

(b) Each sponsor who proposes construction or alteration that is the subject of a notice under paragraph (a) of this section and is advised by an FAA regional office that a supplemental notice is required shall submit that notice on a prescribed form to be received by the FAA regional office at least 48 hours before the start of the construction or alteration.

(c) Each sponsor who undertakes construction or alteration that is the subject of a notice under paragraph (a) of this section shall, within 5 days after that construction or alteration reaches its greatest height, submit a supplemental notice on a prescribed form to the FAA regional office having jurisdiction over the area involved, if—

(1) The construction or alteration is more than 200 feet above the surface level of its site; or

(2) An FAA regional office advises him that submission of the form is required.

§ 77.15 Construction or alteration not requiring notice.

No person is required to notify the Administrator for any of the following construction or alteration:

(a) Any object that would be shielded by existing structures of a permanent and substantial character or by natural terrain or topographic features of equal or greater height, and would be located in the congested area of a city, town, or settlement where it is evident beyond all reasonable doubt that the structure so shielded will not adversely affect safety in air navigation.

(b) Any antenna structure of 20 feet or less in height except one that would increase the height of another antenna structure.

(c) Any air navigation facility, airport visual approach or landing aid, aircraft arresting device, or meteorological device, of a type approved by the Administrator, or an appropriate military service on military airports, the location and height of which is fixed by its functional purpose.

(d) Any construction or alteration for which notice is required by any other FAA regulation.

§ 77.17 Form and time of notice.

(a) Each person who is required to notify the Administrator under § 77.13(a) shall send one executed form set (four copies) of FAA Form 7460–1, Notice of Proposed Construction or Alteration, to the Chief, Air Traffic Division, FAA Regional Office having jurisdiction over the area within which the construction or alteration will be located. Copies of FAA Form 7460–1 may be obtained from the headquarters of the Federal Aviation Administration and the regional offices.

(b) The notice required under § 77.13(a)(1) through (4) must be submitted at least 30 days before the earlier of the following dates—

(1) The date the proposed construction or alteration is to begin.

(2) The date an application for a construction permit is to be filed.

However, a notice relating to proposed construction or alteration that is subject to the licensing requirements of the Federal Communications Act may be sent to the FAA at the same time the application for construction is filed with the Federal Communications Commission, or at any time before that filing.

(c) A proposed structure or an alteration to an existing structure that exceeds 2,000 feet in height above the ground will be presumed to be a hazard to air navigation and to result in an inefficient utilization of airspace and the applicant has the burden of overcoming that presumption. Each notice submitted under the pertinent provisions of Part 77 proposing a structure in excess of 2,000 feet aboveground, or an alteration that will make an existing structure exceed that height, must contain a detailed showing, directed to meeting this burden. Only in exceptional cases, where the FAA concludes that a clear and compelling showing has been made that it would not result in an inefficient utilization of the airspace and would not result in a hazard to air navigation, will a determination of no hazard be issued.

(d) In the case of an emergency involving essential public services, public health, or public safety, that requires immediate construction or alteration, the 30-day requirement in paragraph (b) of this section does not apply and the notice may be sent by telephone, telegraph, or other expeditious means, with an executed FAA Form 7460-1 submitted within five days thereafter. Outside normal business hours, emergency notices by telephone or telegraph may be submitted to the nearest FAA Flight Service Station.

(e) Each person who is required to notify the Administrator by paragraph (b) or (c) of § 77.13, or both, shall send an executed copy of FAA Form 117-1, Notice of Progress of Construction or Alteration, to the Chief, Air Traffic Division, FAA Regional Office having jurisdiction over the area involved.

§ 77.19 Acknowledgment of notice.

(a) The FAA acknowledges in writing the receipt of each notice submitted under § 77.13 (a).

(b) If the construction or alteration proposed in a notice is one for which lighting or marking standards are prescribed in the FAA Advisory Circular AC 70/7460-1 entitled "Obstruction Marking and Lighting," the acknowledgment contains a statement to that effect and information on how the structure should be marked and lighted in accordance with the Advisory Circular.

(c) The acknowledgment states that an aeronautical study of the proposed construction or alteration has resulted in a determination that the construction or alteration—

(1) Would not exceed any standard of Subpart C and would not be a hazard to air navigation;

(2) Would exceed a standard of Subpart C but would not be a hazard to air navigation; or

(3) Would exceed a standard of Subpart C and further aeronautical study is necessary to determine whether it would be a hazard to air navigation, that the sponsor may request within 30 days that further study, and that, pending completion of any further study, it is presumed the construction or alteration would be a hazard to air navigation.

Subpart C—Obstruction Standards

§ 77.21 Scope.

(a) This subpart establishes standards for determining obstructions to air navigation. It applies to existing and proposed manmade objects, objects of natural growth, and terrain. The standards apply to the use of navigable airspace by aircraft and to existing air navigation facilities, such as an air navigation aid, airport, Federal airway, instrument approach or departure procedure, or approved off-airway route. Additionally, they apply to a planned facility or use, or a change in an existing facility or use, if a proposal therefor is on file with the Federal Aviation Administration or an appropriate military service on the date the notice required by § 77.13(a) is filed.

(b) At those airports having defined runways with specially prepared hard surfaces, the primary surface for each such runway extends 200 feet beyond each end of the runway. At those airports having defined strips or pathways that are used regularly for the taking off and landing of aircraft and have been designated by approriate authority as runways, but do not have specially prepared hard surfaces, each end of the primary surface for each such runway shall coincide with the corresponding end of the runway. At those airports, excluding seaplane bases, having a defined landing and takeoff area with no defined pathways for the landing and taking off of aircraft, a determination shall be made as to which portions of the landing and takeoff area are regularly used as landing and takeoff pathways. Those pathways so determined shall be considered runways and an appropriate primary surface as defined in § 77.25(c) will be considered as being longitudinally centered on each runway so determined, and each end of that primary surface shall coincide with the corresponding end of that runway.

(c) The standards in this subpart apply to the effect of construction or alteration proposals upon an airport if, at the time of filing of the notice required by § 77.13(a), that airport is—

(1) Available for public use and is listed in the Airport Directory of the current Airman's Information Manual or in either the Alaska or Pacific Airman's Guide and Chart Supplement; or,

(2) A planned or proposed airport or an airport under construction, that is the subject of a notice or proposal on file with the Federal Aviation Administration, and, except for military airports, it is clearly indicated that that airport will be available for public use; or,

(3) An airport that is operated by an armed force of the United States.

(d) [Deleted]

§ 77.23 Standards for determining obstructions.

(a) An existing object, including a mobile object, is, and a future object would be, an obstruction to air navigation if it is of greater height than any of the following heights or surfaces:

(1) A height of 500 feet above ground level at the site of the object.

(2) A height that is 200 feet above ground level or above the established airport elevation, whichever is higher, within 3 nautical miles of the established reference point of an airport, excluding heliports, with its longest runway more than 3,200 feet in actual length, and that height increases in the proportion of 100 feet for each additional nautical mile of distance from the airport up to a maximum of 500 feet.

(3) A height within a terminal obstacle clearance area, including an initial approach segment, a departure area, and a circling approach area, which would result in the vertical distance between any point on the object and an established minimum instrument flight altitude within that area or segment to be less than the required obstacle clearance.

(4) A height within an en route obstacle clearance area, including turn and termination areas, of a Federal airway or approved off-airway route, that would increase the minimum obstacle clearance altitude.

(5) The surface of a takeoff and landing area of an airport or any imaginary surface established under §§ 77.25, 77.28, or 77.29. However, no part of the takeoff or landing area itself will be considered an obstruction.

(b) Except for traverse ways on or near an airport with an operative ground traffic control service, furnished by an air traffic control tower or by the airport management and coordinated with the air traffic control service, the standards of paragraph (a) of this section apply to traverse ways used or to be used for the passage of mobile objects only after the heights of these traverse ways are increased by:

(1) Seventeen feet for an Interstate Highway that is part of the National System of Military and Interstate Highways where overcrossings are designed for a minimum of 17 feet vertical distance.

(2) Fifteen feet for any other public roadway.

(3) Ten feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road.

(4) Twenty-three feet for a railroad.

(5) For a waterway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it.

§ 77.25 Civil airport imaginary surfaces.

The following civil airport imaginary surfaces are established with relation to the airport and to each runway. The size of each such imaginary surface is based on the category of each runway according to the type of approach available or planned for that runway. The slope and dimensions of the approach surface applied to each end of a runway are determined by the most precise approach existing or planned for that runway end.

(a) Horizontal surface—a horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of specified radii from the center of each end of the primary surface of each runway of each airport and connecting the adjacent arcs by lines tangent to those arcs. The radius of each arc is:

(1) 5,000 feet for all runways designated as utility or visual;

(2) 10,000 feet for all other runways.

The radius of the arc specified for each end of a runway will have the same arithmetical value. That value will be the highest determined for either end of the runway. When a 5,000-foot arc is encompassed by tangents connecting two adjacent 10,000-foot arcs, the 5,000-foot arc shall be disregarded on the construction of the perimeter of the horizontal surface.

(b) Conical surface—a surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

(c) Primary surface—a surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway; but when the runway has no specially prepared hard surface, or planned hard surface, the primary surface ends at each end of that runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline. The width of a primary surface is:

(1) 250 feet for utility runways having only visual approaches.

(2) 500 feet for utility runways having nonprecision instrument approaches.

(3) For other than utility runways the width is:

(i) 500 feet for visual runways having only visual approaches.

(ii) 500 feet for nonprecision instrument runways having visibility minimums greater than three-fourths statute mile.

(iii) 1,000 feet for a nonprecision instrument runway having a nonprecision instrument approach with visibility minimums as low as three-fourths of a statute mile, and for precision instrument runways.

The width of the primary surface of a runway will be that width prescribed in this section for the most precise approach existing or planned for either end of that runway.

(d) Approach surface—a surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based upon the type of approach available or planned for that runway end.

(1) The inner edge of the approach surface is the same width as the primary surface and it expands uniformly to a width of:

(i) 1,250 feet for that end of a utility runway with only visual approaches;

(ii) 1,500 feet for that end of a runway other than a utility runway with only visual approaches;

(iii) 2,000 feet for that end of a utility runway with a nonprecision instrument approach;

(iv) 3,500 feet for that end of a nonprecision instrument runway other than utility, having visibility minimums greater than three-fourths of a statute mile;

(v) 4,000 feet for that end of a nonprecision instrument runway, other than utility, having a nonprecision instrument approach with visibility minimums as low as three-fourths statute mile; and

(vi) 16,000 feet for precision instrument runways.

(2) The approach surface extends for a horizontal distance of:

(i) 5,000 feet at a slope of 20 to 1 for all utility and visual runways;

(ii) 10,000 feet at a slope of 34 to 1 for all nonprecision instrument runways other than utility; and,

(iii) 10,000 feet at a slope of 50 to 1 with an additional 40,000 feet at a slope of 40 to 1 for all precision instrument runways.

(3) The outer width of an approach surface to an end of a runway will be that width prescribed in this subsection for the most precise approach existing or planned for that runway end.

(e) Transitional surface—these surfaces extend outward and upward at right angles to the runway centerline and the runway centerline extended at a slope of 7 to 1 from the sides of the primary surface and from the sides of the approach surfaces. Transitional surfaces for those portions of the precision approach surface which project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at right angles to the runway centerline.

§ 77.27 [Revoked]

§ 77.28 Military airport imaginary surfaces.

(a) *Related to airport reference points.* These surfaces apply to all military airports. For the purposes of this section a military airport is any airport operated by an armed force of the United States.

(1) *Inner horizontal surface*—a plane is oval in shape at a height of 150 feet above the established airfield elevation. The plane is constructed by scribing an arc with a radius of 7,500 feet about the centerline at the end of each runway and interconnecting these arcs with tangents.

(2) *Conical surface*—a surface extending from the periphery of the inner horizontal surface outward and upward at a slope of 20 to 1 for a horizontal distance of 7,000 feet to a height of 500 feet above the established airfield elevation.

(3) *Outer horizontal surface* — a plane, located 500 feet above the established airfield elevation, extending outward from the outer periphery of the conical surface for a horizontal distance of 30,000 feet.

(b) *Related to runways.* These surfaces apply to all military airports.

(1) Primary surface—a surface located on the ground or water longitudinally centered on each runway with the same length as the runway. The width of the primary surface for runways is 2,000 feet. However, at established bases where substantial construction has taken place in accordance with a previous lateral clearance criteria, the 2,000-foot width may be reduced to the former criteria.

(2) *Clear zone surface*—a surface located on the ground or water at each end of the primary surface, with a length of 1,000 feet and the same width as the primary surface.

(3) *Approach clearance surface*—an inclined plane, symmetrical about the runway centerline extended, beginning 200 feet beyond each end of the primary surface at the centerline elevation of the runway end and extending for 50,000 feet. The slope of the approach clearance surface is 50 to 1 along the runway centerline extended until it reaches an elevation of 500 feet above the established airport elevation. It then continues horizontally at this elevation to a point 50,000 feet from the point of beginning. The width of this surface at the runway end is the same as the primary surface, it flares uniformly, and the width at 50,000 is 16,000 feet.

(4) *Transitional surfaces*—these surfaces connect the primary surfaces, the first 200 feet of the clear zone surfaces, and the ap-

proach clearance surfaces to the inner horizontal surface, conical surface, outer horizontal surface or other transitional surfaces. The slope of the transitional surface is 7 to 1 outward and upward at right angles to the runway centerline.

§ 77.29 Airport imaginary surfaces for heliports.

(a) *Heliport primary surface.* The area of the primary surface coincides in size and shape with the designated takeoff and landing area of a heliport. This surface is a horizontal plane at the elevation of the established heliport elevation.

(b) *Heliport approach surface.* The approach surface begins at each end of the heliport primary surface with the same width as the primary surface, and extends outward and upward for a horizontal distance of 4,000 feet where its width is 500 feet. The slope of the approach surface is 8 to 1 for civil heliports and 10 to 1 for military heliports.

(c) *Heliport transitional surfaces.* These surfaces extend outward and upward from the lateral boundaries of the heliport primary surface and from the approach surfaces at a slope of 2 to 1 for a distance of 250 feet measured horizontally from the centerline of the primary and approach surfaces.

Subpart D—Aeronautical Studies of Effect of Proposed Construction on Navigable Airspace

§ 77.31 Scope.

(a) This subpart applies to the conduct of aeronautical studies of the effect of proposed construction or alteration on the use of air navigation facilities or navigable airspace by aircraft. In the aeronautical studies, present and future IFR and VFR aeronautical operations and procedures are reviewed and any possible changes in those operations and procedures and in the construction proposal that would eliminate or alleviate the conflicting demands are ascertained.

(b) The conclusion of a study made under this subpart is normally a determination as to whether the specific proposal studied would be a hazard to air navigation.

§ 77.33 Initiation of studies.

An aeronautical study is conducted by the FAA—

(a) Upon the request of the sponsor of any construction or alteration for which a notice is submitted under Subpart B, unless that construction or alteration would be located within an antenna farm area established under Subpart F; or

(b) Whenever the FAA determines it appropriate.

§ 77.35 Aeronautical studies.

(a) The Regional Director of the region in which the proposed construction or alteration would be located, or his designee, conducts the aeronautical study of the effect of the proposal upon the operation of air navigation facilities and the safe and efficient utilization of the navigable airspace. This study may include the physical and electromagnetic radiation effect the proposal may have on the operation of an air navigation facility.

(b) To the extent considered necessary, the Regional Director or his designee—

(1) Solicits comments from all interested persons;

(2) Explores objections to the proposal and attempts to develop recommendations for adjustment of aviation requirements that would accommodate the proposed construction or alteration;

(3) Examines possible revisions of the proposal that would eliminate the exceeding of the standards in Subpart C; and

(4) Convenes a meeting with all interested persons for the purpose of gathering all facts relevant to the effect of the proposed construction or alteration on the safe and efficient utilization of the navigable airspace.

(c) The Regional Director or his designee issues a determination as to whether the proposed construction or alteration would be a hazard to air navigation and sends copies to all known interested persons. This determination is final unless a petition for review is granted under § 77.37.

(d) If the sponsor revises his proposal to eliminate exceeding of the standard of Sub-

part C, or withdraws it, the Regional Director, or his designee, terminates the study and notifies all known interested persons.

§ 77.37 Discretionary review.

(a) The sponsor of any proposed construction or alteration or any person who stated a substantial aeronautical objection to it in an aeronautical study, or any person who has a substantial aeronautical objection to it but was not given an opportunity to state it, may petition the Administrator, within 30 days after issuance of the determination under § 77.19 or § 77.35 or revision or extension of the determination under § 77.39(c), for a review of the determination, revision, or extension. This paragraph does not apply to any acknowledgment issued under § 77.19(c)(1).

(b) The petition must be in triplicate and contain a full statement of the basis upon which it is made.

(c) The Administrator examines each petition and decides whether a review will be made and, if so, whether it will be—

(1) A review on the basis of written materials, including study of a report by the Regional Director of the aeronautical study, briefs, and related submissions by any interested party, and other relevant facts, with the Administrator affirming, revising, or reversing the determination issued under § 77.19, § 77.35 or § 77.39(c); or

(2) A review on the basis of a public hearing, conducted in accordance with the procedures prescribed in Subpart E.

§ 77.39 Effective period of determination of no hazard.

(a) Unless it is otherwise extended, revised, or terminated, each final determination of no hazard made under this subpart or Subparts B or E expires 18 months after its effective date, regardless of whether the proposed construction or alteration has been started, or on the date the proposed construction or alteration is abandoned, whichever is earlier.

(b) In any case, including a determination to which paragraph (d) of this section applies, where the proposed construction or alteration has not been started during the applicable period by actual structural work, such as the laying of a foundation, but not including excavation, any interested person may, at least 15 days before the date the final determination expires, petition the FAA official who issued the determination to:

(1) Revise the determination based on new facts that change the basis on which it was made; or

(2) Extend its effective period.

(c) The FAA official who issued the determination reviews each petition presented under paragraph (b) of this section, and revises, extends, or affirms the determination as indicated by his findings.

(d) In any case in which a final determination made under this subpart or Subparts B or E relates to proposed construction or alteration that may not be started unless the Federal Communications Commission issues an appropriate construction permit, the effective period of each final determination includes—

(1) The time required to apply to the Commission for a construction permit, but not more than six months after the effective date of the determination; and

(2) The time necessary for the Commission to process the application except in a case where the Administrator determines a shorter effective period is required by the circumstances.

(e) If the Commission issues a construction permit, the final determination is effective until the date prescribed for completion of the construction. If the Commission refuses to issue a construction permit, the final determination expires on the date of its refusal.

Subpart E—Rules of Practice for Hearings Under Subpart D

§ 77.41 Scope.

This subpart applies to hearings held by the FAA under Titles I, III, and X of the Federal Aviation Act of 1958 (49 U.S.C. Subchapters I, III, and X), on proposed construction or alteration that affects the use of navigable airspace.

§ 77.43 Nature of hearing.

Sections 4, 5, 7 and 8 of the Administrative Procedure Act (5 U.S.C. 1003, 1004, 1006 and 1007) do not apply to hearings held on proposed construction or alteration to determine its effect on the safety of aircraft and the efficient use of navigable airspace because those hearings are fact-finding in nature. As a fact-finding procedure, each hearing is non-adversary and there are no formal pleadings or adverse parties.

§ 77.45 Presiding officer.

(a) If, under § 77.37, the Administrator grants a public hearing on any proposed construction or alteration covered by this Part, the Director of the Air Traffic Service designates an FAA employee to be the Presiding Officer at the hearing.

(b) The Presiding Officer may—

(1) Give notice of the date and location of the hearing and any prehearing conference that may be held;

(2) Administer oaths and affirmations;

(3) Examine witnesses;

(4) Issue subpoenas and take depositions or have them taken;

(5) Obtain, in the form of a public record, all pertinent and relevant facts relating to the subject matter of the hearing;

(6) Rule, with the assistance of the Legal Officer, upon the admissibility of evidence;

(7) Regulate the course and conduct of the hearing; and

(8) Designate parties to the hearing and revoke those designations.

§ 77.47 Legal officer.

The Chief Counsel designates a member of his staff to serve as Legal Officer at each hearing under this subpart. The Legal Officer may examine witnesses and assist and advise the Presiding Officer on questions of evidence or other legal questions arising during the hearing.

§ 77.49 Notice of hearing.

In designating a time and place for a hearing under this subpart, the Presiding Officer considers the needs of the FAA and the convenience of the parties and witnesses. The time and place of each hearing is published in the "Notices" section of the *Federal Register* before the date of the hearing, unless the notice is impractical or unnecessary.

§ 77.51 Parties to the hearing.

The Presiding Officer designates the following as parties to the hearing—

(a) The proponent of the proposed construction or alteration.

(b) Those persons whose activities would be substantially affected by the proposed construction or alteration.

§ 77.53 Prehearing conference.

(a) The Presiding Officer may, in his discretion, hold a prehearing conference with the parties to the hearing and the Legal Officer before the hearing.

(b) At the direction of the Presiding Officer, each party to a prehearing conference shall submit a brief written statement of the evidence he intends to provide through his witnesses and by questioning other witnesses at the hearing, and shall provide enough copies of the statement so that the Presiding Officer may keep three for the FAA and give one to each other party.

(c) At the prehearing conference, the Presiding Officer reduces and simplifies the subject matter of the hearing so far as possible and advises the parties of the probable order of presenting the evidence.

§ 77.55 Examination of witnesses.

(a) Each witness at a hearing under this subpart shall, after being sworn by the Presiding Officer, give his testimony under oath.

(b) The party for whom a witness, other than an employee of the FAA, is testifying shall examine that witness. After that examination, other parties to the hearing may examine the witness, in the order fixed by the Presiding Officer. The Presiding Officer and the Legal Officer may then examine the witness. The Presiding Officer may grant any party an additional opportunity to examine any witness, if that party adequately justifies the additional examination.

(c) The Legal Officer examines each FAA employee who is a witness, before the other parties examine him. After that examination,

the order prescribed in paragraph (b) of this section applies. An FAA employee may testify only as to facts within his personal knowledge and the application of FAA regulations, standards, and policies.

§ 77.57 Evidence.

(a) The Presiding Officer receives all testimony and exhibits that are relevant to the issues of the hearing. So far as possible, each party shall submit enough copies of his exhibits that the Presiding Officer may keep three copies for the FAA and give one to each other party.

(b) The Presiding Officer excludes any testimony that is irrelevant, unduly repetitious, or consists of statements made during an aeronautical study in an effort to reconcile or compromise aviation or construction or alteration requirements. A party to the hearing may object to the admission of evidence only on the ground that it is irrelevant.

§ 77.59 Subpoenas of witnesses and exhibits.

(a) The Presiding Officer of a hearing may issue subpoenas for any witness or exhibit that he determines may be material and relevant to the issues of the hearing. So far as possible, each party to the hearing shall provide the witnesses and exhibits that he intends to present at the hearing.

(b) If any party to the hearing is unable to provide his necessary witnesses and exhibits, he shall advise the Presiding Officer far enough in advance that the Presiding Officer can determine whether he should issue subpoenas for the desired witnesses or exhibits.

§ 77.61 Revision of construction or alteration proposal.

(a) The sponsor of any proposed construction or alteration covered by this Part may revise his proposal at any time before or during the hearing. If he revises it, the Presiding Officer decides whether the revision affects the proposal to the extent that he should send it to the Administrator for a redetermination of the need for a hearing.

(b) If the Presiding Officer decides that it does not need to be resubmitted to the Administrator, he advises the parties of the revised proposal and takes the action necessary to allow all parties to effectively participate in the hearing on the revised proposal. Without limiting his discretion, the Presiding Officer may recess and reconvene the hearing, or hold another prehearing conference.

§ 77.63 Record of hearing.

(a) Each hearing is recorded verbatim by an official reporter under an FAA contract. The transcript, and all exhibits, become a part of the record of the hearing.

(b) Any person may buy a copy of the transcript of the hearing from the reporter at the price fixed for it.

(c) The Presiding Officer may allow any party to withdraw an original document if he submits authenticated copies of it.

(d) Any person may buy, from the FAA, photostatic copies of any exhibit by paying the copying costs.

(e) A change in the official transcript of a hearing may be made only if it involves an error of substance. Any recommendation to correct the transcript must be filed with the Presiding Officer within five days after the hearing closes. The Presiding Officer reviews each request for a correction to the extent he considers appropriate and shall make any revisions that he finds appropriate as a result of that review.

§ 77.65 Recommendations by parties.

Within 20 days after the mailing of the record of hearing by the official reporter, or as otherwise directed by the Presiding Officer, each party may submit to the Presiding Officer five copies of his recommendations for a final decision to be made by the Administrator.

§ 77.67 Final decision of the Administrator.

After reviewing the evidence relevant to the questions of fact in a hearing, including the official transcript and the exhibits, the Administrator resolves all these questions, based on the weight of evidence, and makes his determination, stating the basis and reasons for it. He then issues an appropriate order to be served on each of the parties.

§ 77.69 Limitations on appearance and representation.

(a) A former officer or employee of the FAA may not appear on behalf of, or repre-

sent, any party before the FAA in connection with any matter to which this Part applies, if he considered or passed on that matter while he was an officer or employee of the FAA.

(b) A person appearing before the FAA on any matter to which this Part applies may not, in connection with that appearance, knowingly accept assistance from, or share fees with, any person who is prohibited, by paragraph (a) of this section, from appearing himself on that matter.

(c) A former official or employee of the FAA may not, within six months after he ceases to be such an officer or employee, appear before the FAA on behalf of, or represent, any party in connection with any proceeding that was pending under this Part while he was an officer or employee of the FAA, unless he obtains written consent from an appropriate officer of the FAA, based on a verified showing that he did not personally consider the matter concerned or gain particular knowledge of it while he was an officer or employee of the FAA.

Subpart F—Establishment of Antenna Farm Areas

§ 77.71 Scope.

(a) This subpart establishes antenna farm areas in which antenna structures may be grouped to localize their effect on the use of navigable airspace.

(b) It is the policy of the FAA to encourage the use of antenna farms and the single structure-multiple antenna concept for radio and television towers whenever possible. In considering proposals for establishing antenna farm areas, it considers as far as possible the revision of aeronautical procedures and operations to accommodate antenna structures that will fulfill broadcasting requirements.

§ 77.73 General provisions.

(a) An antenna farm area consists of a specified geographical location with established dimensions of area and height, where antenna towers with a common impact on aviation may be grouped. Each such area is established by appropriate rule-making action.

(b) Each proposal for an antenna farm area is evaluated on the basis of its effect on the use of navigable airspace. The views of the Federal Communications Commission are requested on the effect that each establishment of an antenna farm area would have on its statutory responsibilities. Any views submitted by it are fully considered before the antenna farm concerned is established. If the Commission advises that the establishment of any proposed antenna farm area would interfere with its statutory responsibility, the proposed area is not established.

(c) The establishment of an antenna farm area is considered whenever it is proposed by—

(1) The FAA;

(2) The Federal Communications Commission;

(3) The sponsor of a proposed antenna tower; or

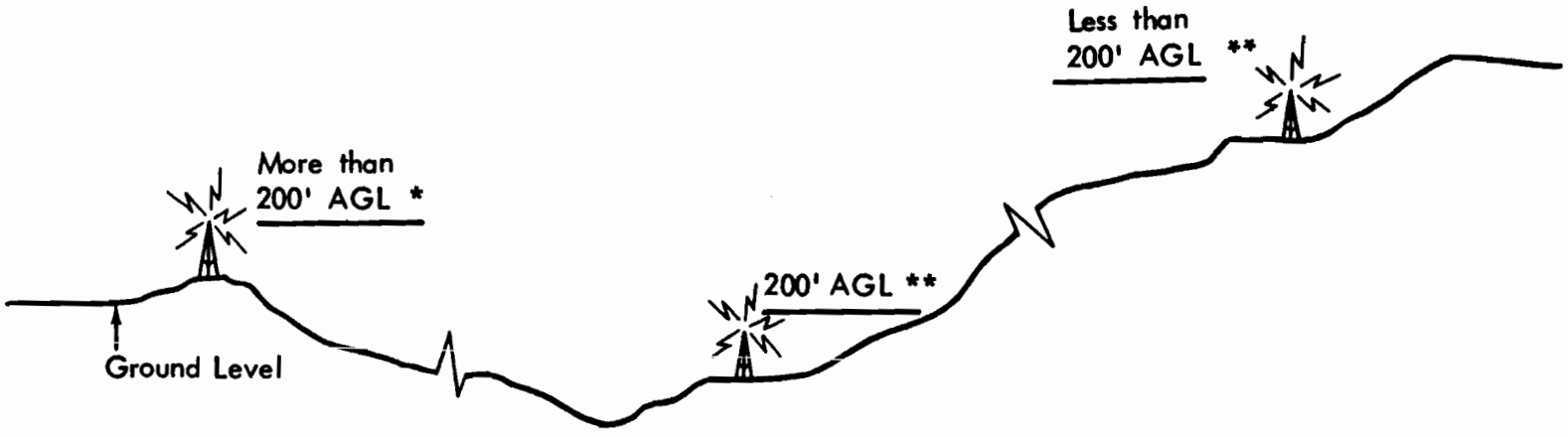
(4) Any other person having a substantial interest in a proposed antenna tower.

§ 77.75 Establishment of antenna farm areas.

The airspace areas described in the following sections of this subpart are established as antenna farm areas.

[Note: §§ 77.77 through 77.1100 reserved for descriptions of antenna farm areas]

§77.13(a)(1) - Notice Requirement Anywhere

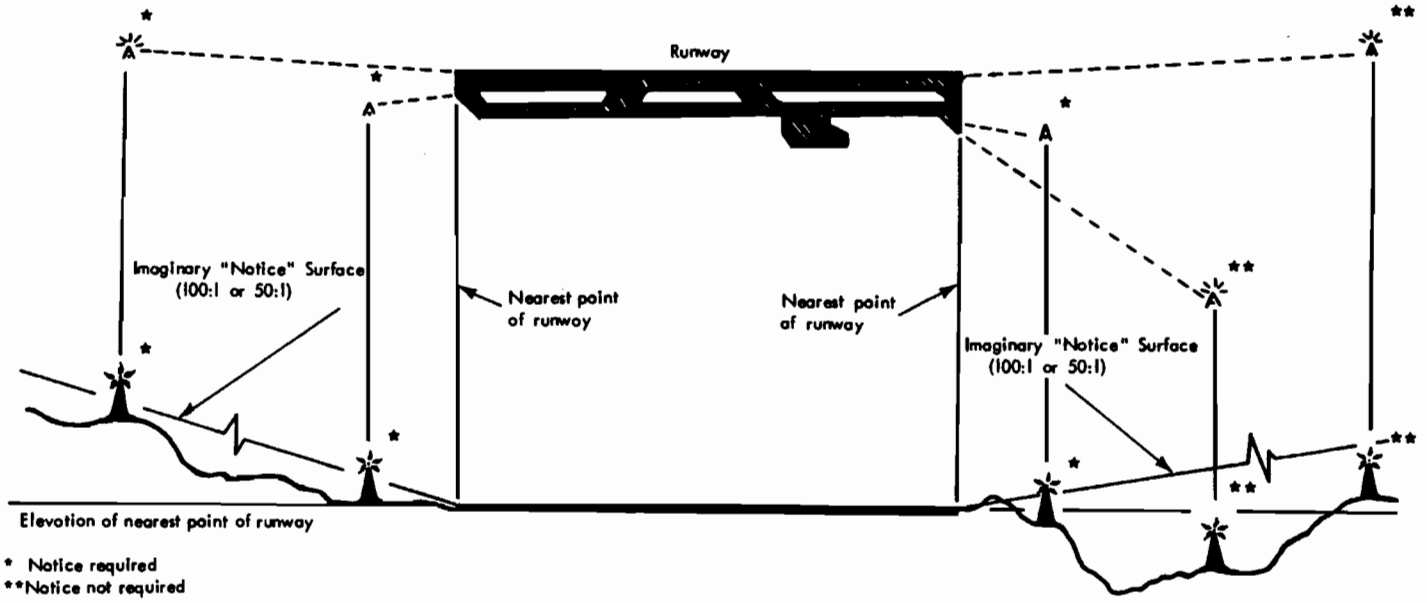


* Notice Required
** Notice Not Required

SUBPART B - NOTICE OF CONSTRUCTION OR ALTERATION

§77.13(a)(1) - A notice is required for any proposed construction or alteration that would be more than 200 feet in height above the ground level at its site.

§ 77.13(a)(2) - NOTICE REQUIREMENT RELATED TO AIRPORTS



Note: Each airport must be available for public use and listed in the Airport Directory of the current Airman's Information Manual, or in either the Alaska or Pacific Airman's Guide and Chart Supplement; under construction and the subject of a notice or proposal on file with FAA, and except for Military airports, it is clearly indicated that that airport will be available for public use, or operated by an armed force of the United States.(Heliports and seaplane bases without specified boundaries are excluded.)

SUBPART B - NOTICE OF CONSTRUCTION OR ALTERATION

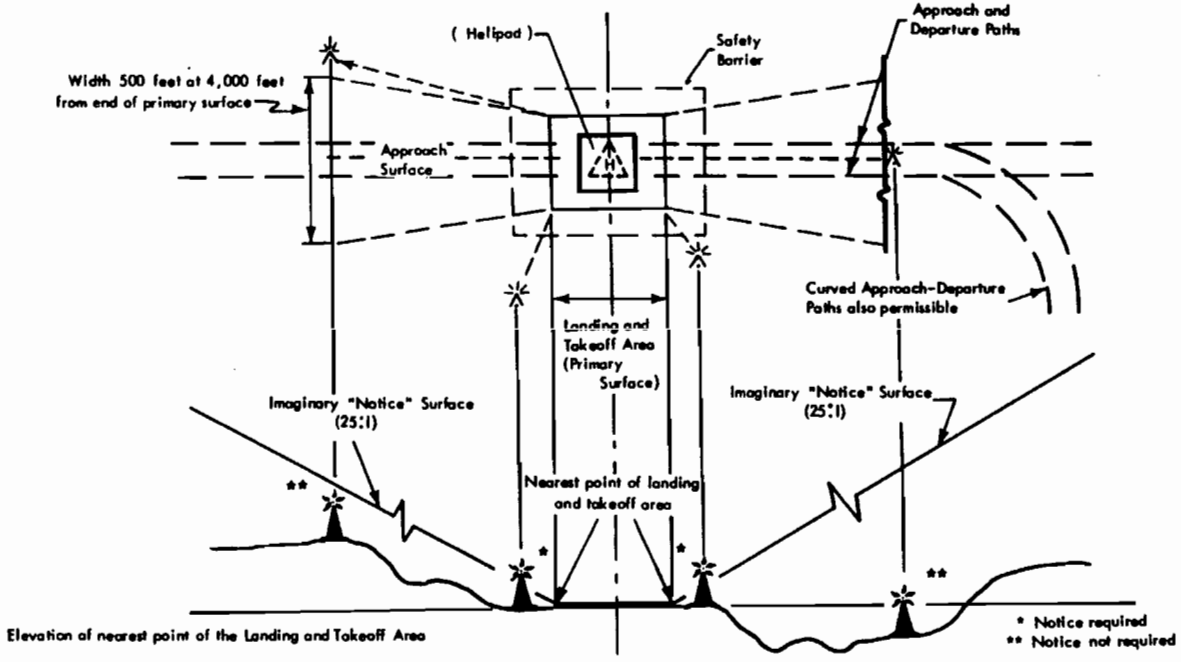
§77.13(a)(2) - A notice is required for any proposed construction or alteration that would be of greater height than an imaginary surface extending outward and upward at one of the following slopes -

(i) 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of each airport with at least one runway more than 3,200 feet in actual length.

(ii) 50 to 1 for a horizontal distance of 10,000 feet from the nearest point of the nearest runway of each each airport with its longest runway no more than 3,200 feet in actual length.

(Note: §77.13(a)(5) requires notice of any proposed construction or alteration on each airport, including heliports)

§ 77.13(a)(2) - NOTICE REQUIREMENT RELATED TO HELIPORTS

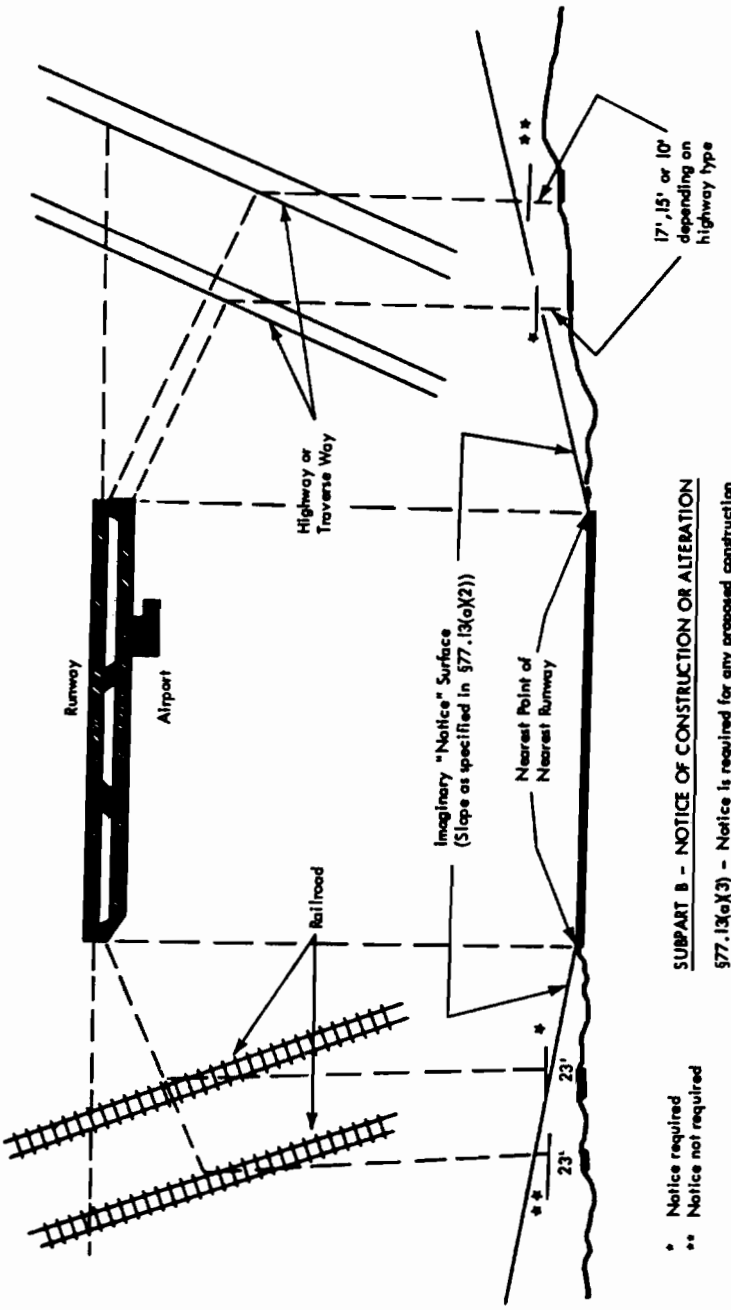


SUBPART B - NOTICE OF CONSTRUCTION OR ALTERATION

§77.13 (a)(2)–A notice is required for any proposed construction or alteration that would be of greater height than an imaginary surface extending outward and upward at the following slope:

(iii) 25 to 1 for a horizontal distance of 5,000 feet from the nearest landing and takeoff area of each heliport, available for public use and listed in the Airport Directory of the current Airman's Information Manual or in either the Alaska or Pacific Airman's Guide and Chart Supplement; is under construction and is the subject of a notice or proposal on file with the FAA and except for military heliports, it is clearly indicated that that heliport will be available for public use, or operated by a Federal Military agency.

§ 77.13(a)(3) - NOTICE REQUIREMENT RELATED TO TRAVERSE WAYS

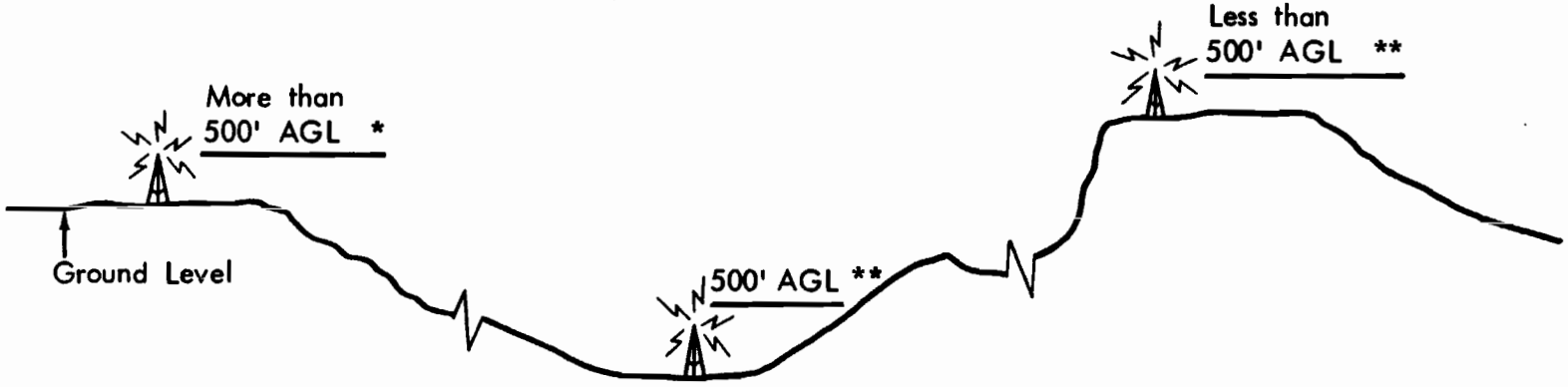


SUBPART B – NOTICE OF CONSTRUCTION OR ALTERATION

§77.13(a)(3) – Notice is required for any proposed construction or alteration of any highway, railroad, or other traverse way for mobile objects if of greater height than the standards of §77.13(a)(1) or (2) after their height has been adjusted upward by one of the following:

17 feet for an Interstate highway that is part of the National System of Military and Interstate Highways,
15 feet for any other public roadway
10 feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road,
23 feet for a railroad
For a waterway or any other traverse way, an amount equal to the height of the highest mobile object that would normally use it.

§77.23(a)(1) - Anywhere

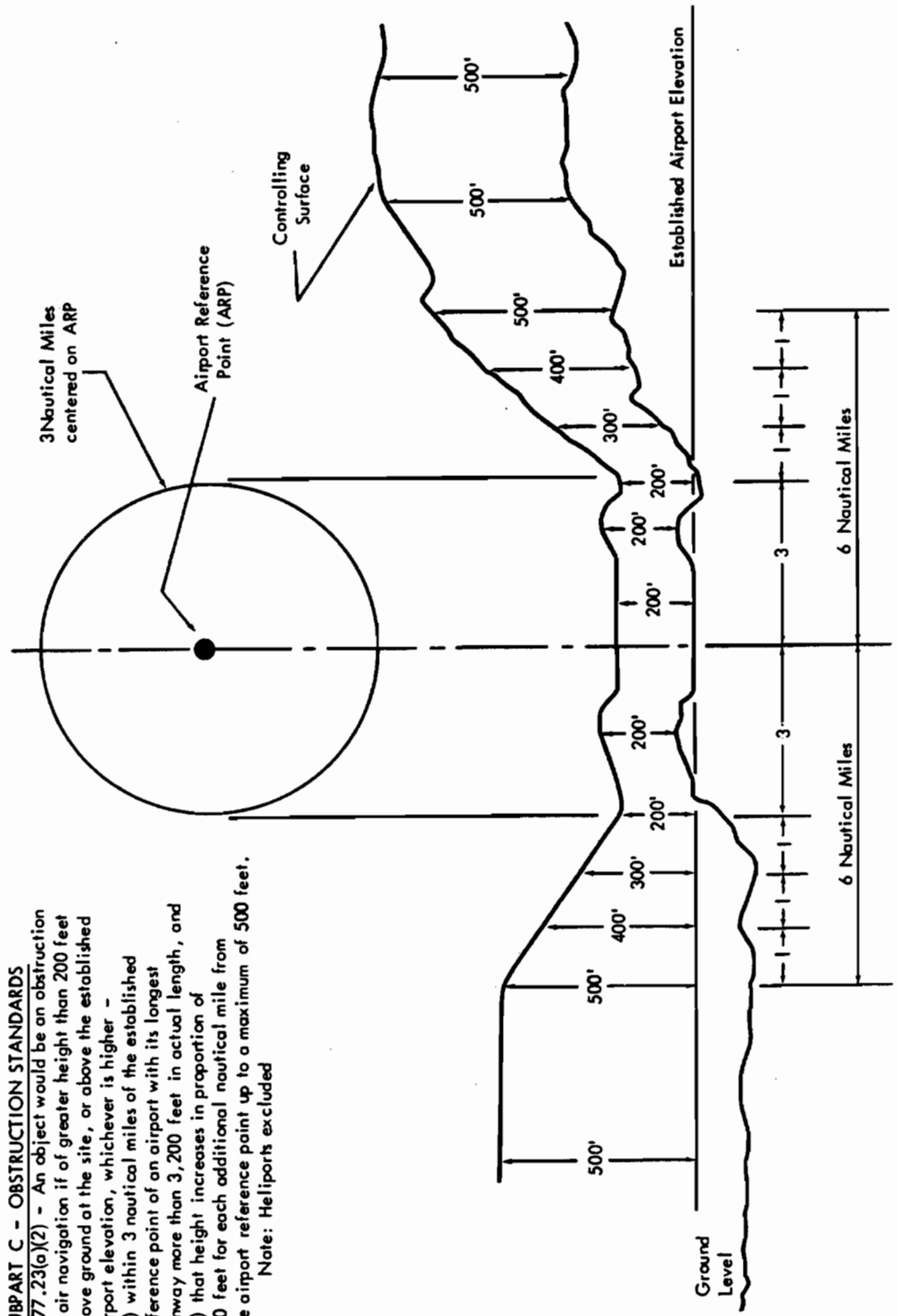


* Obstruction to Air Navigation
** Not an Obstruction to Air Navigation

SUBPART C - OBSTRUCTION STANDARDS

§77.23(a)(1) - An object would be an obstruction to air navigation if of greater height than 500 feet above ground level at its site.

§ 77.23(a)(2) - NEAR AIRPORTS



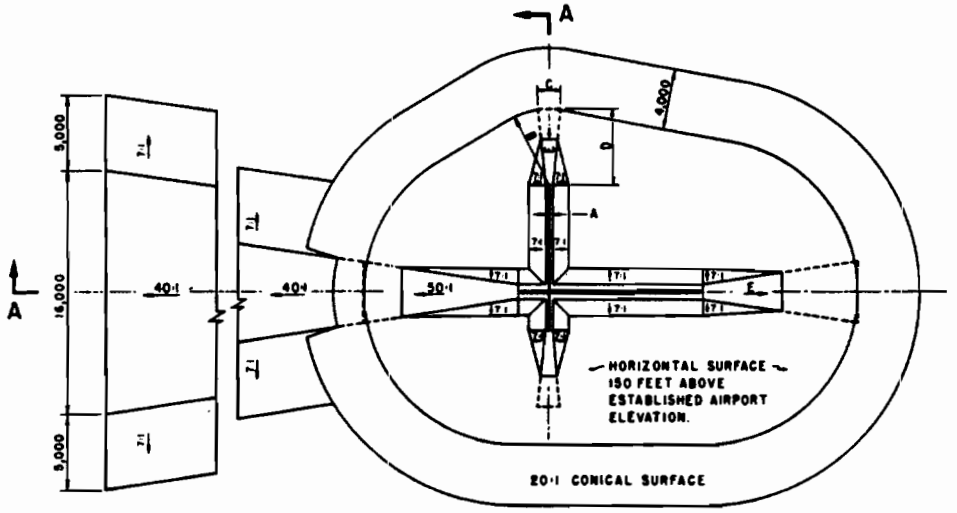
SUBPART C - OBSTRUCTION STANDARDS

§ 77.23(a)(2) - An object would be an obstruction to air navigation if of greater height than 200 feet above ground at the site, or above the established airport elevation, whichever is higher -

(a) within 3 nautical miles of the established reference point of an airport with its longest runway more than 3,200 feet in actual length, and

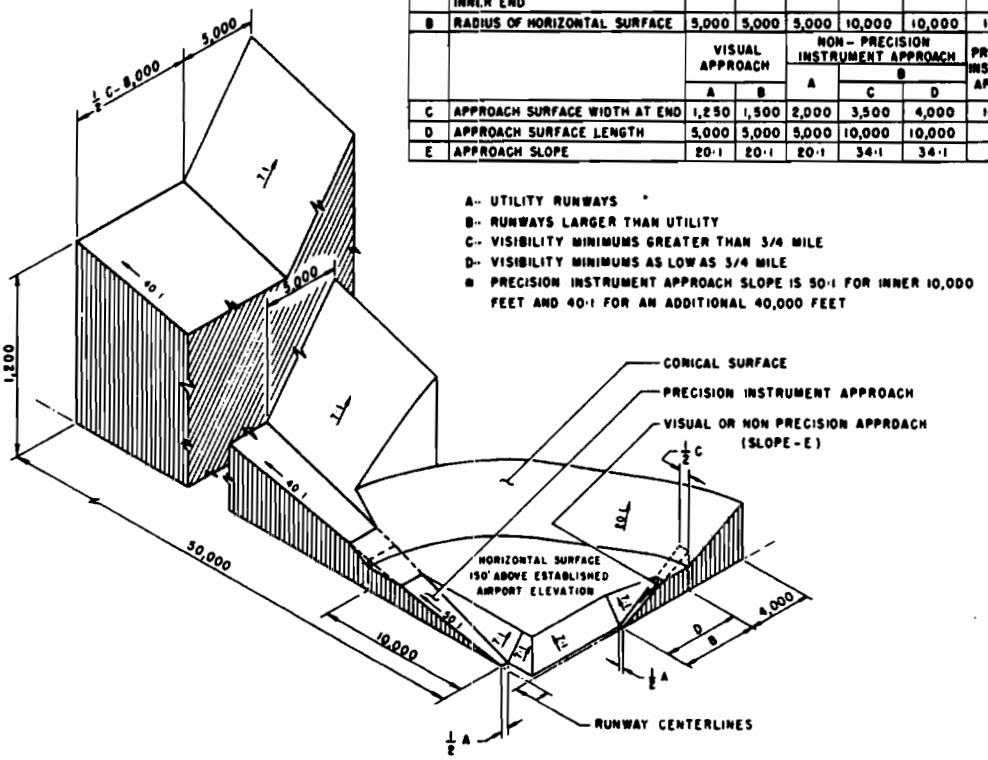
(b) that height increases in proportion of 100 feet for each additional nautical mile from the airport reference point up to a maximum of 500 feet.

Note: Heliports excluded



DIM	ITEM	DIMENSIONAL STANDARDS (FEET)					
		VISUAL RUNWAY		NON-PRECISION INSTRUMENT RUNWAY			PRECISION INSTRUMENT RUNWAY
		A	B	A	C	D	
A	WIDTH OF PRIMARY SURFACE AND APPROACH SURFACE WIDTH AT INNER END	250	500	500	500	1,000	1,000
B	RADIUS OF HORIZONTAL SURFACE	5,000	5,000	5,000	10,000	10,000	10,000
		VISUAL APPROACH		NON-PRECISION INSTRUMENT APPROACH			PRECISION INSTRUMENT APPROACH
		A	B	A	B C	B D	
C	APPROACH SURFACE WIDTH AT END	1,250	1,500	2,000	3,500	4,000	16,000
D	APPROACH SURFACE LENGTH	5,000	5,000	5,000	10,000	10,000	*
E	APPROACH SLOPE	20:1	20:1	20:1	34:1	34:1	*

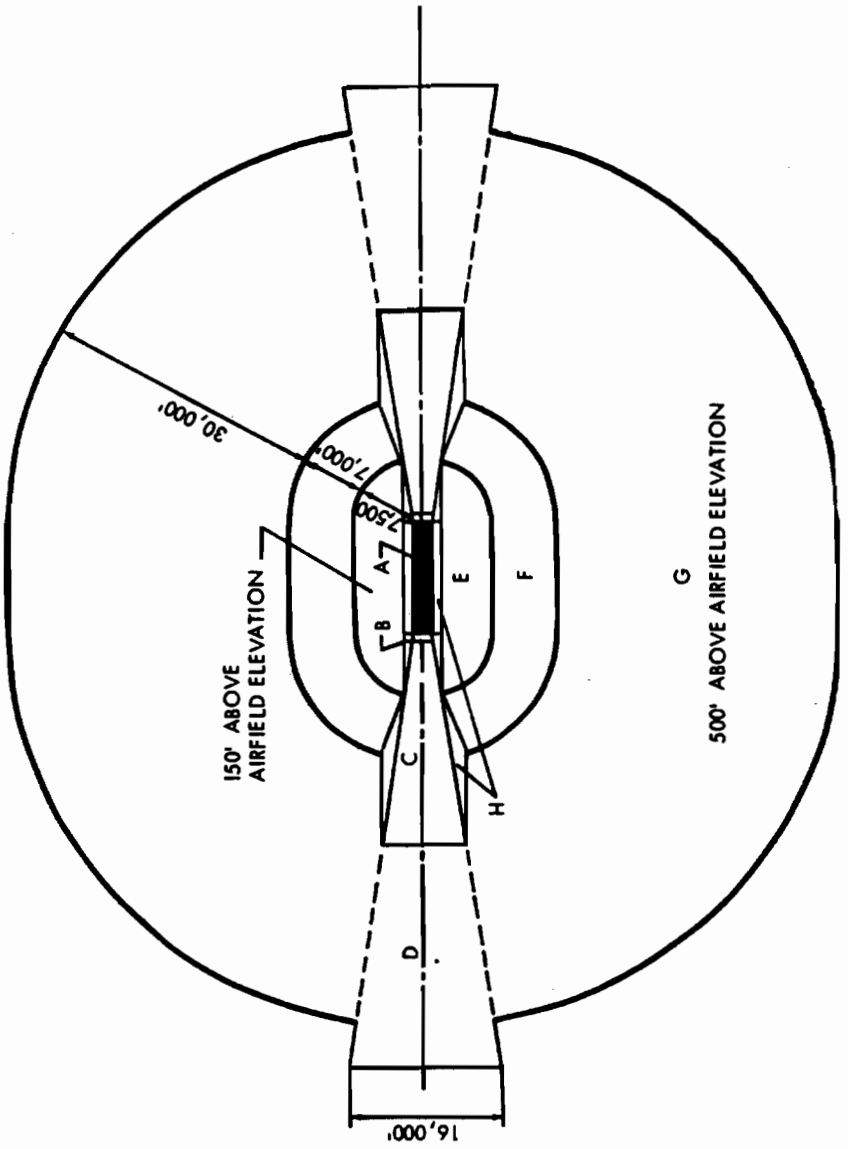
A-- UTILITY RUNWAYS
B-- RUNWAYS LARGER THAN UTILITY
C-- VISIBILITY MINIMUMS GREATER THAN 3/4 MILE
D-- VISIBILITY MINIMUMS AS LOW AS 3/4 MILE
* PRECISION INSTRUMENT APPROACH SLOPE IS 50:1 FOR INNER 10,000 FEET AND 40:1 FOR AN ADDITIONAL 40,000 FEET



ISOMETRIC VIEW OF SECTION A-A

§ 77.25 CIVIL AIRPORT IMAGINARY SURFACES

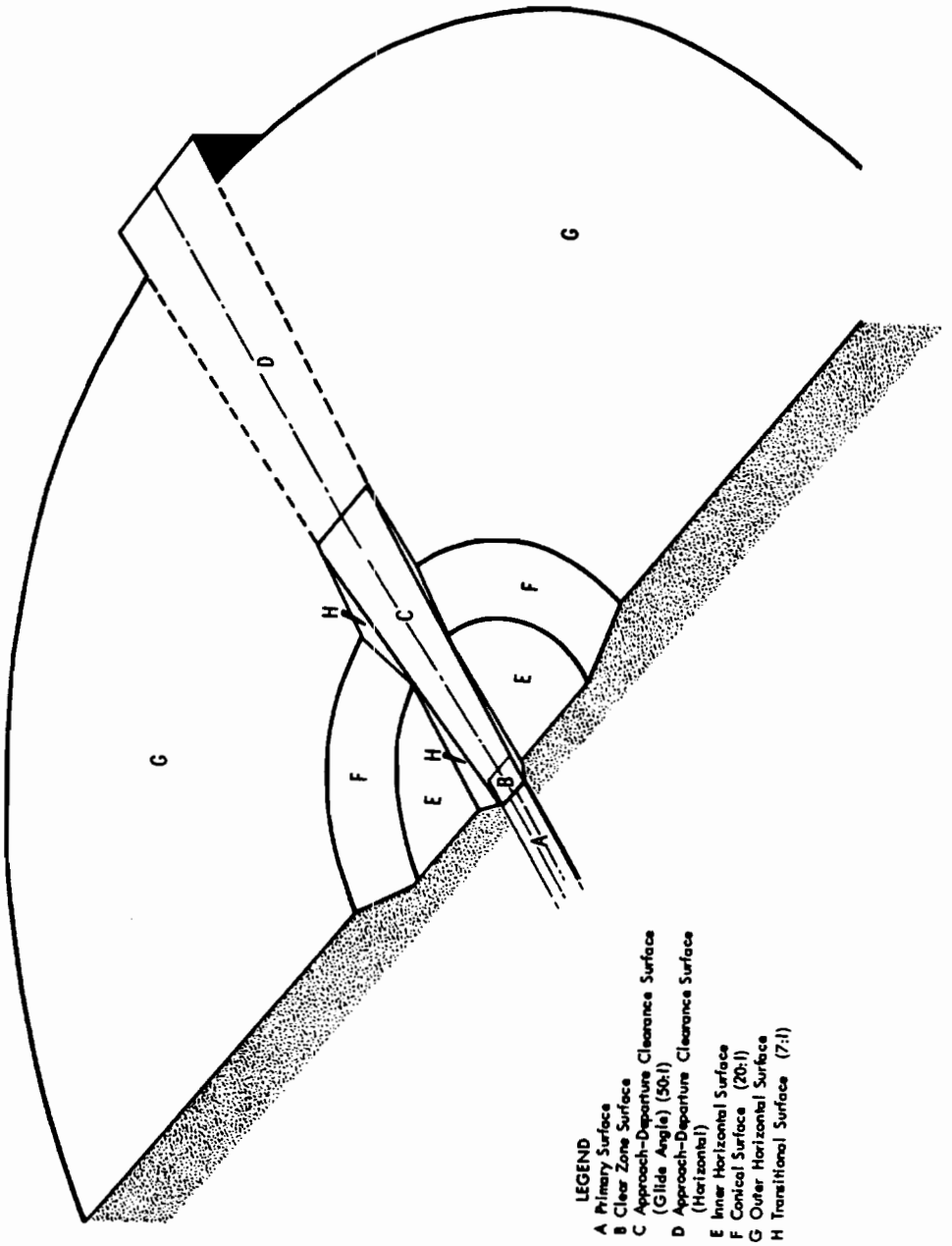
§ 77.28 - MILITARY AIRPORT IMAGINARY SURFACES



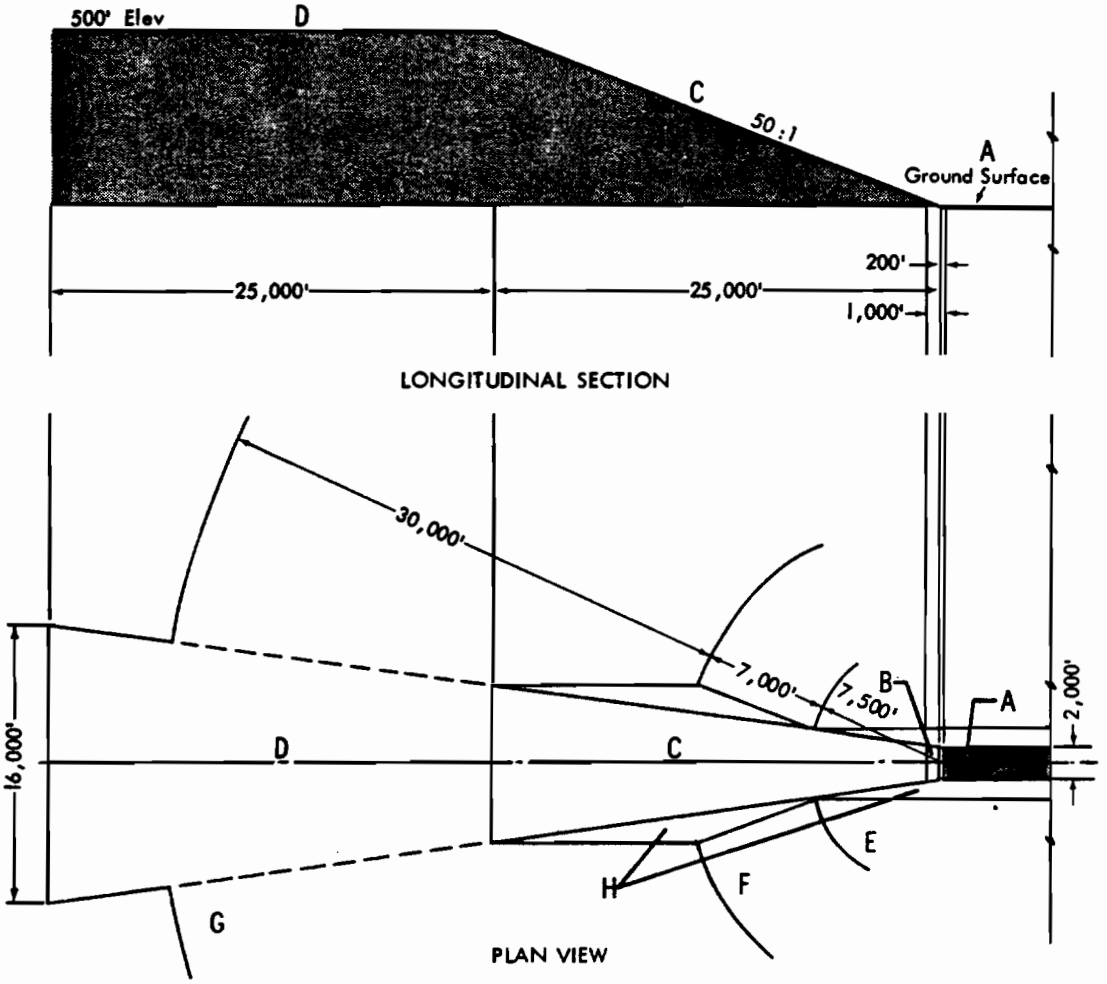
LEGEND

A Primary Surface
B Clear Zone Surface
C Approach-Departure Clearance Surface (Glide Angle)
D Approach-Departure Clearance Surface (Horizontal)
E Inner Horizontal Surface
F Conical Surface
G Outer Horizontal Surface
H Transitional Surface

§ 77. 28 - MILITARY AIRPORT IMAGINARY SURFACES



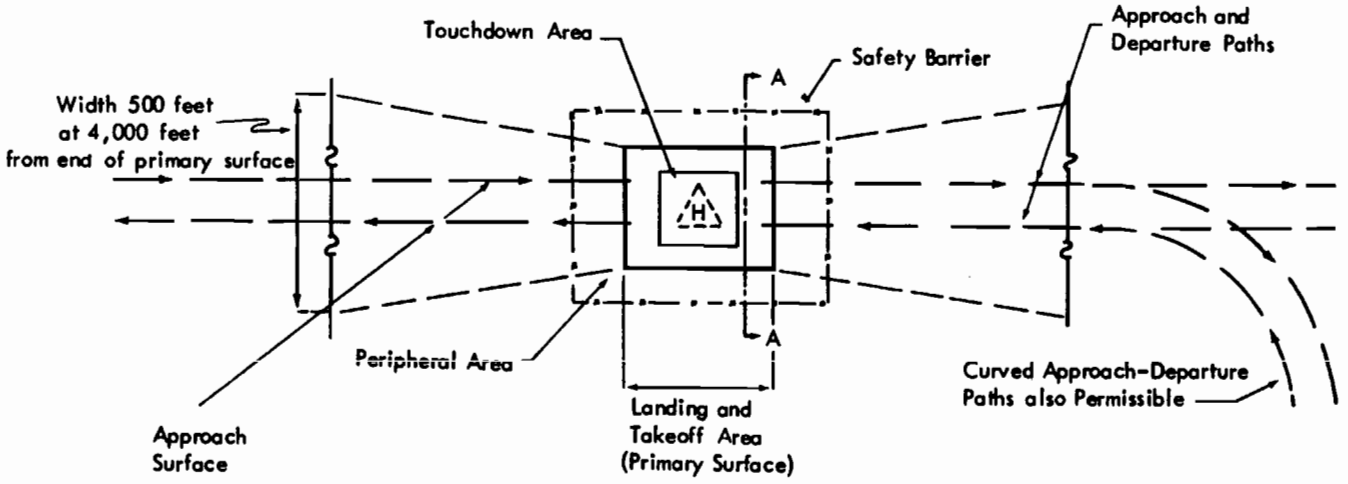
§ 77.28 - MILITARY AIRPORT IMAGINARY SURFACES

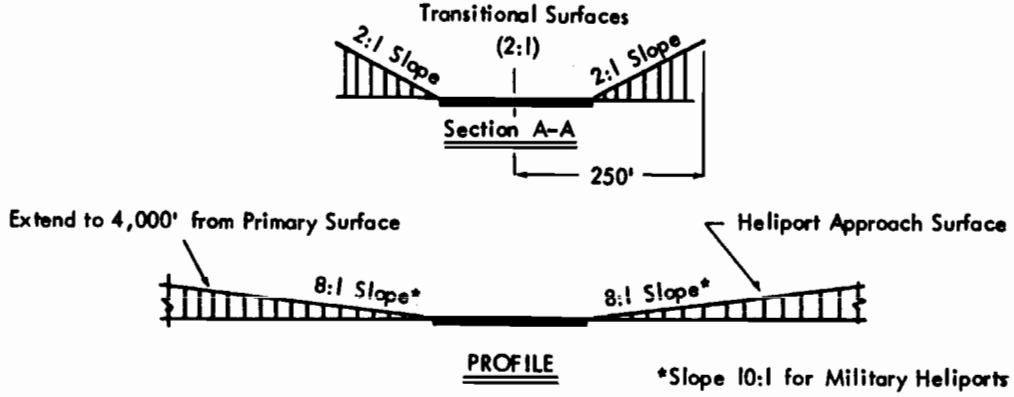


LEGEND

A Primary Surface
B Clear Zone Surface
C Approach-Departure Clearance Surface (Glide Angle)
D Approach-Departure Clearance Surface (Horizontal)
E Inner Horizontal Surface
F Conical Surface
G Outer Horizontal Surface
H Transitional Surface

§ 77.29 - AIRPORT IMAGINARY SURFACES FOR HELIPORTS





*U.S. GOVERNMENT PRINTING OFFICE: 1983-O-381-428/2455

AC NO: 70/7460-2G

DATE: November 30, 1977

ADVISORY CIRCULAR

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

SUBJECT: PROPOSED CONSTRUCTION OR ALTERATION OF OBJECTS THAT MAY AFFECT THE NAVIGABLE AIRSPACE

1. PURPOSE. The purpose of this advisory circular is to advise those persons proposing to erect or alter an object that may affect the navigable airspace of the requirement to submit a notice to the Administrator of the Federal Aviation Administration (FAA). It also contains the addresses of the regional offices and availability of associated publications.

2. CANCELLATION. This cancels AC 70/7460-2F, dated January 22, 1976.

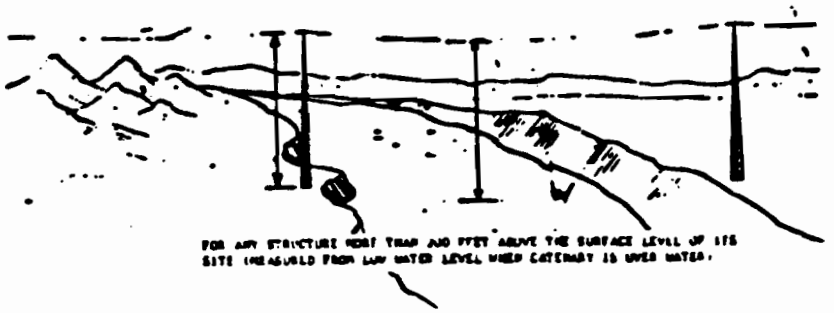
3. KIND OF OBJECTS. The notice requirement criteria apply to the proposed construction or alteration of any structure (building, tower, roadway, overhead wires and their supporting structures, etc.), including any construction equipment employed. These criteria apply to the height of overhead communications and electric transmission lines above the terrain, or water if so situated, as well as the height of their supporting structures.

4. WHO MUST FILE A NOTICE. A construction sponsor is required by regulation 1/ to submit notice to the Administrator of the FAA if his proposed construction or alteration exceeds one or more of the following conditions:

   a. Greater Than 200 Feet in Height. If the proposed object would be more than 200 feet above ground level (AGL) at its location.

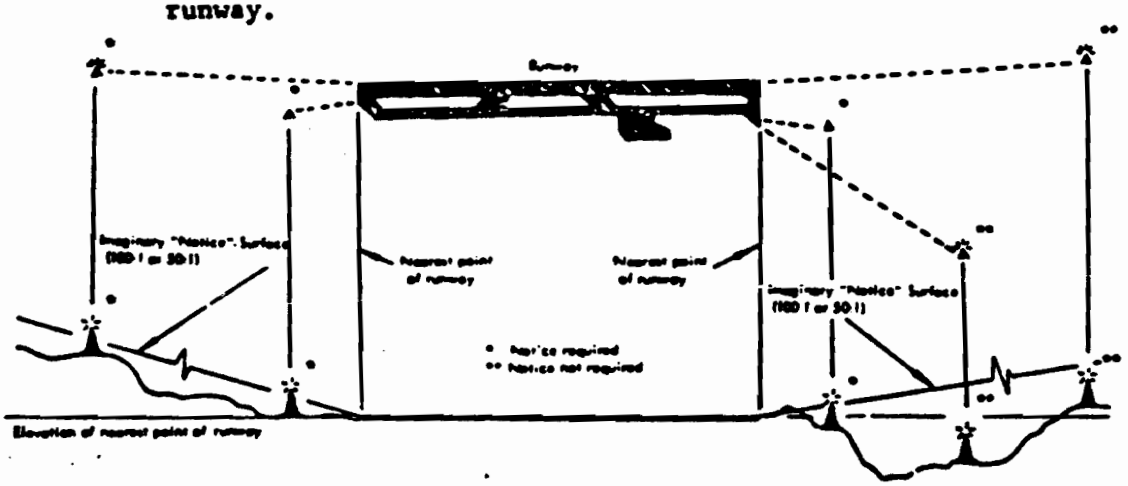
1/ Persons failing to comply with the provisions of the Federal Aviation Regulations, Part 77, may be liable to a fine of up to five hundred dollars ($500.00) as provided for by Section 902(a) of the Federal Aviation Act of 1958, as amended.

Initiated by: AAT-240



b. Near an Airport.[2/]

(1) If the proposed object would be within 20,000 feet of an airport with at least one runway more than 3,200 feet in length; and would exceed one foot in height for each 100 feet (100:1) horizontally from the nearest point of the nearest runway.

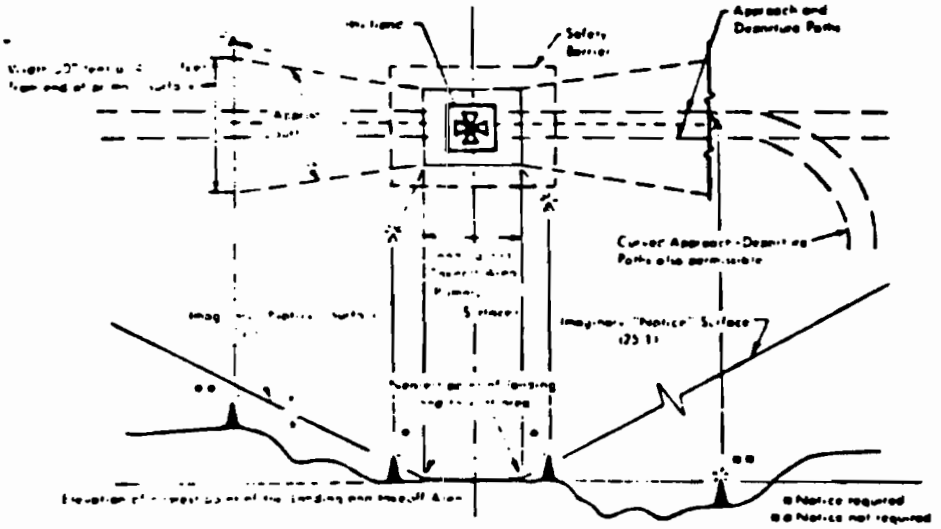


(2) If the proposed object would be within 10,000 feet of an airport[2/] having no runway more than 3,200 feet in length; and would exceed one foot in height for each 50 feet (50:1) horizontally from the nearest point of the nearest runway. (See diagram under item 4b(1))

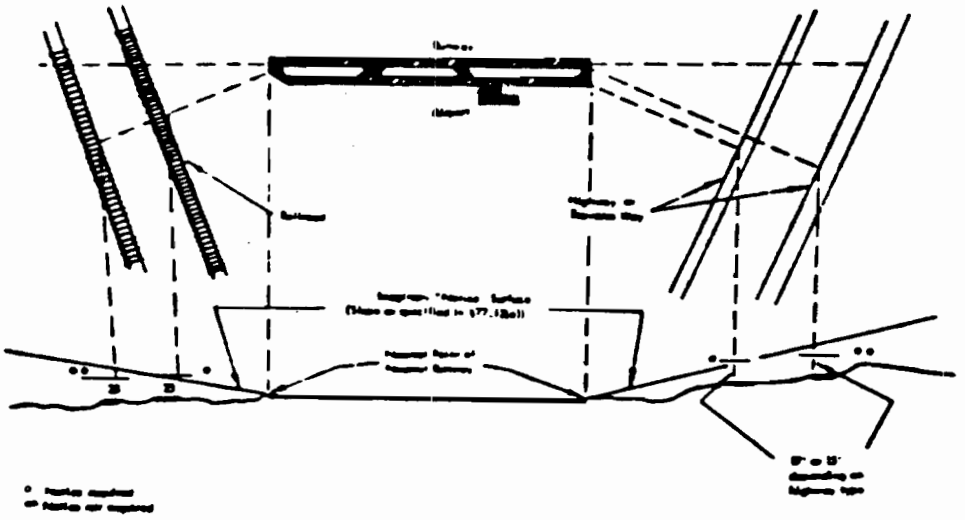
c. Near a Seaplane Base.[2/] If the proposed object would be near a seaplane base, apply item b(1) or (2) above as applicable.

[2/] To qualify, an airport, or visually marked seaplane base, must be listed in the "Airport Directory" of the current Airman's Information Manual or in either the Alaska or Pacific Airman's Guide and Chart Supplement or operated by a Federal military agency.

d. Near a Heliport. If the proposed object would be within 5,000 feet of a heliport listed in the "Airport Directory" or operated by a Federal military agency; and would exceed one foot in height for each 25 feet (25:1), horizontally from the nearest landing and takeoff area of that heliport.



e. Highways and Railroads. If the proposed object is a traverse way which would exceed at least one of the standards listed in Items a - d above, after its height is adjusted upward 17 feet for an Interstate Highway, 15 feet for any other public roadway, 10 feet (or the height of the highest mobile objects that would normally traverse the road) for a private road, 23 feet for a railroad, or an amount equal to the height of the highest mobile objects that would traverse a waterway or any other thoroughfare not previously mentioned.



f. Object on an Airport. If the proposed construction or alteration would be on an airport.

g. When Requested by FAA. The FAA may request a notice if available information indicates the proposal may exceed a standard.

5. WHEN TO FILE A NOTICE. The notice required under Item 4a through g above must be submitted.

a. At least 30 days before:

(1) the construction or alteration is to begin; or,

(2) the application for a construction permit is to be filed.

b. On or before the date the application for construction is filed with the Federal Communications Commission (FCC), if the proposed structure would be subject to FCC licensing requirements.

c. Immediately by telephone or other expeditious means, with written notification submitted within five days thereafter, if immediate construction or alteration is required as in cases involving public services, health or safety.

d. As early as possible, and preferably in the planning stage, for construction or alteration on an airport or near an air navigational facility if the proposal could possibly have an adverse effect on air traffic control operations or an air navigation facility. This includes the effect of the physical presence of structures upon the line-of-sight capability of airport air traffic control towers and the operation of air traffic control radar, as well as the interference effect of electrical signals transmitted by some structures upon ground-based or airborne air navigation equipment.

6. WHY A NOTICE IS REQUIRED. Notice of proposed construction or alteration is required so that the FAA may:

a. Issue notices to airmen (NOTAMS).

b. Depict obstructions on aeronautical charts.

c. Recommend appropriate marking and lighting.

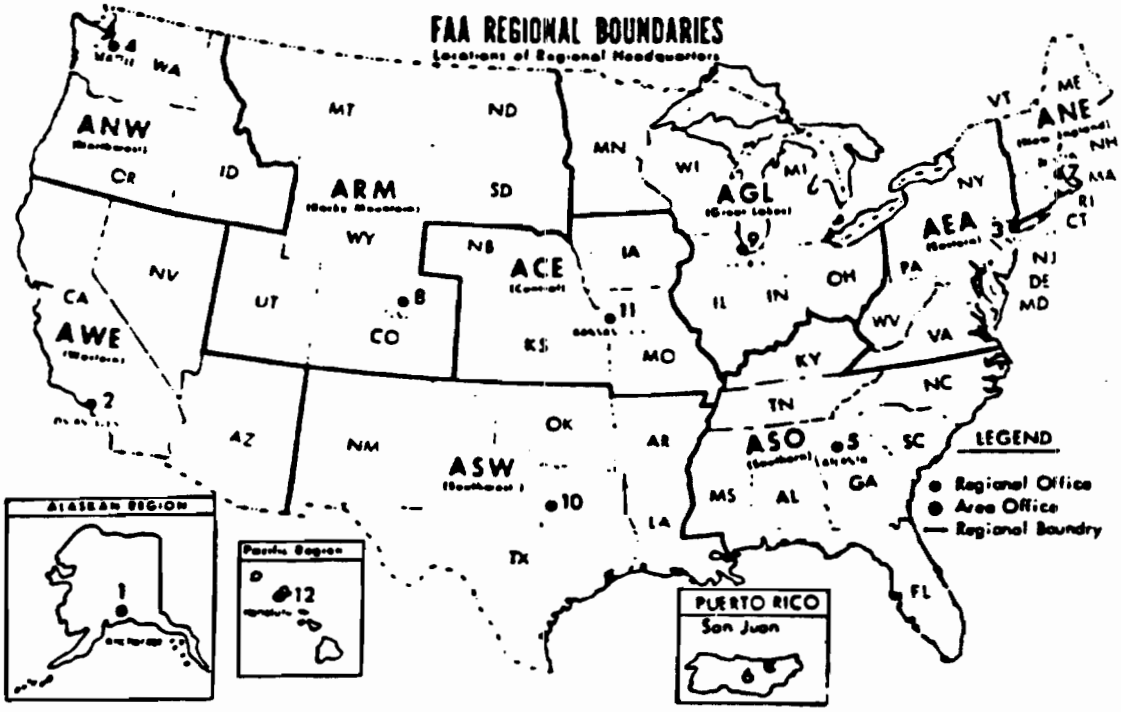
d. Be made aware of potential aeronautical hazards in order to attempt to prevent or minimize them.

e. Insure judicious use of airspace.

f. Protect the lives and property of persons in the air and on the ground.

7. HOW TO NOTIFY FAA. Notification to the FAA may be made by forwarding one completed set of FAA Form 7460-1, Notice of Proposed Construction or Alteration, to the Chief, Air Traffic Division, at the regional office having jurisdiction over the area within which the construction or alteration will be located. In Puerto Rico, notices should be forwarded to the Chief, Air Traffic Branch, San Juan Area Office.

8. WHERE TO FILE A NOTICE. The geographic area of jurisdiction for each FAA office is indicated below:



ADDRESS OF REGIONAL OFFICES AND SAN JUAN AREA OFFICE

1 AAL - ALASKAN REGION
Alaskan Regional Office
632 Sixth Avenue
Anchorage, AK 99501
Tel. 907-265-4271

2 AWE - WESTERN REGION
Western Regional Office
15000 Aviation Boulevard
Hawthorne, CA 90260
Mail Address
P.O. Box 92007
Worldway Postal Center
Los Angeles, CA 90009
Tel. 213-536-6186

3 AEA - EASTERN REGION
Eastern Regional Office
JFK International Airport
Federal Building
Jamaica, NY 11430
Tel. 212-995-3390

4 ANW - NORTHWEST REGION
Northwest Regional Office
FAA Building, Boeing Field
Seattle, WA 98108
Tel. 206-767-2610

5 ASO - SOUTHERN REGION
Southern Regional Office
3400 Whipple Street
East Point, GA 30344
Mail Address
P.O. Box 20636
Atlanta, GA 30320
Tel. 404-763-7646

6 SAN JUAN AREA
San Juan Area Office
RFD-1, Box 29A
Loiza Street Station
San Juan, PR 00914
Tel. 809-791-1250

7 ANE - NEW ENGLAND REGION
New England Regional Office
12 New England Executive Park
Burlington, MA 01803
Tel. 617-273-7285

8 ARM - ROCKY MOUNTAIN REG
Rocky Mountain Regional Office
Attn. ARM-530
10455 East 25th Avenue
Aurora, CO 80010
Tel. 303-837-2537
Send to #4

9 AGL - GREAT LAKES REGION
Great Lakes Regional Office
2300 East Devon Avenue
Des Plaines, IL 60018
Tel. 312-694-4500, ext. 456

10 ASW - SOUTHWEST REGION
Southwest Regional Office
4400 Blue Mound Road
Fort Worth, TX 76101
Mail Address
P.O. Box 1689
Fort Worth, TX 76101
Tel. 817-624-4911, ext. 306

11 ACE - CENTRAL REGION
Central Regional Office
601 East 12th Street
Kansas City, MO 64106
Tel. 816-374-3408

12 APC - PACIFIC-ASIA REGION
Pacific-Asia Regional Office
1833 Kalakaua Avenue
Honolulu, HI 96815
Mail Address
P.O. Box 1009
Honolulu, HI 96813
Tel. 808-955-0456
Send to #2

9. ASSISTANCE.

a. Specialists. Airspace specialists are available in the FAA area and regional offices to provide technical assistance, if required.

b. Maps. Topographical Map Series, 7.5 minute, Quandrangle maps (Scale 1:24,000), showing the shape and elevation of the terrain and selected man-made and natural features of the earth's surface plotted to a definite scale, and geographic coordinates are available for most sections of the country from U. S. Geological Survey, Map Distribution Section, 1200 Eads Street, Arlington, Virginia 22202. A check or money order in the amount of $1.25 for each map should accompany the order. Customers west of the Mississippi should order from: Branch of Distribution, U.S. Geological Survey, Box 25286, Federal Center, Denver, Colorado 80225.

c. Geographic Coordinates and Mean Sea Level Elevations. This information is generally obtainable from the above maps; local zoning boards and surveyors may also be able to provide this information.

10. ASSOCIATED PUBLICATIONS. The following publications contain obstruction criteria, marking and lighting standards and paint specifications:

a. Advisory Circulars.

(1) AC 70/7460-1, Obstruction Marking and Lighting.

Purpose. To describe the standards for marking and lighting of structures such as buildings, chimneys, antenna towers, cooling towers, storage tanks, supporting structures of overhead wires, etc.

(2) AC 150/5345-1, Approved Airport Lighting Equipment.

Purpose. Lists the approved airport and obstruction lighting equipment by model number and the manufacturers qualified to supply products in accordance with the indicated specification requirements.

(3) AC 150/5340-21, Airport Miscellaneous Lighting Visual Aids.

Purpose. To provide guidance for the installation, maintenance, testing and inspection of airport visual aids and the red flashing and steady burning obstruction lighting systems. (It is anticipated that guidance for the installation and maintenance of the high intensity white obstruction lighting system will be included in the next revision.)

Availability. FAA advisory circulars are available free of charge from: Department of Transportation, Publications Section, TAD-443.1, 400 7th Street, S.W., Washington, D. C. 20590.

b. FAA Forms.

(1) FAA Form 7460-1, Notice of Proposed Construction or Alteration.

Purpose. To notify the FAA of the proposed construction or alteration of an object that may interfere with the navigable airspace.

(2) FAA Form 7460-2, Notice of Progress of Construction or Alteration.

Purpose. To notify the FAA of progress, when and as requested on the form. This form will be automatically furnished by the FAA regional office issuing the determination whenever notification is needed for charting purposes and to change affected aeronautical procedures.

Availability. FAA forms are available free of charge from all FAA regional offices. (See Item 8.)

c. Federal Aviation Regulation.

(1) Federal Aviation Regulation (FAR) Part 77, "Objects Affecting the Navigable Airspace."

Purpose. To prescribe the standards for determining obstructions in navigable airspace and to set forth the requirements for notice to the FAA of proposed construction or alteration.

Availability. FAR, Part 77 is available for $4/50 from: Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402. Make check or money order payable to Superintendent of Documents.

d. Marking Specifications and Standards. Aviation colors and paint should conform with the following:

(1) Federal Standard Number 595, Color Guide, Ready Mixed Paint.

(a) Orange Number 12197

(b) White Number 17875

(2) Federal Specification TT-P-59, Aviation Surface Paint, Ready Mixed, International Orange.

(3) Federal Specification TT-P-102, Aviation Surface Paint, Oil Titanium Lead-Zinc and Oil, Exterior, Ready Mixed, White and Light Tints.

Availability. FAA standards and specifications are available free of charge from: Business Service Center, General Services Administration, Washington, D. C. 20405.

e. Lighting Specifications.

(1) Aviation Red Obstruction Lighting Systems.

(a) Color. Military Specification MIL-C-25050 Colors; Aeronautical Lights and Lighting Equipment

(b) Rotating Beacons.

1 Military Specification MIL-L-7185 Lamp Assembly, 24-inch, Rigid Drum-Type Rotating Beacon

2 FAA Specification 291 Beacon, 36-inch, Rotating Double-Ended Type

(c) Flashing Code Beacons.

FAA Specification 446 Code Beacons, 300 MM

(d) Double and Single Obstruction Lights.

1 Military Specification MIL-L-7830 Light, Navigational Boundary and Obstruction Markers

2 FAA Advisory Circular Number 150/5345-2 Specifications for L-810 Obstruction Light

(2) High Intensity White Obstruction Lighting Systems.

FAA Advisory Circular Number 150/5345-43, FAA/DOD Specification L-856, High Intensity Obstruction Lighting Systems.

Availability. The lighting specifications listed above may be obtained free of charge from the designated facility.

Military Specifications:

Commanding Officer
Naval Publications and Forms Center
5801 Tabor Avenue
Attention: NPFC-105
Philadelphia, Pennsylvania 19120

FAA Specifications:

Chief, Airports Engineering Division, AAP-500
Department of Transportation
Federal Aviation Administration
800 Independence Avenue, S.W.
Washington, D. C. 20591

FAA Advisory Circulars:

Department of Transportation
Publications Section, TAD-443.1
400 7th Street, S.W.
Washington, D. C. 20590

11. HOW TO OBTAIN ADDITIONAL COPIES OF THIS ADVISORY CIRCULAR.

a. AC 70/7460-2G, Proposed Construction or Alteration That May Affect the Navigable Airspace, dated 11/30/77.

b. Identify the publication by its full title as in a. above and order from: Department of Transportation, Publications Section, TAD-443-1, 400 7th Street, S.W., Washington, D.C. 20590. FAA employees obtain copies through normal distribution system.

c. Payment. There is no charge for this publication.

Raymond G. Belanger

RAYMOND G. BELANGER
Director, Air Traffic Service

APPENDIX D

MODEL AIRPORT HAZARD ZONING ORDINANCE

AC NO: 150/5190-3A

DATE: 19 Sep 72

ADVISORY CIRCULAR

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

SUBJECT: MODEL AIRPORT HAZARD ZONING ORDINANCE

1. PURPOSE. This advisory circular provides a model airport hazard zoning ordinance for airports. The model ordinance is intended merely as a guide to control manmade and natural hazards to aircraft and will require modifications and revisions to meet the varying circumstances and the state and local laws. This advisory circular does not pre-empt the requirements in Part 77 of the Federal Aviation Regulations.

2. CANCELLATION. AC 150/5190-3, Model Airport Zoning Ordinance, dated 16 January 1967.

3. REFERENCES.

   a. The following FAA publications may be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402. Make check or money order payable to the Superintendent of Documents; no c.o.d. orders are accepted.

      (1) Federal Aviation Regulations (FAR), Volume XI, Part 77, Objects Affecting Navigable Airspace ($2.75).

      (2) AC 150/5070-5, Planning the Metropolitan Airport System ($1.25).

      (3) AC 150/5070-6, Airport Master Plans ($1.25).

      (4) AC 150/5390-1A, Heliport Design Guide ($0.75).

   b. Obtain copies of the following publications and additional copies of this advisory circular from the Department of Transportation, Distribution Unit, TAD-484.3, Washington, D. C. 20590.

Initiated by: AAS-560

(1) AC 70/7460-1A, Obstruction Marking and Lighting

(2) AC 150/5050-3, Announcement of a Report Entitled Planning the State Airport System.

(3) AC 150/5300-8, Planning and Design Criteria for Metropolitan STOL Ports.

4. BACKGROUND.

a. The purpose of airport hazard zoning is to prevent the creation or establishment of structures or objects of natural growth which would constitute hazards or obstructions to aircraft operating to, from, and in the vicinity of an airport. An airport zoning ordinance can be an effective means of controlling the height of structures and objects of natural growth and of generally attaining compatibility in the use of property in the immediate vicinity of the airport.

b. The standards established in FAR Part 77 make it possible to determine, for any location on or adjacent to an airport, the height above which any structure or growth would constitute an obstruction to air navigation.

c. The Airport and Airway Development Act of 1970, Public Law 91-258, enacted 21 May 1970,requires airport planning to be consistent with other plans for the development of the area in which the airport is located if Federal aid for the airport is involved. It also requires that appropriate action, including the adoption of zoning laws, be taken to the extent reasonable to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations.

d. The enclosed Model Ordinance may be used as a guide in preparing a zoning ordinance which protects the airspace described in FAR Part 77, AC 150/5300-8, and AC 150/5390-1A. This Model is a revised version of the original Model Zoning Ordinance dated 7 November 1944.

5. USE OF MODEL ZONING ORDINANCE.

a. An airport hazard zoning ordinance must conform to the prescribed authority of the particular airport zoning enabling act.

b. The Model Ordinance defines and provides for the establishment of various zones and prescribes height limitations for each zone as required to protect the airport from encroachment of obstructions or hazards to aircraft. The areas covered by these zones will vary

from airport to airport depending upon the type, size, and layout of the airport, the type of aircraft using the airport, the elevation of the landing area above sea level, and the nature of the surrounding terrain. The Model Ordinance, therefore, leaves the specific zone measurements to be inserted by the political subdivisions adopting the Ordinance to suit the requirements of its particular airport.

c. Any height limitations imposed by an airport hazard zoning ordinance must be "reasonable," meaning that the height limitations prescribed should not be so low at any point as to constitute a taking of property without compensation. Therefore, the zoning ordinance should not purport to impose height limitations in any area where the approach slope is so close to the ground that the application of criteria prescribed by FAR Part 77 would result in unreasonable or unduly restrictive height limitations. This problem is taken care of in the Model Zoning Ordinance by the establishment of an "excepted height limitation."

d. The decision as to the excepted height limits to be applied or the distances from the airport at which the height limitations shall commence is one which should be made on the basis of local conditions and circumstances, including the uses being made of property in the vicinity of the airport. In making such a decision, the political subdivision should use the same procedures generally recognized as desirable in preparing comprehensive zoning ordinances.

e. Areas in the various zones where the applicable height limit is below the excepted height limit prescribed in the ordinance should be protected by the acquisition of title or of a property interest sufficient to insure the required protection.

f. The FAA personnel in regional and district offices should be consulted when developing airport zoning regulations as applicable to FAR Part 77, AC 150/5390-1A, and AC 150/5300-8.

6. AIRPORT HAZARD ZONING MAP.

a. Attached to the airport hazard zoning ordinance and made a part thereof is an airport hazard zoning map. The airport hazard zoning map is similar for CTOL (Conventional Take Off Landing) airports, STOL (Short Take Off Landing) ports, and heliports and may be compiled from data in FAR Part 77, AC 150/5390-1A, and AC 150/5300-8. A typical example of the airport hazard zoning map was reduced in size for printing on the last page of this publication.

b. The airport hazard zoning map is of the area affected by the airport hazard zoning ordinance and shows the layout of the runways, the airport boundaries, the airport elevation, and the area topography. The map also sets forth the various zones with the applicable height limitations for each as described in the body of the ordinance. The zoning map should contain a method of land identification, as typical in different areas of the country, such as section, township and range, block and lot, or metes and bounds. This map also depicts other identifying geographic objects such as streams, rivers, railroads, roads, and streets. By using a map with this amount of detail, in conjunction with the text of an ordinance, a property owner should, without undue difficulty, be able to determine not only the location of his property but also the height limitations imposed thereon by the ordinance.

c. Topographic maps of sufficient accuracy and detail may be available from local governmental sources. Suitable topographic maps (Quadrangle maps) may be obtained from the Washington Distribution Section, United States Geological Survey, 1200 South Eads Street, Arlington, Virginia 22202, and the Denver Distribution Section, United States Geological Survey, Federal Center, Denver, Colorado 80225, for those people living east and west of the Mississippi River, respectively. This agency has developed such maps for a large area throughout the country. Many state agencies have topographic maps available. In the absence of contour topographic data, land height source data may be available from bench marks, railroads, highways, or local project surveys. However, contour data on a map should be shown to the extent it is reasonably available and obtainable or required to legally support the ordinance.

7. BOARD OF ADJUSTMENT. The Model Ordinance provides for the creation of a Board of Adjustment to hear appeals from decisions of the municipal official designated to receive applications and issue permits and also provides for judicial review of decisions of the Board of Adjustment. Such review and appeal procedures are intended to conform to the applicable constitutional requirements.

8. GENERAL INSTRUCTIONS FOR USING THE ENCLOSED ZONING ORDINANCE. The enclosed zoning ordinance may be used as a guide for CTOL airports, STOL ports, heliports, or any combination thereof. The blank spaces will be filled in with the appropriate specific instructions shown in Appendix 1, pages 14 and 15. The general instructions emphasize using portions of the enclosed zoning ordinance that apply for a specific airport. The general instructions are as follows:

a. The zoning ordinance will be renumbered as material is deleted and/or added.

b. Material prior to Section I and Section I are satisfactory for any airport type or types.

c. Section II should only define the terms applicable for the specific airport zoning ordinance.

d. Section III should only include the airport zones applicable for the specific airport. Zones in items 1 through 6, 10, 14, and 15 are for CTOL runways. An approach zone is applied to each end of each runway based upon the type of approach available or planned for that runway end. The most precise type of approach, existing or planned, for either end of the runway determines the primary surface width. Heliports do not have horizontal or conical zones, and STOL ports do not have immediately available criteria for horizontal or conical zones. Zones in items 7, 8, 11, and 12 are for heliports. Zones in items 9 and 13 are for STOL runways.

e. Section IV should only include the applicable height limitations for the airport zones used in Section III for a specific airport.

f. Sections V through XV are satisfactory for any airport type or types.

Clyde W. Pace Jr.

CLYDE W. PACE, JR.
Acting Director, Airports Service

AIRPORT HAZARD ZONING ORDINANCE

(See Instruction #1, Page 14)

AN ORDINANCE REGULATING AND RESTRICTING THE HEIGHT OF STRUCTURES AND OBJECTS OF NATURAL GROWTH, AND OTHERWISE REGULATING THE USE OF PROPERTY, IN THE VICINITY OF THE (See Instruction #1, page 14) BY CREATING THE APPROPRIATE ZONES AND ESTABLISHING THE BOUNDARIES THEREOF; PROVIDING FOR CHANGES IN THE RESTRICTIONS AND BOUNDARIES OF SUCH ZONES; DEFINING CERTAIN TERMS USED HEREIN; REFERRING TO THE (See Instruction #1, page 14) ZONING MAP WHICH IS INCORPORATED IN AND MADE A PART OF THIS ORDINANCE; PROVIDING FOR ENFORCEMENT; ESTABLISHING A BOARD OF ADJUSTMENT; AND IMPOSING PENALTIES. (See Instruction #2, page 14).

This Ordinance is adopted pursuant to the authority conferred by (See Instruction #3, page 14) . It is hereby found that an airport hazard endangers the lives and property of users of (See Instruction #1, page 14) ,and property or occupants of land in its vicinity, and also if the obstruction type, in effect reduces the size of the area available for the landing, takeoff, and manuevering of aircraft, thus tending to destroy or impair the utility of (See Instruction #1, page 14) and the public investment therein. Accordingly, it is declared:

(1) that the creation or establishment of an airport hazard is a public nuisance and an injury to the region served by (See Instruction #1, page 14) .

(2) that it is necessary in the interest of the public health, public safety, and general welfare (See Instruction #4, page 14) that the creation or establishment of airport hazards be prevented; and

(3) that the prevention of these hazards should be accomplished, to the extent legally possible, by the exercise of the police power without compensation.

It is further declared that both the prevention of the creation or establishment of airport hazards and the elimination, removal, alteration, mitigation, or marking and lighting of existing airport hazards are public purposes for which political subdivision may raise and expend public funds and acquire land or interests in land.

IT IS HEREBY ORDAINED BY (See Instruction #5, page 14) as follows:

SECTION I: SHORT TITLE

This Ordinance shall be known and may be cited as "(See Instruction #1, page 14) Hazard Zoning Ordinance."

SECTION II: DEFINITIONS

As used in this Ordinance, unless the context otherwise requires:

(1) AIRPORT - The (See Instruction #1, page 14).

(2) AIRPORT ELEVATION - The highest point of an airport's usable landing area measured in feet from mean sea level.

(3) AIRPORT HAZARD - Any structure or object of natural growth located on or in the vicinity of a public airport, or any use of land near such airport, which obstructs the airspace required for the flight of aircraft in landing or takeoff at such airport or is otherwise hazardous to such landing or takeoff of aircraft.

(4) STRUCTURE - An object constructed or installed by man, including, but without limitation, buildings, towers, smokestacks, earth formation, and overhead transmission lines.

(5) TREE - Any object of natural growth.

(6) NONCONFORMING USE - Any pre-existing structure, object of natural growth, or use of land which is inconsistent with the provisions of this Ordinance or an amendment thereto.

(7) HEIGHT - For the purpose of determining the height limits in all zones set forth in this Ordinance and shown on the zoning map, the datum shall be mean sea level elevation unless otherwise specified.

(8) PERSON - An individual, firm, partnership, corporation, company, association, joint stock association, or governmental entity. It includes a trustee, receiver, assignee, or similar representative of any of them.

(9) BOARD OF ADJUSTMENT - A board consisting of (See Instruction #6, page 14) members appointed by the (See Instruction #6, page 14) as provided in (See Instruction #6, page 14).

(10) RUNWAY - A defined area on an airport prepared for landing and takeoff of aircraft along its length.

(11) VISUAL RUNWAY - A runway intended solely for the operation of aircraft using visual approach procedures with no straight-in instrument approach procedure and no instrument designation indicated on an FAA approved airport layout plan, a military service's approved military airport layout plan, or by any planning document submitted to the FAA by competent authority.

(12) UTILITY RUNWAY - A runway that is constructed for and intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight and less.

(13) NON-PRECISION INSTRUMENT RUNWAY - A runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance, or area type navigation equipment, for which a straight-in non-precision instrument approach procedure has been approved or planned, and for which no precision approach facilities are planned or indicated on an FAA planning document or military service's military airport planning document.

(14) PRECISION INSTRUMENT RUNWAY - A runway having an existing instrument approach procedure utilizing an Instrument Landing System (ILS) or a Precision Approach Radar (PAR). It also means a runway for which a precision approach system is planned and is so indicated on an FAA approved airport layout plan; a military service's approved military airport layout plan; any other FAA planning document, or military service's military airport planning document.

(15) PRIMARY SURFACE - A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway; but when the runway has no specially prepared hard surface, or planned hard surface, the primary surface ends at each end of that runway. The width of the primary surface of a runway will be that width prescribed in Part 77 of the Federal Aviation Regulations (FAR) for the most precise approach existing or planned for either end of that runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline.

(16) HELIPORT PRIMARY SURFACE - The area of the primary surface coincides in size and shape with the designated landing and takeoff area of a heliport (runway). This surface is a horizontal plane at the elevation of the established heliport elevation.

(17) STOL PRIMARY SURFACE - An imaginary plane, 300 feet wide, centered on the runway. Its length extends 100 feet beyond each runway end. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline.

(18) APPROACH, TRANSITIONAL, HORIZONTAL, AND CONICAL ZONES - These zones apply to the area under the approach, transitional, horizontal, and conical surfaces defined in (See Instruction #7, page 14).

SECTION III: AIRPORT ZONES

In order to carry out the provisions of this Ordinance, there are hereby created and established certain zones which include all of the land lying within the approach zones, transitional zones, horizontal zones, and conical zones as they apply to a particular airport. Such zones are shown on (See Instruction #1, page 14) Hazard Zoning Map consisting of ___ sheets, prepared by _____, and dated ___19__ , which is attached to this Ordinance and made a part hereof. An area located in more than one (1) of the following zones is considered to be only in the zone with the more restrictive height limitation. The various zones are hereby established and defined as follows:

1. Utility Runway Visual Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is (See Instruction #8, page 14) feet wide. The approach zone expands outward uniformly to a width of 1,250 feet at a horizontal distance of 5,000 feet from the primary surface. Its centerline being the continuation of the centerline of the runway.

2. Utility Runway Non-Precision Instrument Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is (See Instruction #8, page 14) feet wide. The approach zone expands outward uniformly to a width of 2,000 feet at a horizontal distance 5,000 feet from the primary surface. Its centerline being the continuation of the centerline of the runway.

3. Runway Larger Than Utility Visual Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is (See Instruction #8, page 14) feet wide. The approach zone expands outward uniformly to a width of 1,500 feet at a horizontal distance of 5,000 feet from the primary surface. Its centerline being the continuation of the centerline of the runway.

4. Runway Larger Than Utility With a Visibility Minimum Greater Than 3/4 Mile Non-Precision Instrument Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is (See Instruction #8, page 14) feet wide. The approach zone expands outward uniformly to a width of 3,500 feet at a horizontal distance of 10,000 feet from the primary surface. Its centerline being the continuation of the centerline of the runway.

5. Runway Larger Than Utility With a Visibility Minimum As Low As 3/4 Mile Non-Precision Instrument Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is 1,000 feet wide. The approach zone expands outward uniformly to a width of 4,000 feet at a horizontal distance of 10,000 feet from the primary surface. Its centerline being the continuation of the centerline of the runway.

6. Precision Instrument Runway Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is 1,000 feet wide. The approach zone expands outward uniformly to a width of 16,000 feet at a horizontal distance of 50,000 feet from the primary surface. Its centerline being the continuation of the centerline of the runway.

7. Heliport Visual Flight Rules (VFR) Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is (See Instruction #9, page 14) feet wide. The approach zone expands outward uniformly to a width of 500 feet at a horizontal distance of 4,000 feet from the primary surface. Its centerline being the continuation of the centerline of the primary surface.

8. Heliport Instrument Flight Rules (IFR) Approach Zone - The inner edge of of this approach zone coincides with the width of the primary surface and is 300 feet wide. The approach zone expands outward uniformly to a width of 3,400 feet at a horizontal distance of 10,000 feet from the primary surface. Its centerline being the continuation of the centerline of the primary surface.

9. STOL Precision Instrument Approach Zone - The inner edge of this approach zone coincides with the primary surface and is 300 feet wide. The approach zone expands outward uniformly to a width of 3,400 feet at a horizontal distance of 10,000 feet from the primary surface. Its centerline being the continuation of the centerline of the runway.

10. Transitional Zones - These zones are hereby established as the area beneath the transitional surfaces. These surfaces extend outward and upward at 90 degree angles to the runway centerline and the runway

centerline extended at a slope of seven (7) feet horizontally for each foot vertically from the sides of the primary and approach surfaces to where they intersect the horizontal and conical surfaces. Transitional zones for those portions of the precision approach zones which project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach zones and at 90 degree angles to the extended runway centerline.

11. Heliport VFR Transitional Zones - These zones extend outward from the sides of the primary surface and the approach zones a horizontal distance of 250 feet from the primary surface centerline and the extended primary surface centerline.

12. Heliport IFR Transitional Zones - These zones extend outward from the sides of the primary surface and a portion of the sides of the approach zones a horizontal distance of 350 feet from the primary surface centerline and the extended primary surface centerline.

13. STOL Precision Instrument Transitional Zones - These zones extend outward from the sides of the primary surfaces a horizontal distance of 400 feet and from a portion of the sides of the approach zones a variable horizontal distance of 400 feet at the primary surface end to zero feet at a horizontal distance of 1,500 feet measured outward along the extended primary surface centerline.

14. Horizontal Zone - The horizontal zone is hereby established by swinging arcs of (See Instruction #10, page 14) feet radii from the center of each end of the primary surface of each runway, and connecting the adjacent arcs by drawing lines tangent to those arcs. The horizontal zone does not include the approach and transitional zones.

15. Conical Zone - The conical zone is hereby established as the area that commences at the periphery of the horizontal zone and extends outward therefrom a horizontal distance of 4,000 feet. The conical zone does not include the precision instrument approach zones and the transitional zones.

SECTION IV: AIRPORT ZONE HEIGHT LIMITATIONS

Except as otherwise provided in this Ordinance, no structure or tree shall be erected, altered, allowed to grow, or be maintained in any zone created by this Ordinance to a height in excess of the applicable height limit herein established for such zone. Such applicable height limitations are hereby established for each of the zones in question as follows:

1. Utility Runway Visual Approach Zone - Slopes upward twenty (20) feet horizontally for each foot vertically, beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 5,000 feet along the extended runway centerline.

2. Utility Runway Non-Precision Instrument Approach Zone - Slopes upward twenty (20) feet horizontally for each foot vertically beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 5,000 feet along the extended runway centerline.

3. Runway Larger Than Utility Visual Approach Zone - Slopes upward twenty (20) feet horizontally for each foot vertically beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 5,000 feet along the extended runway centerline.

4. Runway Larger Than Utility With A Visibility Minimum Greater Than 3/4 Mile Non-Precision Instrument Approach Zone - Slopes upward thirty-four (34) feet horizontally for each foot vertically beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 10,000 feet along the extended runway centerline

5. Runway Larger Than Utility With a Visibility Minimum As Low As 3/4 Mile Non-Precision Instrument Approach Zone - Slopes upward thirty-four (34) feet horizontally for each foot vertically beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 10,000 feet along the extended runway centerline.

6. Precision Instrument Runway Approach Zone - Slopes upward fifty (50) feet horizontally for each foot vertically beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 10,000 feet along the extended runway centerline; thence slopes upward forty (40) feet horizontally for each foot vertically to an additional horizontal distance of 40,000 feet along the extended runway centerline.

7. Heliport VFR Approach Zones - Slopes upward eight (8) feet horizontally for each foot vertically beginning at the end of and at the same elevation as the primary surface and extending to a distance of 4,000 feet along the extended primary surface centerline.

8. Heliport IFR Approach Zones - Slopes upward fifteen (15) feet horizontally for each foot vertically beginning at the end of and at the same elevation as the primary surface, and extending to a distance of 10,000 feet along the extended primary surface centerline.

9. STOL Approach Zones - Slopes upward fifteen (15) feet horizontally for each foot vertically beginning at the end of and at the same elevation as the primary surface, and extending to a distance of 10,000 feet along the extended runway centerline.

10. Transitional Zones - Slopes upward and outward seven (7) feet horizontally for each foot vertically beginning at the sides of and at the same elevation as the primary surface and the approach zones, and extending to a height of 150 feet above the airport elevation which is _____ feet above mean sea level. In addition to the foregoing, there are established height limits sloping upward and outward seven (7) feet horizontally for each foot vertically beginning at the sides of and at the same elevation as the approach zones, and extending to where they intersect the conical surface. Where the precision instrument runway approach zone projects beyond the conical zone, height limits sloping upward and outward seven (7) feet horizontally for each foot vertically shall be maintained beginning at the sides of and at the same elevation as precision instrument runway approach surface, and extending to a horizontal distance of 5,000 feet measured at 90 degree angles to the extended runway centerline.

11. Heliport VFR Transitional Zones - Slopes upward and outward two (2) feet horizontally for each foot vertically beginning at the sides of and at the same elevation as the primary surface and the approach surfaces, and extending a distance of 250 feet measured horizontally from and at 90 degree angles to the primary surface centerline and extended centerline.

12. Heliport IFR Transitional Zones - Slopes upward and outward four (4) feet horizontally for each foot vertically beginning at the sides of and at the same elevation as the primary surface and a portion of the sides of the approach surface and extending a distance of 350 feet measured horizontally from and at 90 degree angles to the primary surface centerline and extended centerline.

13. STOL Transitional Zones - Slopes upward and outward four (4) feet horizontally for each foot vertically beginning at the sides of and at the same elevation as the primary surface and a portion of the sides of the approach surface and extends to an elevation of 100 feet above the primary surface.

14. Horizontal Zone - One hundred and fifty (150) feet above the airport elevation or a height of _____ feet above mean sea level.

15. Conical Zone - Slopes upward and outward twenty (20) feet horizontally for each foot vertically beginning at the periphery of the horizontal zone and at one hundred and fifty (150) feet above the airport elevation and extending to a height of 350 feet above the airport elevation.

16. Excepted Height Limitations - Nothing in this Ordinance shall be construed as prohibiting the growth, construction, or maintenance of any tree or structure to a height up to (See Instruction #11, page 14) feet above the surface of the land.

Where an area is covered by more than one (1) height limitation, the more restrictive limitation shall prevail.

SECTION V: USE RESTRICTIONS

Notwithstanding any other provisions of this Ordinance, no use may be made of land or water within any zone established by this Ordinance in such a manner as to create electrical interference with navigational signals or radio communication between the airport and aircraft, make it difficult for pilots to distinguish between airport lights and others, result in glare in the eyes of pilots using the airport, impair visibility in the vicinity of the airport or otherwise in any way create a hazard or endanger the landing, takeoff, or maneuvering of aircraft intending to use the airport.

SECTION VI. NONCONFORMING USES

1. Regulations not Retroactive - The regulations prescribed by this Ordinance shall not be construed to require the removal, lowering, or other changes or alteration of any structure or tree not conforming to the regulations as of the effective date of this Ordinance, or otherwise interfere with the continuance of a nonconforming use. Nothing contained herein shall require any change in the construction, alteration, or intended use of any structure, the construction or alteration of which was begun prior to the effective date of this Ordinance, and is diligently prosecuted.

2. Marking and Lighting - Notwithstanding the preceding provision of this Section, the owner of any existing nonconforming structure or tree is hereby required to permit the installation, operation, and maintenance thereon of such markers and lights as shall be deemed necessary by the (See Instruction #12, page 15) to indicate to the operators of aircraft in the vicinity of the airport, the presence of such airport hazards. Such markers and lights shall be installed, operated, and maintained at the expense of (See Instruction #13, page 15).

SECTION VII: PERMITS

1. Future Uses - No material change shall be made in the use of land and no structure or tree shall be erected, altered, planted, or otherwise established in any zone hereby created unless a permit therefor shall have been applied for and granted.

   (a) However, a permit for a tree or structure of less than 75 feet of vertical height above the ground shall not be required in the horizontal and conical zones or in any approach and transitional zones beyond a horizontal distance of 4,200 feet from each end of the runway except when such tree or structure, because of terrain, land contour, or topographic features, would extend above the height limit prescribed for the respective zone.

   (b) Each application for a permit shall indicate the purpose for which the permit is desired with sufficient particulars to determine whether the resulting use, structure, or tree would conform to the regulations herein prescribed. If such determination is in the affirmative, the permit shall be granted.

2. Existing Uses - No permit shall be granted that would allow the establishment or creation of an airport hazard or permit a nonconforming use, structure, or tree to become a greater hazard to air navigation than it was on the effective date of this Ordinance or any amendments thereto or than it is when the application for a permit is made. Except as indicated, all applications for such a permit shall be granted.

3. Nonconforming Uses Abandoned or Destroyed - Whenever the (See Instruction #14, page 15) determines that a nonconforming tree or structure has been abandoned or more than 80 percent torn down, physically deteriorated, or decayed, no permit shall be granted that would allow such structure or tree to exceed the applicable height limit or otherwise deviate from the zoning regulations.

4. Variances - Any person desiring to erect or increase the height of any structure, or permit the growth of any tree, or use his property not in accordance with the regulations prescribed in this Ordinance, may apply to the Board of Adjustment for a variance from such regulations. Such variances shall be allowed where it is duly found that a literal application or enforcement of the regulations would result in practical difficulty or unnecessary hardship and relief granted would not be contrary to the public interest but will do substantial justice and be in accordance with the spirit of this Ordinance.

5. HAZARD MARKING AND LIGHTING - Any permit or variance granted may, if such action is deemed advisable to effectuate the purpose of this Ordinance and be reasonable in the circumstances, be so conditioned as to require the owner of the structure or tree in question to permit the (See Instruction #13, page 15), at its own expense, to install, operate, and maintain thereon such markers and lights as may be necessary to indicate to pilots the presence of an airport hazard.

SECTION VIII: ENFORCEMENT

It shall be the duty of the (See Instruction #15, page 15) to administer and enforce the regulations prescribed herein. Applications for permits and variances shall be made to the (See Instruction #15, page 15) upon a form furnished by him. Applications required by this Ordinance to be submitted to the (See Instruction #15, page 15)shall be promptly considered and granted or denied by him. Application for action by the Board of Adjustment shall be forthwith transmitted by the (See Instruction #15, page 15).

SECTION IX: BOARD OF ADJUSTMENT

1. There is hereby created a Board of Adjustment to have and exercise the following powers: (1) to hear and decide appeals from any order, requirement, decision, or determination made by the (See Instruction #15, page 15) in the enforcement of this Ordinance; (2) to hear and decide special exceptions to the terms of this Ordinance upon which such Board of Adjustment under such regulations may be required to pass; and (3) to hear and decide specific variances.

2. The Board of Adjustment shall consist of __members appointed by the (See Instruction #13, page 15) and each shall serve for a term of __ years and until his successor is duly appointed and qualified. Of the members first appointed, one shall be appointed for a term of__ year, __ for a term of __years and __ for a term of ___years. Members shall be removable by the appointing authority for cause, upon written charges, after a public hearing.

3. The Board of Adjustment shall adopt rules for its governance and in harmony with the provisions of this Ordinance. Meetings of the Board of Adjustment shall be held at the call of the Chairman and at such other times as the Board of Adjustment may determine. The Chairman, or in his absence the acting chairman, may administer oaths and compel the attendance of witnesses. All hearings of the Board of Adjustment shall be public. The Board of Adjustment shall keep minutes of its proceedings showing the vote of each member upon each question; or

if absent or failing to vote, indicating such fact, and shall keep records of its examinations and other official actions, all of which shall immediately be filed in the office of (See Instruction #15, page 15), and on due cause shown.

4. The Board of Adjustment shall make written findings of facts and conclusions of law giving the facts upon which it acted and its legal conclusions from such facts in reversing, affirming, or modifying any order, requirement, decision, or determination which comes before it under the provisions of this Ordinance.

5. The concurring vote of a majority of the members of the Board of Adjustment shall be sufficient to reverse any order, requirement, decision, or determination of the (See Instruction #15, page 15) or to decide in favor of the applicant on any matter upon which it is required to pass under this Ordinance, or to effect variation in this Ordinance.

SECTION X: APPEALS

1. Any person aggrieved, or any taxpayer affected, by any decision of the (See Instruction #15,page 15) made in his administration of this Ordinance, may appeal to the Board of Adjustment.

2. All appeals hereunder must be taken within a reasonable time as provided by the rules of the Board of Adjustment, by filing with the (See Instruction #15, page 15) a notice of appeal specifying the grounds thereof. (See Instruction #15, page 15) shall forthwith transmit to the Board of Adjustment all the papers constituting the record upon which the action appealed from was taken.

3. An appeal shall stay all proceedings in furtherance of the action appealed from unless the (See Instruction #15, page 15) certifies to the Board of Adjustment, after the notice of appeal has been filed with it, that by reason of the facts stated in the certificate a stay would, in his opinion, cause imminent peril to life or property. In such case, proceedings shall not be stayed except by order of the Board of Adjustment on notice to the (See Instruction #15, page 15), and on due cause shown.

4. The Board of Adjustment shall fix a reasonable time for hearing appeals, give public notice and due notice to the parties in interest, and decide the same within a reasonable time. Upon the hearing, any party may appear in person or by agent or by attorney.

5. The Board of Adjustment may, in conformity with the provision of this Ordinance, reverse or affirm, in whole or in part, or modify the order, requirement, decision, or determination appealed from and may make such order, requirement, decision, or determination, as may be appropriate under the circumstances.

SECTION XI: JUDICAL REVIEW

Any person aggrieved, or any taxpayer affected, by any decision of the Board of Adjustment, may appeal to the Court of _____ as provided in Section _____ of Chapter _____ of the Public Laws of (See Instruction #16, page 15).

SECTION XII: PENALTIES

Each violation of this Ordinance or of any regulation, order, or ruling promulgated hereunder shall constitute a misdemeanor and be punishable by a fine of not more than __ dollars or imprisonment for not more than _____ days or both; and each day a violation continues to exist shall constitute a separate offense.

SECTION XIII: CONFLICTING REGULATIONS

Where there exists a conflict between any of the regulations or limitations prescribed in this Ordinance and any other regulations applicable to the same area, whether the conflict be with respect to the height of structures or trees, the use of land, or any other matter, the more stringent limitation or requirement shall govern and prevail.

SECTION XIV: SEVERABILITY

If any of the provisions of this Ordinance or the application thereof to any person or circumstances is held invalid, such invalidity shall not affect other provisions or applications of the Ordinance which can be given effect without the invalid provision or application, and to this end the provisions of this Ordinance are declared to be severable.

SECTION XV: EFFECTIVE DATE

WHEREAS, the immediate operation of the provisions of this Ordinance is necessary for the preservation of the public health, public safety, and general welfare, and EMERGENCY is hereby declared to exist, and this Ordinance shall be in full force and effect from and after its passage by the _____ and publication and posting as required by law.
Adopted by the _____ this _____ day of _____, 19__.

SPECIFIC INSTRUCTIONS FOR USING THE PRECEDING ZONING ORDINANCE

1. Insert the name of airport such as Airville Municipal Airport, Heliport, or STOL port, or a combination thereof.

2. This title may need to be revised to meet the usages and legal requirements of your state, and the political subdivisions in question.

3. This citation should be made to conform to the usual method of citing your state's laws.

4. If other terms are commonly used by the courts of your state in defining the limits of the police power, such as "convenience" or "prosperity", they should be added here.

5. A form of enacting clause commonly used by the political subdivision in adopting ordinances should be followed.

6. Insert the number of members appointed to the Board of Adjustment, the appointing body, and the enabling legislation authorizing same.

7. Insert FAR Part 77 for CTOL or heliport runways. Insert AC 150/5390-1A, and AC 150/5300-8 for heliport and STOL port runways, respectively. (Note heliports have two references, and do not have horizontal and conical zones. STOL ports do not have immediately available criteria for horizontal or conical zones.)

8. The applicable distance in feet must be based on the primary surface width as set forth in FAR Part 77.

9. The applicable distance in feet must be based on the primary surface width as set forth in the Heliport Design Guide advisory circular (AC 150/5390-1A).

10. The arc radius is 5,000 feet for all runways designated as utility or visual and 10,000 feet for all others. The radius of the arc specified for each end of a runway will have the same arithmetical value. That value will be the highest determined for either end of the runway.

11. The adoption of height limits should be reasonable and be based on land use considerations in the vicinity of the airport and the nature of the area to be zoned. The adoption of height limits should not be so low as to constitute a taking of private property without due process of law.

12. Insert here the title of the appropriate official who may be charged with the duty of determining the necessity for lighting and marking.

13. Insert here the name of the appropriate political subdivision or body.

14. Insert here the title of the appropriate official charged with making this determination.

15. Insert here the title of the appropriate official, such as Building Inspector.

16. Insert the jurisdiction. Consideration should be given the desirability of setting forth this procedure here, or as an alternative attaching to all copies of this Ordinance, a copy of excerpts from the statute cited.

APPENDIX E

MODEL AIRPORT NOISE AND AVIGATION EASEMENT

APPENDIX

MODEL AVIGATION AND NOISE EASEMENT

WHEREAS, [property owner][1], hereinafter called Grantor, is the owner in fee of that certain parcel of land situated in the [City, County, State] more particularly described and identified in Exhibit A (legal description of property) attached hereto and made a part hereof, hereinafter called "PARCEL" and

WHEREAS, [ ] hereinafter called Grantee, is the [owner and/or operator] of certain properties upon which [airport], described in Exhibit B attached hereto, is located, said properties lying within [City, County, State] and furthermore being in close proximity to said PARCEL; and

WHEREAS, Grantor and Grantee wish to establish provisions so that aircraft using the [airport] shall have the right of flight and the right to cause noise, light, and other effects associated with the operation of aircraft in the airspace over and above said PARCEL.

NOW, THEREFORE, Grantor, for its heirs, executors, administrators, successors and assigns, for and in consideration of the sum of One Dollar ($1.00) and other good and valuable consideration, receipt and sufficiency of which are hereby acknowledged, hereby grants and conveys to Grantee, its successors and assigns forever:

1. A perpetual public-use avigation/noise easement subject to termination as expressly provided herein, and right-of-way for the free and unobstructed passage and flight of aircraft, of any and all kinds now known or hereafter invented, used or designed for navigation or flight in the air, of the class, size and category operationally compatible with [airport]. Said easement shall be in, through, over and across the airspace of said PARCEL in an airspace as described and depicted in Exhibit C (map of areas protected by easement including description of imaginary surfaces and elevations).

2. The rights herein granted shall include the right in such airspace to allow, make and emit such noise, light, vibrations, fumes, exhaust, smoke, air currents, dust, fuel particles, radio, television, and other electromagnetic interferences, and all other effects as may be inherent to the operation of aircraft for navigation or flight in the air.

[1] Insert appropriate names, titles, etc. in brackets used throughout the model.

3. Grantor hereby fully waives, remises and releases any right or cause of action that it may now have or that it may have in the future against Grantee, its successors, and assigns, and covenants not to sue due to such noise, light, vibrations, fumes, exhaust, smoke, air currents, dust, fuel particles, radio, television, and other electromagnetic interferences, and all other effects that may be caused or may have been caused by the operation of aircraft landing at, or taking off from, or operating at or on [airport]. Said release and covenant shall include, but not be limited to claims, known or unknown, for damages for physical or emotional injuries, discomfort, inconvenience, property damage, death, interference with use and enjoyment of property, diminution of property values, nuisance, or inverse condemnation or for injunctive or other extraordinary or equitable relief.

4. It is further agreed that Grantee as [owner and/or operator] of [airport] shall have no duty to avoid or mitigate such damages by, without limitation, setting aside or condemning buffer lands, rerouting air traffic, erecting sound or other barriers, establishing curfews, noise or other regulations, except to the extent, if any, that such actions are validly required by governmental authority. Grantor reserves such use, rights and privileges in said PARCEL as may be exercised and enjoyed without interference with or abridgment of the rights hereby granted.

5. (a) This grant of easement allows the level of aircraft noise impinging on Grantor's PARCEL to be the lesser of:

(1) The annual CNEL reflected on the latest map validated by the [County of] and filed with the California Department of Transportation, Division of Aeronautics in accordance with §5050 of Title 21 of the California Administrative Code, or
(2) The annual CNEL reflected on any subsequent map validated by the [County of] and filed with the California Department of Transportation, Division of Aeronautics in accordance with §5050 of Title 21 of the California Administrative Code.

(b) There is hereby created an irrebutable presumption that this grant of easement is overburdened by unreasonable use if the noise which impinges on the burdened property exceeds the easement by an amount equal to or greater than 1.5 dB CNEL, and Grantor may seek injunctive relief from the unreasonable use of the easement.

(c) There is hereby created an irrebutable presumption that this grant of easement is so overburdened by unreasonable use that its purpose is defeated if the noise which impinges on the burdened property exceeds the easement by an amount equal to or greater than 3.0 dB CNEL, and Grantor may seek a court finding that the easement is extinguished.

(d) The provisions of subdivisions (b) or (c) shall not apply under the following circumstances: [specify exceptions, if desired].

6. This grant of avigation/noise easement shall not operate to deprive the Grantor, his successors or assigns, of any rights that it may from time to time have against any individual or private operator for negligent or unlawful operation of aircraft.

7. For and on behalf of itself, its successors and assigns, Grantor hereby covenants with Grantee for the direct benefit of the real property constituting [airport] that neither Grantor nor its successors in interest or assigns shall hereafter construct or permit the construction or growth of any structure, tree or other object that penetrates an approved transitional, horizontal, or control surface as described and depicted in Exhibit C or that constitutes an obstruction to air navigation under FAA Part 77, or that obstructs or interferes with the use of the flight easements and rights of way herein granted or that creates electrical interference with radio communication between any installation upon said airport and aircraft, or as to make it difficult for pilots to distinguish between airport lights and other lights, or as to impair visibility in the vicinity of the airport, or as otherwise to endanger the landing, take-off or maneuvering of aircraft. Grantee reserves the right to mark and light as obstructions to air navigation any such building, structure, tree or other object now upon, or that in the future may be upon Grantor's property, together with the right of ingress to, egress from, and passage over Grantor's property for the above purpose.

8. All promises, covenants, conditions and reservations contained in this document are made and entered into for the benefit of [owner and/or operator] of [airport]. These promises, covenants, conditions and reservations shall run with the PARCEL, described and identified on Exhibit A attached, and bind Grantor's heirs, administrators, executors, successors and assigns to the maximum extent now or hereafter permitted by statute or case law and are intended by the parties to comply with California Civil Code §1468. The real property first hereinabove described as the PARCEL is the servient tenement and said [airport] is the dominant tenement. Grantor for itself and its successors and assigns waives all rights under Civil Code §1542. "Successors and assigns" as used in this paragraph includes without limitation: invitees, licensees, permittees, tenants, lessees, and others who may use easement rights reserved herein or use or be upon said PARCEL, and/or their respective officers, agents, and employees.

9. Grantor agrees to defend at its own cost, hold harmless and indemnify Grantee from any liability for or based upon the exercise of the easement rights granted herein.

10. The avigation/noise easement, covenants and agreements described herein shall continue in effect until [airport] shall be abandoned and shall cease to be used for public airport purposes.

Signed: _____

_____

(Signatures of Grantor)

Source: Derived from Reference 47 and other examples of easements in current use.

APPENDIX

MODEL NOISE EASEMENT AND RELEASE

[Owner][1] (Grantor), hereby grants to [airport operator] (Grantee) a perpetual easement on the following terms:

1. Description. The easement shall be an easement on, over and upon that certain real property situated on within the [City, County], State of California and the airspace above said real property (PARCEL) which property is described in Exhibit 1 attached hereto, and by this reference incorporated herein, the airspace being formed by a plane parallel to the surface of the real property, and having the same boundaries as those described in Exhibit 1 attached hereto and extending the boundaries of the plane perpendicular to the plane upwards to the limits of the atmosphere of the earth.

2. Benefit. The easement shall be appurtenant to and for the benefit of all of the real property comprising the [airport], hereafter called Airport, a legal description of which is attached hereto designated Exhibit 2 and by this reference incorporated herein, and such other additional property or interest therein as shall be subsequently acquired or designated from time to time by Grantee or its successors as constituting a part of the Airport, and the easement shall be in gross for the benefit of Grantee and all other persons and entities who directly or indirectly use the easement as a result of any type of use of the property and facilities constituting the Airport, including aviation ground and flight operations.

3. Use and Purpose. The easement shall be used for the existence on, over, upon and within the described PARCEL, of all noise, vibration, air currents, natural or artificial illumination and such matter, emissions, activities or other things that may occur or result directly or indirectly from the operations of the Airport, now and in the future, including but in no way limited to ground and flight operations of aircraft at, over, on or about the Airport. The easement shall not be used for the passage and flight of aircraft. However, this easement shall not affect such rights for the passage and flight of aircraft as such rights existed prior to the date of the easement and as are now or may be provided or permitted by law.

All of such uses shall be without any liability of Grantee or of any other person or entity entitled to the benefits of this easement to Grantor, Grantor's heirs, assigns or successors in interest to all or any part of the property or any interest therein or to any other person or entity using or located on or in the area subject to the easement for:

[1]Insert appropriate names, titles, etc. in brackets used throughout the model

- o damage to property or physical or emotional injury to persons, animals or any other living thing,

- o the diminution in value of any personal or real property,

- o discomfort or inconvenience of any type or kind to any person or thing,

- o or interference with television, radio or other types or kinds of electrical reception, transmissions or activities in the easement.

4. Release. Grantor, for itself and on behalf of the Grantor's heirs, assigns or successors in interest to all or any part of the property, or any interest therein and each person or entity using or located on or in the area subject to this easement, hereby releases and discharges Grantee and all persons and entities entitled to the benefits of the easement from all claims, demands, actions and causes of action of all types or kinds, known or unknown, existing or that might be created hereinafter by statute or case decision, arising out of any of the foregoing described injuries or damages resulting from the use of this easement by Grantee and any other person or entity entitled to the benefits of this easement pursuant to Civil Code Section 1542. Grantor further agrees to defend at its own cost, hold harmless and indemnify Grantee from any liability for or based upon the exercise of the easement rights granted herein.

5. (a) This grant of easement allows the level of aircraft noise impinging on Grantor's PARCEL to be the lesser of:

(1) The annual CNEL reflected on the latest map validated by the [County of] and filed with the California Department of Transportation, Division of Aeronautics in accordance with Section 5050 of Title 21 of the California Administrative Code, or

(2) The annual CNEL reflected on any subsequent map validated by the [County of] and filed with the California Department of Transportation, Division of Aeronautics in accordance with Section 5050 of Title 21 of the California Administrative Code.

(b) There is hereby created an irrebutable presumption that this grant of easement is overburdened by unreasonable use if the noise which impinges on the burdened property exceeds the easement by an amount equal to or greater than 1.5 dB CNEL, and Grantor may seek injunctive relief from the unreasonable use of the easement.

(c) There is hereby created an irrebutable presumption that this grant of easement is so overburdened by unreasonable use that its purpose is defeated if the noise which impinges on the burdened property exceeds the easement by an amount equal to or greater than 3.0 dB CNEL, and Grantor may seek a court finding that the easement is extinguished.

(d) The provisions of subdivisions (b) or (c) shall not apply under the following circumstances: [specify exceptions, if desired].

6. This easement and release and the uses authorized herein shall run with the property described in Exhibit 1, and bind Grantor's heirs, administrators, executors, successors and assigns to the maximum extent now or hereafter permitted by statute or case law and are intended by the parties to comply with Civil Code Section 1468. The real property first hereinabove described as the PARCEL is the servient tenement and said [airport] is the dominant tenement.

7. This noise easement, covenants and agreements described herein shall continue in effect until [airport] shall be abandoned and shall cease to be used for public airport purposes.

Dated: _____

By: _____

(Signatures of Grantor)

Source: Modified from Harbor Bay Isle Noise Easement and Release for Oakland International Airport, and other examples.

APPENDIX F

ANALYSIS OF OAKLAND AIRPORT NOISE STUDIES

APPENDIX

ANALYSIS OF MOIA NOISE STUDIES

The following discussion contains first a section on current noise contours measured near Oakland Airport, followed by information on recent "forecasts." The discussion is intended to assist the Commission in re-evaluating its adopted "line of demarcation" (forecast 65 dB CNEL)[1] for Bay Farm Island, which is affected by departures from Oakland North and South Fields and engine test runs, and adopting a noise impact area for lands in Oakland and San Leandro affected by approaches to the two airfields.

1. Current Contours

There are several sources of information on "current" levels of noise from flights taking off and landing at the North and South Airports: a study prepared by Wyle Laboratories[2] for the City of Alameda, used in the city Noise Element;[3] and the contours prepared for the Port of Oakland for its Draft Environmental Impact Report in 1974.[4] Additionally, quarterly monitoring of South Airport departures at two points on Bay Farm Island provides ongoing information of the noise impact there.[5]

1.1 Wyle Laboratories study: Using monitored data taken from four points on Bay Farm Island in February 1973, in combination with data on the configuration of the airport runways and ground tracks, aircraft traffic statistics (October 1974 - September 1975), and aircraft takeoff and landing profiles, the Wyle study represented several "cases" of current "65 dB" CNEL noise over Bay Farm Island. The first ("Case A") assumed business jet operations at the North Field and included San Francisco Airport overflights, which alone produce approximately 60 dB CNEL over the Island; the second ("Case B") excluded the San Francisco flight noise; the third ("Case C") both excluded San Francisco overflights and assumed, in conformity with the Board of Port Commissioners' Resolution 23150,[6] that business jet traffic would be moved from the North to the South Airport.[7]

In dealing with the North Field, the study assumed that all light propeller aircraft make a required immediate right turn after takeoff (over the golf course), rendering their noise so negligible as to be excluded from the study. Table 3-3 in the Wyle Study lists those North Field operations considered to have a noise impact in Cases A and B but removed to the South runway 29 in Case C, thus excluding the North Field operations from further noise consideration.[8]

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[1]The line of demarcation was adopted by the Commission on October 10, 1973, (Resolution No. 8).

[2]Wyle Research Report WCR 76-1, CNEL Contour Study for Municipal Oakland International Airport, April 1976.

[3]City of Alameda, Noise Element, September 1976.

[4]Port of Oakland, Airport Master Plan Environmental Impact Report, certified August 1977.

[5]See Appendix D.

[6]Appendix E of Policy Plan.

[7]Training flights were not counted at the South Airport in Case "C", as their noise impact was found to be insignificant.

[8]The cases are defined as follows (Wyle, p. 4-1):
"Case A All traffic, including SFO overflights; Case B Oakland traffic only (like Case A, but no SFO overflights); Case C Oakland traffic only, without training flights, no SFO overflights, and all traffic on runways 27L and 27R removed to runways 29-11."

Case C, represented in Map XV ("Settlement Agreement" line), is significant because it was used by the City of Alameda in its Noise Element to represent current conditions on the Island; with one alteration of less than ten acres the 65 dB contour from Case C was also recognized in the Settlement Agreement signed by the Port of Oakland, City of Alameda, Harbor Bay Isle Associates, et. al.[1]

1.2 Port of Oakland: The most recent contours for the Airport as a whole were carried out by Bolt, Baranek and Newman (BBN) for the Port of Oakland in 1974 and were included in the Draft Environmental Impact Report for the proposed Airport Master Plan.[2] Airport operations from April 1973 - March 1974 provided the data base.[3] These contours are particularly important because they are the most recent available on noise impact in the San Leandro area. Thus, they provided the basis for the "current" assessment of airport noise impact in San Leandro's proposed noise element.[4]

Unlike Wyle Case C, the BBN study did not exclude the North Field altogether but reflected a limited use of this field for landings by business jets and noiser propeller-driven aircraft as well as light general aviation aircraft.

Since the time of the BBN study, Resolution 23150 has superseded a Port policy[5] discouraging use of the North Field by jets, so that noise impact from this airport may have decreased.

1.3 Monitoring: Because of the Alameda County Board of Supervisors Resolution 144246 in June 1972, declaring that the airport has a noise problem, quarterly monitoring is carried out by the Port of Oakland and an average annual CNEL is determined. In implementing the monitoring provisions of the state airport noise standards it was decided by the Division of Aeronautics that only the South Airport need be monitored, as it is the major noise source. Monitoring takes the form of quarterly sampling. As a result of the monitoring, it has been found that the airport currently has a "zero noise impact area"--that is, no residences are located within the current airport noise standards 75 dB CNEL criterion level. The monitoring continues, however, and provides a continuing source of information on aircraft takeoff noise impact.

Comparing monitoring information with the Wyle and BBN contours, it will be observed that both sets of contours appear to slightly overstate the noise level. It must be remembered, however, that neither the sampled monitoring nor the contour studies can be precisely accurate: their measures are at best within $\pm$ 1.5 dB and perhaps - particularly where the contours represent points more distant from the aircraft noise source - as much as $\pm$ 3 dB. The CNEL is in effect a band, not a line.

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[1]Settlement Agreement between the City of Oakland, City of Alameda, Harbor Bay Isle Associates, Reclamation District No. 2105; July 21, 1976.
[2]Oakland Airport Master Plan Draft Environmental Impact Report 1974. These contours were used in the subsequent revised EIR, dated May 1977.
[3]Ibid; p. D-51 - D-55 (1974 document).
[4]November 1976.
[5]The policy was adopted in January 1974 by the Board of Port Commissioners.

1.4 Test runups: Neither the Wyle nor BBN study includes noise from engine test runups, although the location of jet aircraft maintenance facilities on the North Airport makes this noise source close to existing and prospective Bay Farm Island residents. The Alameda Noise Element discusses runups in some detail, making abatement recommendations, but does not provide actual measures of the noise level.[1] In the Settlement Agreement between the Port of Oakland, City of Alameda, Harbor Bay Isle Associates, and Reclamation District No. 2105, it is provided that Harbor Bay Isle Associates and the City of Alameda will not bring a complaint against the Port for test runups 70 dBA or less between 7 p.m. and 10 p.m. and 65 dBA or less between 10 p.m. and 7 a.m.[2] Even at the level sanctioned in the Settlement Agreement, this intermittent noise can be a significant disturbance to residences. In the Agreement, the Port has made a commitment to abatement of engine test runup noise upon completion of a specified annexation arrangement between Oakland and Alameda.

1.5 San Francisco overflights: Because the BBN study is concerned only with the impact of the Oakland Airport, it does not consider composite noise from Oakland and San Francisco airport overflights. The Wyle study does discuss the added noise from San Francisco flights but only in cases which do not represent current Oakland Airport operating procedures established by Resolution 23150--that is, San Francisco overflights are not combined with a North Field "jet ban." The San Francisco-originated noise is in 60-65 dB CNEL range.[3]

2. Future Noise Impact

2.1 Introduction: Assessment of the future noise levels resulting from aircraft operations can be undertaken in several ways. Most common has been the method of forecasting based on air traffic demand, used for instance by the FAA and in various regional studies. In contrast, MTC has adopted future passenger allocations for Bay Area airports.[4] Translating travel demand into aircraft operations and noise impact requires assumptions concerning the passengers per flight, aircraft fleet mix, noise characteristics of this anticipated fleet, and other factors seen to directly influence future noise levels.

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[1]Alameda, Noise Element, p. 68-70.
[2]The noise would be measured "at the nearest present residential property on Bay Farm Island" (Settlement Agreement, p. 8).
[3]Alameda, Noise Element, p. 21.
[4]See: Metropolitan Transportation Commission, Regional Plan Update Program, Phase I Summary, "Aviation Forecasts," p. 14-40; Regional Transportation Plan, 1976.

Upon these demand forecasts and allocations, constraints may be placed: airport runway and airspace capacity, access to the airport, and other capacity limitations which may directly affect operations. For MOIA the most limiting factor could be access, as the existing surface transportation access system is estimated to have a capacity of 6 million annual passengers (MAP). The South Airport runway 29, on the other hand, may reach its limits at 13 MAP (again, this figure depends on many operational assumptions).

A less obvious but potentially important constraint on airport operations can be the capacity of lands surrounding to accommodate airport impacts. While it is not correct to describe as a "forecast" an upper limit of operations based on noise impact, setting maximum allowable noise impact contours is clearly one way of handling future noise levels.

Concern for noise impact is essentially the consideration behind Resolution 23150 leading to limitation of North Airport use to light, non-jet aircraft. Additionally, the California Airport Noise Standards deal with this balance between land use and permissible noise levels: as the Alameda Noise Element points out, "Although temporary variances are provided for and limited exceptions can be employed, the basic thrust of the regulations is to require airport operators to run their airports in such a fashion that the Annual Community Noise Equivalent Level measurement does not exceed 75 dB today, 70 dB by 1981, and 65 dB by 1986 in residential areas of the type existing today on Bay Farm Island."[1]

The balancing of forecast or allocated demand with noise sensitivity of near-airport land use is one aspect of ALUC deliberations in delineating a noise impact area. Essentially, the contours recognized by the ALUC imply policy in that they suggest that uses allowed to develop outside the impact area will continue to be outside the range of airport impacts. However, since the Commission has no authority over airport operations, this continued compatibility cannot be safeguarded by the Policy Plan. (Additionally, of course, a local jurisdiction which disagrees with an ALUC judgement of incompatibility which is not in the public and airport interst may override the Commission as described in Chapter I.)

Concern for future enforcement of the airport noise standards and a desire to ensure that new residential development will not become incompatible with airport operations has led to concentration on forecasting the 65 CNEL contour. Thus, several studies of future noise do not include a range of contours in 5 dB intervals down to 60 dB. Such a range is required for full application of proposed noise/land use compatibility standards.

2.2 ALUC Line of Demarcation: The policy line adopted by the ALUC is depicted on Map XV, along with several other 65 CNEL forecasts.[2] Adopted in October 1973, this "line of demarcation" does not correspond to a contour from a particular study but marks a compromise between forecast levels of the 65 CNEL for 1985 made by the Port of Oakland

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[1] Noise Element, p. 92.
[2] Appendix C, Interim Land Use Plan For Bay Farm Island.

TABLE III

Land Use Within Current and Selected Forecast
65 CNEL Contours on Bay Farm Island

Land Use within 65 CNEL	Contours "a" 7.5 MAP, jets on North Field	"b" ALUC line of demarcation	"c" settlement agreement	"d" 7.5 MAP, no jets on North Field
Existing residences	1700 (all dwellings on BFI)	1570	860	1025
Potential new dwellings density 5-7 units/acre	1425-1995	1225-1715	700-980	950-1330
Undeveloped, residentially-zoned (acres)				
Total	285	245	140	190
HBI	215	180	90	140
Other	70	65	50	50

(BBN) and the consultant to Harbor Bay Isle Associates. Whereas the Port had estimated that by 1985 the airport would be operating at 13 MAP capacity (179,000 operations annually) and foresaw a 65 CNEL north of McCartney Road, the consultant contended that air traffic would be less and the 65 CNEL would fall near Catalina Avenue. The ALUC line follows the consultant's 65 dB CNEL measure for 1972 for the stretch between McCartney/Verdamer and the western end of Bay Farm Island. The line assumes reduced jet traffic on the North Field and does not include the San Francisco overflights or on-ground aircraft noise.

Table III includes an evaluation of the implications of the ALUC line of demarcation for future Bay Farm Island land use, assuming that areas exposed to noise 65 CNEL or higher are unsuitable for new residential and other noise-sensitive uses. The alignment along McCartney Road would prevent development of up to 1700 new dwellings south of this line (until or unless the noise impact recedes southward). It should be pointed out that the ALUC line in no way resolves the problem of over 1500 existing residences within the noise impact areas. If in fact the measured 65 dB CNEL were determined to come up to the ALUC line in 1986 or thereafter, thus rendering the Airport noise level incompatible with these residences, the Airport would be faced with violation of the Noise Standards.

2.3 Settlement Agreement: The recent Settlement Agreement between the Port of Oakland, City of Alameda and Harbor Bay Isle Associates recognizes a line (based on the "current hypothetical" 65 dB CNEL depicted in the Alameda Noise Element[1]) which has land use implications contravening those of the ALUC line of demarcation. While the Agreement does not itself project or establish policies for future noise levels, it does not conflict with those set forth in the Alameda Noise Element (see next section), which takes the position that the area under the 65 dB CNEL will not increase but may not decrease within the next decade. The Agreement provides a "noise easement" option for Harbor Bay Isle property within the line recognized in the Settlement Agreement; according to the Agreement, residential development in this area would thus be certain to comply with theCalifornia Airport Noise Standards. Translated into land use terms, development of the area within noise easement option would mean an additional 700-980 dwellings on the Island (Table III).

2.4 City of Alameda Noise Element: Rather than rely on a specific forecast of noise the Element states: "it is assumed that the CNEL contours from Oakland Airport will be reduced over the years. In the meantime, however, a reasonable approach to development of the Island, from the point of view of noise compatibility, would be to encourage development on the Island with a CNEL lower than 65 dB first, with the development of areas with a higher than 65 dB later."[2] Elsewhere, the Element estimates the amount of long-range decrease from current noise levels will be 5 dB.

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[1]City of Alameda, Noise Element, "Community Noise Environments Map," p. 91. An adjustment in the Noise Element 65 CNEL was made to place all of Harbor Bay Isle "Village I" north of the "65 CNEL" contour.

[2]Noise Element, p. 92.

Backing up its position, the City calls for continuous monitoring and application of the adopted noise/land use compatibility standards[1] based on the results. Since no policy on noise easements is mentioned, it might be presumed that adopted Noise Element policies would prevail: new residential development within the current 65 CNEL contour (see Map XV) would be discouraged. Land use complications of implementing the City policies north and south of this line are summarized in Table III. As mentioned previously, this CNEL is selected from the Wyle study and represents Case C: Oakland Airport Runway 29 noise only, no training flights, jet traffic moved from the North Field to the South Airport.

The City of Alameda prediction of a "long run" - perhaps several decades - decline in airport noise rests on several considerations. First, the Element observes that only by reducing the 65 dB CNEL to Catalina Avenue or south can the airport meet the 1986+ noise standards as strictly interpreted.[2] (Such a marked reduction is unlikely, however, by 1986). Secondly, it is anticipated that introduction of "quiet" aircraft complying with Federal Aviations Part 36 or a revised Part 36 could yield a significant reduction in noise impact.

More detailed support for the Alameda position comes from the Wyle Report, which uses a matrix of possible future airport operation levels and aircraft noise reduction assumptions to forecast future "cases" of noise from the South Airport. These cases, not an official part of the Noise Element per se, are analyzed in the following section.

2.5 Wyle/Thompson noise estimates: In addition to assessing current noise levels at Bay Farm Island, the Wyle Report depicts a range of potential future levels given various assumed conditions: MAP ranges from 3.5 to 13 are translated into assumptions about fleet mix, rate of replacement of the existing fleet with new jets meeting FAR Part 36, and so forth.[3] Two basic cases of airport operating procedures were distinguished, one with forecast business jet traffic using North Field, another assigning this traffic to the South Airport. Table III summarizes the potential land use impact of several of the contours if used to guide policy decisions. One interesting feature of these estimates is that whatever the operating conditions at the Airport (that is to say, Cases "A", "B", or "C")[4] the noise impact on BFI is shown not to rise for MAP's up to 7.5 (as compared with the "current" 2.09 MAP). This is true even under "existing fleet" technical assumptions, where by positing that 10-20% of certain aircraft will be "quiet" and the remaining non-retrofit and by making certain other analytical simplifications, it is estimated that at 3.5 and 5.0 MAP the noise levels will be lower than at the current existing fleet.

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[1] Ibid., p. 86-88.
[2] Ibid., p. 35.
[3] Preparation of the technical data for the forecasts was carried out by Arnold Thompson Associates.
[4] See Page 65 for explanation of these cases.

Not surprisingly, it was found that JT8D retrofit,[1] which is relatively ineffective in reducing take-off noise, would yield little noise relief on Bay Farm Island.

2.6 Other contour forecasts for airport departures: Other than the Wyle Report, the only future contours for the Oakland Airport prepared within the last three years are those presented in the Draft Environmental Impact Report for the Oakland Airport Master Plan.[2] These contours represent a 4 MAP, 1981, case and show greater noise impact than an "alternative" noise estimate for 1981 (Wyle, 3.5 MAP).

2.7 Summary of Alternative Future Noise Levels on Bay Farm Island: Table III summarizes the potential land use impact of various "alternative" forecast locations of the 65 dB CNEL. For contours, see Map XV.

2.7.1 In terms of noise impact, the optimum conditions would see 65 CNEL noise reduced to Catalina Avenue or south thus placing all existing development outside the contour. Such a "contour" cannot serve as an ALUC policy line as long as it is exceeded by the existing noise impact from the aiport.

2.7.2 A forecast of decreasing noise would justify using the existing 65 dB CNEL as the "line of demarcation." As previously mentioned, this case is supported by the City of Alameda as a long-range policy of removing noise impact from existing residential areas.

The city Noise Element does not discuss in detail the basis for this assumed noise decline, although the Wyle Report, which provided technical material for the Element, did define a range of future noise levels.

2.7.3 A more moderate case, in terms of balancing noise impact and air operations, is represented by line "d" (Wyle 7.5 MAP, Case C). This is the level estimated by the Port of Oakland in its revised Airport Master Plan Draft Environmental Impact Report, which foresees approximately 6 MAP at the airport by 1986. This noise line for 7.5 MAP depends on the introduction of aircraft meeting FAR Part 36 and on an increased number of passengers boarding per flight; all business jets would be prohibited from the North Airport; San Francisco overflights are not included. While noise would not rise significantly over current levels, operations would increase from approximately 80,000 at present to 124,500.

Even if the "moderate" 7.5 MAP, Case C were judged a reasonable estimate of maximum future noise levels, over 1000 existing dwellings would fall within a 65+ dB contour, and after 1985 would form a "noise impact area" for the airport. This total is less than the number of existing residences inside the ALUC line but represents a 160-170 dwelling increase over the Settlement Agreement line. The 7.5 MAP, Case C also places approximately 190 acres of undeveloped residentially-zoned land within the anticipated 65+ dB CNEL contour, rendering them unadvisable for this use according to proposed ALUC policies and the airport noise standards.

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[1] JT8D retrofit would apply sound reducing measures to current narrow-bodied 727, 737, and DC-9 aircraft so that they would meet FAR Part 36 standards for new aircraft.
[2] Port of Oakland, Airport Master Plan, Draft Environmental Impact Report, May 1977.

2.7.4 Under two conditions the noise impact from the Oakland Airport could be significantly more severe than the 7.5 MAP, Case C: use of the North Field by business jets and increase in traffic from the South Airport to a service level approaching its estimated 13 MAP capacity.

A 13 MAP case depicted in the Wyle Report assumes all aircraft to comply with FAR Part 36, a 65% boarding factor,[1] over 66,000 annual departures, and use of the South Airport rather than the North Field by twelve business jets daily. These conditions are unlikely before 1990, at the earliest.

According to the calculations in the Wyle study, use of business jets on the North Field runways[2] would have the greater overall impact on the Island because of high noise which would affect existing residences near this airport. Thus, the 7.5 MAP with jet traffic on the North Field is used in this discussion to generally represent "severe noise impact."

Anticipation of the level of noise depicted in "7.5 MAP, jet traffic on NF" would remove over 280 acres of vacant, residentially-zoned land from development for this use and would place all existing dwellings within at least 65 dB CNEL.

3. North Field Operations

It is clear that the long-range prospects for operations at the North Field can greatly affect forecast noise on Bay Farm Island. Currently, the Board of Port Commissioner's Resolution 23150 excludes business jets and certain heavier propeller-driven aircraft. Although established primarily for noise abatement, this ban also has the effect of reducing straightout flights by heavier aircraft, thus cutting risk of accidents in nearby neighborhoods. The Resolution is reinforced by provisions in the recent Settlement Agreement, which cites the possibility of formalizing these restrictions by setting up a preferential runway system.[3] These considerations, along with Port support of a noise forecast assuming a North Field jet ban, point to limiting the North Field operations to light, non-jet general aviation aircraft except when the South Airport runway is not open to full use.

On the other hand, there are certain factors which might encourage opening the North Field to business jets: convenient location of this facility relative to other general aviation airports equipped to handle these aircraft and the possibility that, if the South Airport runway ever does approach capacity, there could be pressure to allow business jets to use the North Field. (It is entirely possible, of course, that at such a point the North Field would itself be used at or near capacity.) In the East Bay area the only general aviation airport within 15 miles of the Oakland Airport is the Hayward Air Terminal, 6 miles southeast. Not only is the Hayward Terminal less equipped for jet traffic and nearer its capacity at present, but the safety and noise impacts of jet use at this facility could significantly affect nearby residential and commercial development.

[1]The boarding factor = $\frac{\text{daily emplanements}}{\text{seats per day}}$

[2]The Wyle Report assumes an assignment of 50% of the jets to North Field Runway 27R/9L and 50% to 27L/9R. By contrast, the configuration of the ALUC line of demarcation seems to indicate that jets are assumed to use 27L/9R only, thus reducing the noise impact area somewhat.

[3]Settlement Agreement, p. 25.

The question of availability of general aviation airports and business jet facilities on a regional scale is properly the concern of the Metropolitan Transportation Agency and Association of Bay Area Governments in the Regional Transportation Plan, now being updated. Currently the Plan mentions only that the Oakland North Field is "regionally significant"; the update may elaborate on this position in such a way as to help the ALUC evaluate the long-range role of the North Field.

4. Future Noise Impact from Airport Approaches

The foregoing discussion has concentrated almost exclusively on noise impacts in areas affected by departures from the North and South Airports because of current and potential future noise problems in these areas. By contrast, the noise from approaches to runways 27 and 29 is much less problematic now and is not anticipated to affect noise-sensitive areas in the future.

Fewer studies have been done on approach-track noise than on departures and the only recent source for noise projections at the San Leandro/Oakland/Hayward end of the airport runways is the Bolt, Baranek and Newman (BBN) material included in the Draft Environmental Impact Report for the Airport Master Plan.[1] While these contours do not represent assumptions altogether comparable to those of the Wyle report, in combination with the BBN "current" contours they do offer some idea of the range of noise impact south of the Airport. The Port's forecast for 4 MAP is used by the cities of San Leandro and Hayward in their noise elements.

Several factors reduce the likelihood of a noise problem in the approach paths for the Oakland Airport. In the first place, the approach to runway 29 is largely over water. Where lands are included, the uses such as open space, recreation, industrial, are generally not so noise sensitive that a 65-70 dB CNEL would be critical. According to the plans of the communities affected, the future uses would also be compatible.[2] A second consideration is the fact that retrofit of the JT8D engines would significantly reduce approach noise (whereas departure noise reduction is minimal).

Also, use of the North Field for business jets is not as critical a question in the approach paths as in the departures. Nearby uses are presently low population density open space/recreation and industrial, rendering both noise and safety impacts less severe. It should also be pointed out that the proximity of the Nimitz Freeway raises the ambient noise level, making aircraft noise less obstrusive.[3]

The lands within existing and projected 65+ dB CNEL contours are under Oakland and San Leandro jursidiction and are expected to continue in noise-compatible uses.

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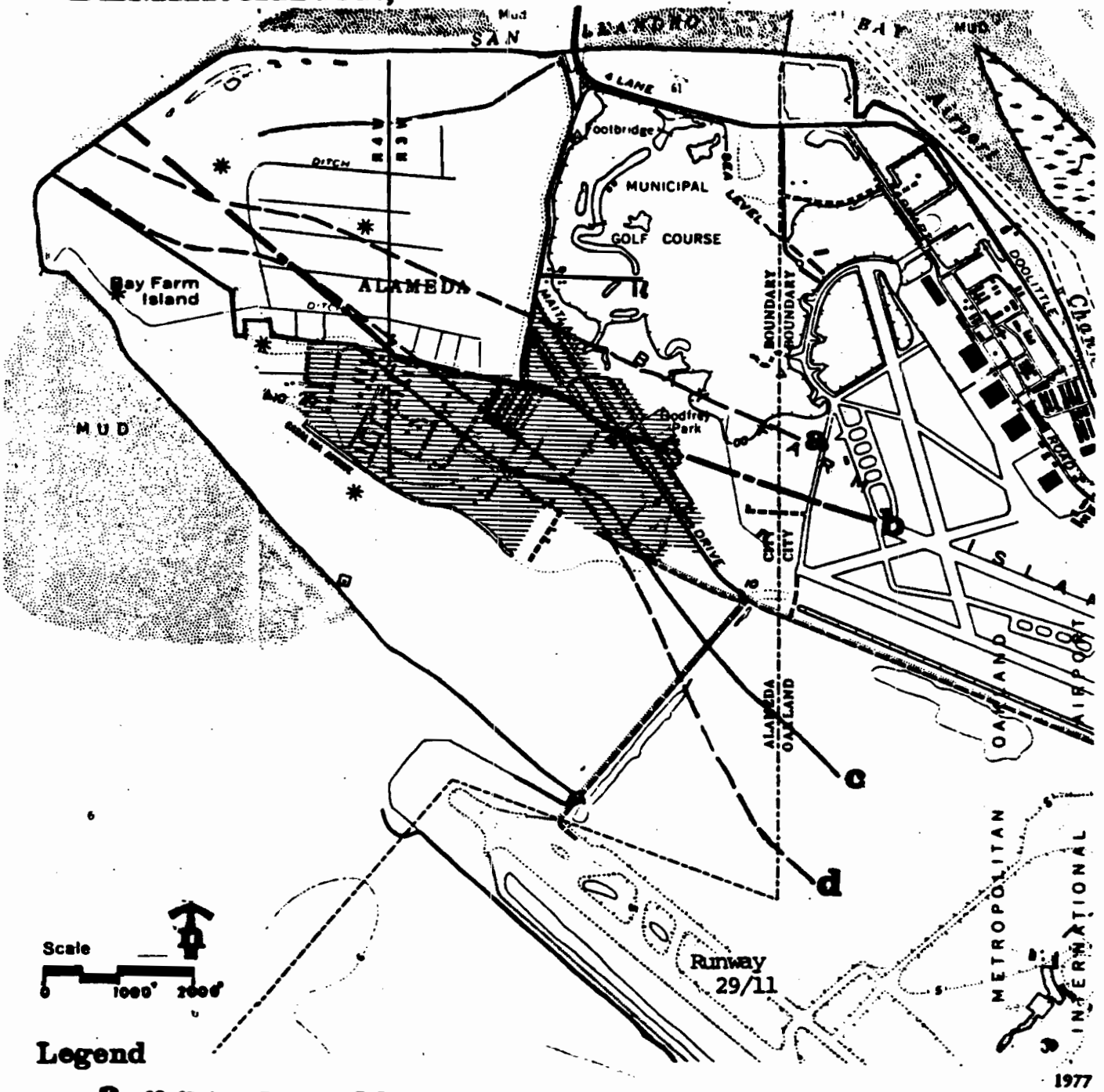
[1]Airport Master Plan Draft Environmental Impact Report, p. D-32. The contours are for 4 MAP/1981. Assignment of business jets to the North Field for both landings and take-offs is now outdated.

[2]See ALUC Background Report "Policies from Other Jurisdictions," October 1976.

[3]San Leandro Noise Element, "Composite Noise" Map 3.

MAP XXI

MOIA NOISE CONTOURS, LINE OF DEMARCATION, SETTLEMENT AGREEMENT LINE



Legend

a 65 dB CNEL Forecast 7.5 M.A.P. jets on runway 27, all aircraft meet FAR 36. *

b ALUC Line of Demarcation

c Settlement Agreement Line

d 65dB CNEL Forecast. 7.5 M.A.P. no jets on runway 27, all aircraft meet FAR 36. *

* Fixed points for CNEL calculations (see Appendix F, table 4.1)

◇ Port of Oakland noise monitoring stations

Developed Areas

* Source: Wyle Labs, CNEL Contours For MOIA, 1976

*Not normalized

APPENDIX G

NOISE PROBLEM DECLARATION AT OAKLAND INTERNATIONAL AIRPORT

APPENDIX

NOISE PROBLEM DECLARATION AT OAKLAND INTERNATIONAL AIRPORT

Based on the California aircraft noise standards[1] provision that a county may require noise monitoring by an airport deemed to have a "noise problem", the Alameda County Board of Supervisors adopted Resolution 144246 in June 1972 declaring the existence of a noise problem at the Oakland International Airport. In accordance with State Division of Aeronautics standards, the airport now performs quarterly monitoring of noise produced by aircraft using South Airport runway 29 and computes quarterly and average annual CNEL's at the two monitoring sites, located near the southern shoreline of Bay Farm Island (see Map XV).

The petition to declare a noise problem at Oakland Airport was first brought before the Board of Supervisors by the City of Alameda and Utah International, Inc., in April 1972. The airport, described in the petition as a commercial and general aviation facility, was alleged to have a "noise impact area" exposing some Bay Farm Island residents to 70 dB CNEL or higher and to have a history of noise complaints. As prescribed by the state standards, the Board of Supervisors referred the petition to the Airport Land Use Commission for its recommendations.

At its May 1972 meeting the Airport Land Use Commission considered the arguments and evidence concerning Oakland Airport noise and recommended to the Board of Supervisors that the airport be found to have a noise problem.[2] The Board acted accordingly.

The required noise monitoring, begun in April 1973, deals only with the alleged CNEL noise impact from the South Airport, despite the fact that the initial petition and some of the noise complaints considered by the ALUC and the Board referred to North Field as well as South Airport operations. However, since the time of noise problem declaration the Port of Oakland has instituted North Field noise abatement measures--primarily by prohibiting use of the 27 runway complex by turbojets, turbofans, turboprops exceeding 12,500 pounds gross weight, and four engine reciprocating engine aircraft.

The Port of Oakland is responsible for carrying out the monitoring required by the noise problem declaration. Reports giving quarterly and annual CNEL's at the two monitoring sites, as well as total aircraft operations, are submitted regularly to the County and the state Division of Aeronautics. CNEL's at Site 1 have ranged between approximately 75 and 79 dB, at Site 2, between 72.5 and 75; the annual average CNEL for the period of June 1975 to June 1976 was 75.61 at Site 1 and 73.95 at Site 2. With these sites well south of built areas on Bay Farm Island, this information establishes that no residential areas on the Island have been exposed to Oakland South Airport current criterion level CNEL of 75 dB[3] and suggests that the South Airport 70 CNEL lies south of existing residences.

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1 California Administrative Code, Title 4, Subchapter 6.
2 Airport Land Use Commission Resolution 6, May 10, 1972.
3 Airport Noise Standards, Section 5012.

APPENDIX H

BOARD OF PORT OF OAKLAND COMMISSIONERS
RESOLUTION NO. 23150

BOARD OF PORT COMMISSIONERS
CITY OF OAKLAND

RESOLUTION NO. 23150

RESOLUTION ESTABLISHING THE POLICY OF THE BOARD OF PORT COMMISSIONERS WITH RESPECT TO THE USE OF RUNWAYS AT METROPOLITAN OAKLAND INTERNATIONAL AIRPORT

RESOLVED that the following is established as the policy of the Board of Port Commissioners with respect to the use of runways at Metropolitan Oakland International Airport:

1. Turbojet and turbofan powered aircraft, turboprop powered aircraft with a certificated gross take-off weight in excess of 12,500 pounds and all four engine reciprocating engine powered aircraft shall be prohibited from either taking off from Runways 27R and 27L or landing on Runways 9L and 9R.

2. The aircraft specified in Paragraph 1 of this resolution shall use Runway 11/29.

3. The requirements of Paragraphs 1 and 2 of this resolution shall not be applicable or effective in emergency situations or whenever Runway 11/29 is closed for maintenance or construction or for reasons of safety;

and be it

FURTHER RESOLVED that this resolution shall take effect March 18, 1976.

At a regular meeting held March 17, 1976

Passed by the following vote:

AYES: Commissioners Berkley, Connolly, Gainor, Lange, Walters and President Mortensen - 6

NOES: None

ABSENT: Commissioner Soda - 1

APPENDIX I

AIRCRAFT NOISE AND INSULATION: TABLES

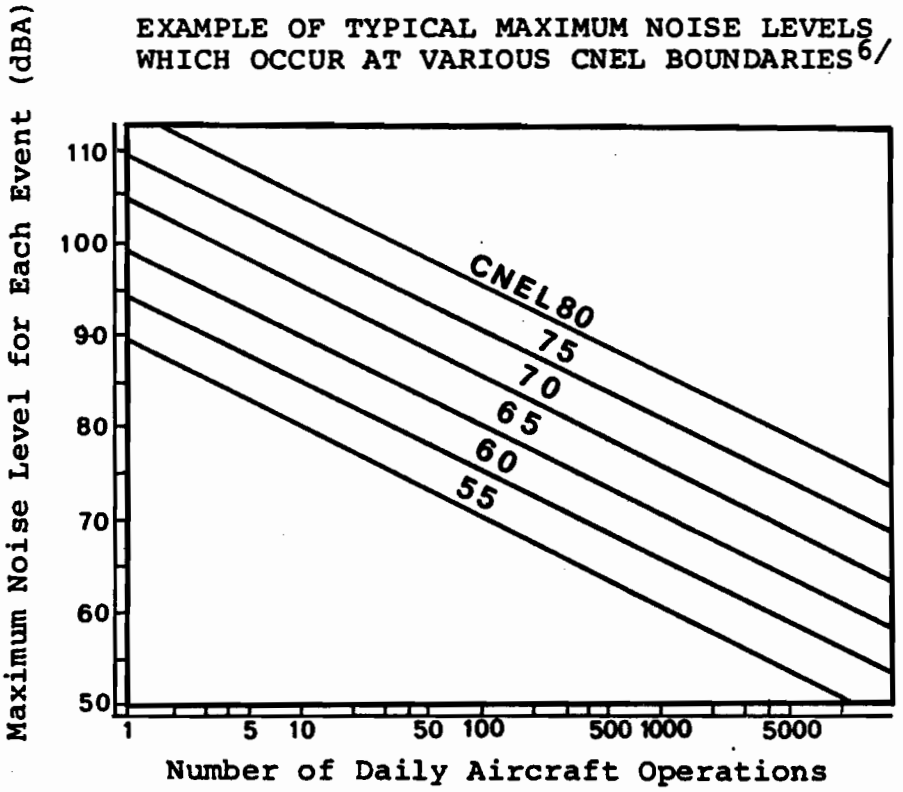
APPENDIX

AIRCRAFT NOISE AND INSULATION:

TABLES IV -- VIII

TABLE IV

EXAMPLE OF TYPICAL MAXIMUM NOISE LEVELS WHICH OCCUR AT VARIOUS CNEL BOUNDARIES[6/]



NOTES:

1. All aircraft events are assumed to be equally noisy and of equal duration.

2. Aircraft operations time mix used in this example:

Day	70 percent
Evening	23
Night	7

Source: "Supporting Information for the Adopted Noise Regulations for California Airports," Final Report to the California Department of Aeronautics, Report No. WCR 70-3 (R), Wyle Laboratories Research Staff, El Segundo, California, January 29, 1971.

TABLE V

RECOMMENDED MAXIMUM INTERIOR NOISE LEVEL CRITERIA FOR INTERMITTENT NOISE

Generalized Land Use (Occupancy)	Maximum Int. Intermittent Noise - dBA	Basis for Criteria*
A. RESIDENTIAL - SINGLE AND TWO FAMILY DWELLINGS		
1. Living Areas		
a. Daytime	45	Conversation
b. Nighttime	45	Conversation
2. Sleeping Areas	40	Sleeping
B. RESIDENTIAL		
Multiple Family Apartments	Same as A.	Same as A.
C. EDUCATIONAL FACILITIES, ETC.		
1. Concert Hall	25	Intrusion of noise may spoil artistic effect
2. Legitimate Theater	30	" " " "
3. School Auditorium	35	Minimize intrusion into artistic performance
4. School Classroom	55	Speech communication - 20 ft. - raised voice
5. School Laboratory	60	" " - 6 ft. - normal voice
6. Church Sanctuaries	45	" " - 50 ft. - raised voice
7. Library	55	" "
D. RECREATIONAL FACILITIES		
1. Motion Picture Theater	45	Minimize intrusion into artistic performance
2. Sports Arena	75	Conversation - 2 ft. - raised voice
3. Bowling Alley	75	" - 2 ft. - " "
E. COMMERCIAL, MISCELLANEOUS		
1. Hotel, Motel Sleeping	40	Sleeping
2. Hospital Sleeping	40	"
3. Executive Offices, Conf. Rooms	55	Speech communication - 12 ft. - normal voice
4. Staff Offices	60	" " - 6 ft. - normal voice
5. Sales, Secretarial	65	Satisfactory telephone use
6. Restaurants	65	Conversation - 4 ft. - normal voice
7. Markets, Retail Stores	65	" - 4 ft. - normal voice
F. LIGHT INDUSTRIAL		
1. Office Areas	See E-3,4,5	See E-3, 4, 5
2. Laboratory	60	Speech Communication - 6 ft. - normal voice
3. Machine Shop	70	" " - 3 ft. - raised voice
4. Assembly, Construction	70	" " - 2 ft. - raised voice

(continued)

Table V continued

G. HEAVY INDUSTRIAL		
1. Office Areas	See E-3,4,5	See E-3, 4, 5
2. Machine Shop	75	Speech Communication - 3 ft. - raised voice
3. Assembly, Construction	75	" " 2 ft. - raised voice

*The relationship between noise level expressed in dBA and the ability to communicate is given in reference 16. There may be some exceptions depending upon the type of exposure and the noise reduction frequency characteristics of the exterior building construction.

Adapted from:

J. C. Webster, "SIL--Past, Present and Future," Sound and Vibration, III, 8 (August 1969), 22-26; Paul S. Veneklasen and Assoc., "Noise Insulation Problems in Buildings," January 1973.

Appears in:

Sacramento Regional Area Planning Commission, Airport Land Use Policy Plan, p. 18; Santa Clara County Airport Land Use Planning Commission, Land Use Plan for Area Surrounding Santa Clara County Airports, p. 28-29.

TABLE VI

NOISE REDUCTION AFFORDED BY COMMON BUILDING CONSTRUCTION ASSUMING NO SPECIAL NOISE CONTROL PROVISIONS

Construction Type	Typical Occupancy	General Description	Range of Noise Reduction, dBA
1	Residential, Commercial, Schools	Wood framing. Exterior stucco or wood sheathing. Interior drywall or plaster. Sliding glass windows. Windows partially open.	15 - 20
2	Same as 1, above	Same as 1 above, but windows closed	25 - 30
3	Commercial, Schools	Same as 1 above, but windows are fixed 1/4 inch plate glass	30 - 35
4	Commercial	Steel or concrete framing. Curtain-wall or masonry exterior wall. Fixed 1/4 inch plate glass windows	30 - 40

The range depends upon the openess of the windows, the degree of seal and the window area involved.

Source:

Bolt, Baranek and Newman, "Methods for Improving the Noise Insulation of Houses with Respect to Aircraft Noise," November 1966.

Paul S. Veneklasen and Assoc., "Aircraft Noise Level Study for the City of Newport Beach, California--1972."

Wyle Laboratories, "Guide to the Soundproofing of Existing Homes Against Exterior Noise," March 1970.

"Noise Insulation Problems in Buildings," Paul S. Veneklasen and Assoc., January 19, 1973.

Used in Santa Clara County and Sacramento Regional Area airport land use plans.

TABLE VII

GENERAL CONSTRUCTION METHODS TO ACHIEVE THE INDICATED EXTERIOR NOISE REDUCTION

Required Overall Bldg. Noise Reduction(dBA)	CONSTRUCTION BUILDING ELEMENTS				
	FLOOR	EXTERIOR WALLS	EXTERIOR DOORS	WINDOWS	CEILING, ROOF
30	No special provisions	No special provisions, except eliminate penetrations of wall air conditioning units, etc.	Solid core, weatherstripping	Seal	Generally, no special provisions
40	a. Slab on grade-no special provisions b. If raised floor, one or more of the following: 1. vent baffling 2. attach gypboard to under side of floor joists	No special provisions in most cases. Eliminate penetrations of wall air conditioning units, etc.	Sound doors, sound seals	Double glazing, sealed windows	a. Attic System 1. vent baffling 2. sound absorption between joists b. If beam ceiling: 1. provide sound absorption between beams 2. provide gypboard on resilient clips to under side of beams
50	a. Slab on grade-no special provisions b. If raised floor: 1. vent baffling 2. provide sound absorption between floor joists 3. add gypboard to under side of floor joists	a. Wood framing-staggered studs with sound absorption in cavity. Stucco on outside, 2 layers gypboard on inside. b. 8 in. concrete block with sealed exterior and interior surfaces. c. 4 in. dense concrete	Special sound doors with acoustical seals	Double glazing, sealed windows, minimum 4 in. airspace	a. Attic System 1. vent sound traps 2. independently framed ceiling and roof system 3. sound absorption in attic space b. Built up roof over 4 in. concrete slab with suspended ceiling
60	a. Slab on grade-no special provisions b. If raised floor: similar to NR-50 requirement except more effective vent baffling+attach gypboard to floor joists by resilient clips	a. Wood or steel stud framing-double studs with multi-layer gypboard on both sides, exterior stucco or sheathing. Sound absorption in air cavity b. 12 in. dense concrete c. 4 in. concrete with separate furred multi-layer gypboard wall. Sound absorption in air cavity	Two solid core weatherstripped doors with sound lock	Barely practical. Minimize window area. Double glazing with acoustical glass and 8 in. airspace. Avoid windows on noise exposure side. Arrange windows on interior encl. court, etc.	a. Attic System, similar to NR-50 requirement but more mass b. 4 in. concrete slab with vibration isolated ceiling

Source: "Noise Insulation Problems in Buildings," Paul S. Veneklasen and Assoc., January 19, 1973.

TABLE VIII

SUMMARY OF NOISE LEVELS IDENTIFIED BY EPA
AS REQUISITE TO PROTECT PUBLIC HEALTH AND WELFARE
WITH AN ADEQUATE MARGIN OF SAFETY

Effect to be Guarded Against	Maximum Noise Level[1]	Area
Hearing loss[2]	$L_{eq}(24) \leq 70$ dBA	All areas
Outdoor actitity interference and annoyance	$L_{dn} \leq 55$ dBA	Outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use
	$L_{eq}(24) \leq 55$ dBA	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor activity interference and annoyance	$L_{dn} \leq 45$ dBA	Indoor residential areas
	$L_{eq}(24) \leq 45$ dBA	Other indoor areas with human activities such as schools, etc.

[1]Basically, $L_{eq}24$ represents the sound energy averaged over a 24-hour period. L_{dn} is a 24-hour average, obtained by adding 10 dB to sound measurements between 10 p.m. and 7 a.m.

[2]The hearing loss level identified here represents annual averages of the daily level over a period of forty years.

Source: U. S. Environmental Protection Agency, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare With an Adequate Margin of Safety (Washington: March 1974), page 40.

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RESOLUTION ADOPTING PLAN

ALAMEDA COUNTY AIRPORT LAND USE COMMISSION
RESOLUTION NO. 23
AT THE MEETING OF JULY 16, 1986

MOVED BY COMMISSIONER ROBERTS
SECONDED BY COMMISSIONER YOUNG

WHEREAS, pursuant to provisions of the Public Utilities Code, State Aeronautics Act, the function and duty of the Airport Land Use Commission of Alameda County, California, is to prepare and adopt an airport land use plan to provide for orderly growth of public use airports in this County and the area in the vicinity of these airports, and to safeguard the general welfare of persons in the airport vicinity and the public in general; and

WHEREAS, said land use plan may include the area surrounding any federal military airports, and

WHEREAS, this Commission adopted an Airport Land Use Policy Plan, August 10, 1977, and amended said Plan on February 8 and April 12, 1978, and revised said Plan on November 14, 1979; and

WHEREAS, changed conditions require this Commission to consider revision of said Plan; and

WHEREAS, an Initial Study, dated January 3, 1986, was prepared which identified no significant environmental impacts of this project, and a proposed Negative Declaration was prepared and circulated pursuant to CEQA and State and County guidelines; and

WHEREAS, a public hearing was held to consider said Negative Declaration and revision to the Alameda County Airport Land Use Policy Plan on September 11, 1985 and at each subsequent regular Commission meeting through July 16, 1986, at which time all interested parties were heard; **NOW, THEREFORE**

BE IT RESOLVED THAT:

(1) This Commission does hereby adopt a Negative Declaration, dated July 16, 1986, for revision of the Alameda County Airport Land Use Policy Plan; and

(2) This Commission does hereby adopt the revised Alameda County Airport Land Use Policy Plan, dated July 16, 1986.

ADOPTED BY THE FOLLOWING VOTE:

AYES: Commissioners Baines, Castenada, Corica, Roberts, Trautwein, and Westgard.

NOES: None.

ABSENT: None.

WILLIAM H. FRALEY - ADMINISTRATIVE OFFICER