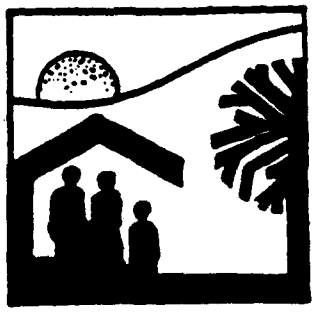
(2)

Environmental Impact Analysis Process



FINAL

Environmental Impact Statement

for the Closure of

Mather Air Force Base

MARCH 1990

DEPARTMENT OF THE AIR FORCE

HEADQUARTERS, AIR TRAINING COMMAND
RANDOLPH AIR FORCE BASE, TEXAS 78150-5001

COVER SHEET

(a) Responsible Agency: U.S. Air Force

(b) Action: In response to the recommendations of the Defense Secretary's Commission on Base Realignments and Closures, to legislative requirements in the Base Closure and Realignment Act (Pub. L. 100–526), and to U.S. Air Force plans to enhance mission readiness and national security, Mather AFB, located near Sacramento, California, is planned to be closed. The 323rd Flying Training Wing now located at Mather AFB would be moved to Beale AFB, California (located about 60 miles to the north). The 940th Air Refueling Group (AREFG) now located at Mather AFB would remain until a decision is made on the future reuse of Mather AFB. If the reuse includes a commercial airport, the 940th AREFG would remain at Mather AFB; if not, the 940th AREFG would be moved to McClellan AFB, California (located about 10 miles to the north of Mather AFB). All other units at Mather AFB would be deactivated as appropriate. No construction or demolition is planned as part of the action.

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(d) Designation: Final Environmental Impact Statement (FEIS)

(e) Abstract: This statement assesses the potential environmental impacts from closure of Mather AFB, located near Sacramento, California. Closure would significantly reduce on-base activity and associated environmental impacts. Air emissions, wastewater effluents, and solid wastes generated would be substantially reduced from current levels and would result in beneficial impacts to the environment. Because Mather AFB's contribution to Sacramento County totals for these parameters is minor, the beneficial effects are also expected to be minor. Effects on ecological resources are expected to be minimal with mitigation as planned. The most significant impact from closure would be a reduction of about 90% in the area within the 65 dB noise contour reflecting full operation of Mather AFB, which could result in land use changes.

SUMMARY

The action evaluated in this environmental impact statement (EIS) is the closure of Mather Air Force Base (AFB), California. The closure is the result of the recommendations of the Defense Secretary's Commission on Base Realignment and Closure, from legislative requirements in the Base Closure and Realignment Act (Pub. L. 100–526), and from U.S. Air Force plans to enhance mission readiness and national security. Primarily, the closure of Mather AFB will involve moving the 323rd Flying Training Wing (FTW) to Beale AFB, California; retaining the 940th Air Refueling Group (AREFG) as an active unit until a decision is made regarding the operation of a commercial airport at Mather AFB as a part of reuse; and deactivating all remaining Mather AFB support units as appropriate. No construction or demolition activities are planned as part of the action. Movement of personnel and equipment is scheduled to begin in FY 1993 and is estimated to take 11 months. Further schedule developments that have occurred since the draft EIS was issued have provided more refined dates for the relocation of the courses held by the 323rd FTW; course relocations are now expected to begin in April 1993 and to be completed in September 1993. Provisions of the Base Closure and Realignment Act preclude the examination of any alternative actions to closure but allow for examination of alternative methods of carrying out the closure.

Because the Act requires implementation of the closure/realignment, "no action" is not an alternative, and consequently potential impacts from "no action" are not specifically evaluated. However, Section 3 describes 1988 and 1989 operations and associated environmental conditions and serves as the baseline against which the implementation impacts are judged. The baseline includes operations from the 320th Bombardment Wing (BMW), which was deactivated on October 1, 1989, independent of the Commission's recommendations. The specific impacts resulting from this previously planned movement are addressed in a separate environmental assessment (EA), but the discussion of potential cumulative impacts is included in this EIS. While the environmental impacts to Mather AFB caused by the departure of the 320th BMW are within the scope of this EIS, the environmental impacts caused by the arrival of this unit at new locations are not part of this EIS. Those impacts are analyzed in separate NEPA documents focusing on impacts and issues at the various receiving bases. Section 4 of this document assesses the impacts of the closure of the base (withdrawal of all units except for the 940th AREFG). The potential environmental impacts resulting from the realignment of Beale AFB to receive the 323rd FTW are addressed in a separate Environmental Impact Statement (54 FR 6254, February 8, 1989).

A second EIS will be prepared to cover the final disposition of the base property (including potential reuse). This process also involves the consideration of laws and community issues in a way that is quite different from the comparatively straightforward steps involved in closure (i.e., reducing operations and removing equipment and personnel).

The following areas of environmental impact were identified during the scoping process for Mather AFB closure: noise, energy use, air quality, solid and liquid waste disposal, transportation, land use, and ecology. For these impact areas, the potential environmental consequences of the action (during the closure process and after the base is closed) are described and analyzed, and mitigative measures are given. Socioeconomic issues were also identified during scoping; however, these issues will be addressed in the second EIS by examining the potential combined effects from closure and reuse.

Noise. Average daily aircraft activity would significantly decrease upon completion of the base closure and therefore, the noise impacts in the area would be significantly reduced. Estimated land area within the 65 decibel (dB) contour would be about 90% less than 1989 values reflecting full operation of the base. Because reuse of Mather AFB could include a civilian airport, it is strongly recommended that no changes in local land use be implemented until a decision on reuse is made. Ground transport of people and equipment would not add unacceptable noise levels along existing transportation routes, and it would occur at times that are most practicable.

Energy use. The principal energy use resulting from moving the 323rd FTW to Beale AFB would be diesel fuel for transport vehicles. An estimated 27,000 gal of diesel fuel would be needed to carry out the action. This fuel use would be about 25–30% of the 1988 annual diesel fuel consumption at Mather AFB. Gasoline use for carrying out the action (about 10,000 gal) would be about 5% of 1988 annual gasoline consumption at Mather AFB. Electricity and natural gas use at Mather AFB would decrease significantly since only the 940th AREFG would remain at the base after closure. Gasoline and diesel fuel consumption would be about 10% of current levels after closure, and JP4 use would be about 28% of current levels.

Air quality. Transport vehicle emissions of carbon monoxide, hydrocarbons, and nitrogen oxides would contribute an insignificant fraction (<0.01%) of current estimated mobile source emissions in Sacramento County and thus would have a negligible effect on air quality. Reduction of operations at Mather AFB would reduce current air pollution emissions by amounts ranging from 1 to 3% of total county emissions, and this would have a minor beneficial impact on air quality. Continuing operations of the 940th AREFG at Mather would result in estimated pollutant emissions that are less than 1% of total county emissions.

Solid waste disposal. Only an insignificant and temporary increase in solid waste production is expected to result from closure, causing an insignificant effect on the Sacramento County Landfill; after the base is closed, the reduction of solid waste from the base is expected to have a slight beneficial impact on the landfill. Minor beneficial impacts will also result from reduction of current hazardous waste disposal activities.

Installation restoration program. Current Installation Restoration Program (IRP) activities directed at cleanup of past hazardous waste disposal sites (Appendix G) would continue at Mather AFB after the base is closed. IRP remedial investigation/feasibility studies and subsequent remedial action will continue until cleanup is complete. IRP activities are monitored by the State of California and the U.S. Environmental Protection Agency under an Interagency Agreement signed July 1989. Closure should result in little potential for adversely affecting cleanup of hazardous waste sites under IRP. Since an approved work plan for the cleanup is not available, information on the timing, nature, and extent of cleanup operations is not available for evaluation. However, most of the IRP sites are located away from base housing and the main base area, where the heaviest activity of packing and moving is expected, and thus there is little potential for closure to adversely affect activities at these sites.

Transportation. Because the additional vehicle traffic associated with closure would be <1% of average daily traffic along the proposed routes, no significant impacts are expected. Long-term transportation effects near Mather AFB should be beneficial because closure should result in a 90% decrease in worker commute trips in the Mather AFB vicinity. Transportation of personnel and equipment out of Mather AFB would avoid existing congested areas to the greatest extent practicable.

Land use. Currently, Mather AFB operations extensively affect land use near the base. Reducing those operations could allow development of some of that area (with resulting short- and long-term environmental consequences). However, closure of Mather AFB would not, in itself, allow development of areas outside of the base. Control of off-base development would remain the responsibility of the local communities. Maintenance of the 940th AREFG flying mission at Mather AFB would result in a continuation of the Air Installation Compatible Use Zone (AICUZ) recommendations for restrictions on incompatible development. New land uses would be subject to local and regional land use controls, including a consideration of environmental impacts. It is strongly recommended that any post-closure changes in zoning and land use be made after specific reuse options have been decided.

Water resources. Currently Mather AFB operations have minor impacts on surface water quality through the discharge of effluent to the Sacramento Regional Wastewater Treatment Plant (Mather AFB flows are less than 1% of current total levels treated at the facility). After closure, wastewater volume to be treated would be about 20% of current levels discharged from Mather AFB. Withdrawal of groundwater by Mather AFB currently has little discernible effect on groundwater in the vicinity. Reducing current operations would thus result in minor beneficial impacts.

Ecology. Withdrawal of personnel, equipment, and supplies from Mather AFB would not involve any construction, demolition, or dismantlement activities, nor is it expected to produce any liquid effluents. As a result, implementing the action has little potential to affect ecological resources. After closure, ecological effects are expected to be minor with mitigation as planned: protecting burrowing owl habitat and vernal pool areas from development and other disturbances, and pumping Mather Lake to maintain its current level, thereby avoiding changes in lake biota caused by lake level fluctuations that occur in the absence of pumping. Each of these activities would continue until the property is transferred from the U.S. Air Force.

Socioeconomics. A detailed analysis will be conducted in the Reuse EIS which will discuss reutilization alternatives of Mather AFB. The net potential socioeconomic impacts stemming from closure and reuse will be addressed.

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ACRONYMS AND ABBREVIATIONS

AC&W	Aircraft Control and Warning
AFB	Air Force Base
AFR	Air Force Regulation
AFRES	Air Force Reserve
AICUZ	Air Installation Compatible Use Zone
APZ	Accident Potential Zone
AREFG	Air Refueling Group
ATC	Air Training Command
BMW	Bombardment Wing
CBRC	Commission on Base Realignment and Closure
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	*Code of Federal Regulations*
CLUP	Comprehensive Land Use Plan
CO	carbon monoxide
CRWQCB	California Regional Water Quality Control Board
CY	calendar year
CZ	Clear Zone
dB	decibel
DOD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
EA	environmental assessment
EAC	Economic Adjustment Committee
EIA	Energy Information Administration
EIS	environmental impact statement
EPA	Environmental Protection Agency
EWO	Electronic Warfare Officer
FAA	Federal Aviation Administration
Fed. Regist.	*Federal Register*
ft	foot or feet
ft^3	cubic feet
FTW	Flying Training Wing
gal	gallon
HC	hydrocarbons
HQ	Headquarters
HSWA	Hazardous and Solid Waste Amendments
IAG	Interagency Agreement
in.	inches
IRP	Installation Restoration Program
JP	jet propulsion
kWh	kilowatt-hour
lb	pound
Ldn	average day/night sound level

Ldn y-avg	yearly average day/night sound level
LOS	level of service
mpg	miles per gallon
MSA	Metropolitan Statistical Area
MTMC	Military Traffic Management Command
MWh	megawatt-hour
NEPA	National Environmental Policy Act of 1969
NOI	Notice of Intent
NO_x	nitrogen oxides
NPL	National Priority List
NPDES	National Pollutant Discharge Elimination System
NSC	National Safety Council
OEA	Office of Economic Adjustment
ORNL	Oak Ridge National Laboratory
PCBs	polychlorinated biphenyls
ppm	parts per million
Pub. L.	Public Law
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
SAC	Strategic Air Command
SMUD	Sacramento Municipal Utility District
$miles^2$	square miles
TCE	trichloroethylene
TSCA	Toxic Substance Control Act
TSD	treatment, storage, or disposal
U.S.C.	*United States Code*
USAF	U.S. Air Force
UST	underground storage tanks
v/c	volume-to-capacity

1. INTRODUCTION

1.1 BACKGROUND

The Defense Secretary's Commission on Base Realignment and Closure ("Commission" or "CBRC") was chartered on May 3, 1988 by the Secretary of Defense to recommend for realignment and closure military installations within the United States, its commonwealths, territories, and possessions. Subsequently, the Base Closure and Realignment Act (Pub. L. 100–526, October 24, 1988) endorsed the Secretary's Commission and required the Secretary of Defense to implement its recommendations unless either he rejected them in their entirety or the Congress passed (and the President signed) a Joint Resolution disapproving the Commission's recommendations.

The primary criterion used by the Commission for identifying candidate bases was the military value of the installation. However, cost savings were also considered, as were the current and projected plans and requirements for each military service. Last, the Commission focused its review on military properties and their uses, not military units or organizational/administrative issues.

On December 29, 1988, the Commission recommended the realignment and closure of 145 military installations. Of this number, 86 are to be completely closed, 5 are to be closed in part, and 54 will experience a change (either an increase or decrease in units and activities) as units and activities are relocated.

On January 8, 1989, the Secretary of Defense approved those recommendations and announced that the Department of Defense would implement them. The Congress did not pass a Joint Resolution disapproving the recommendations within the time allotted by the Base Closure and Realignment Act.

Therefore, the Act now requires the Secretary of Defense, as a matter of law, to implement those closures and realignments. Implementation must be initiated by September 30, 1991, and must be completed no later than September 30, 1995. Thus, this EIS addresses only implementation; the decision to close Mather Air Force Base (AFB) is, by law, a final one.

The Base Closure and Realignment Act requires the implementing actions to conform to the provisions of the National Environmental Policy Act of 1969 (NEPA), as implemented by the President's Council on Environmental Quality (CEQ) regulations (40 CFR Pts. 1500–1508). In addition, this EIS also follows Air Force regulations (AFR) 19-2, which implement both NEPA and the CEQ regulations within the Air Force system. However, the Base Closure and Realignment Act also modified NEPA to the extent that the environmental analysis need not consider

> (1) the need for closing or realigning a military installation selected for closure or realignment by the Commission,
> (2) the need for transferring functions to another military installation that has been selected as the receiving installation, or
> (3) alternative military installations to those selected.

1.2 LOCATION OF ACTION

Mather AFB is located in the lower Sacramento Valley between the Coast Range and the Sierra Nevada foothills, approximately 90 miles northeast of San Francisco and 12 miles east of Sacramento. The base is situated on about 5800 acres and is directly adjacent to the community of Rancho Cordova (Fig. 1.1).

Mather AFB is an Air Training Command (ATC) installation; the host unit is the 323rd Flying Training Wing (FTW). The primary mission of the 323rd FTW is the qualification of officers as navigators capable of operating the advanced navigation, bombing, missile, and electronic warfare systems currently in use by the Armed Forces. Major tenant organizations include the 320th Bombardment Wing (BMW) of the Strategic Air Command (deactivated as of October 1, 1989), the 940th Air Refueling Group (AREFG) of the Air Force Reserve (AFRES), and Mather Hospital. Other tenant organizations include Air Force units and components of several other federal agencies (see Section 2.1).

1.3 SCOPING PROCESS AND PREPLANNING ANALYSIS

1.3.1 Issues/Scope of the EIS

The purpose of this Environmental Impact Statement (EIS) is to help the U.S. Air Force (USAF) intelligently cease operations at Mather AFB. It analyzes the local environmental effects caused by the closure and the measures necessary to implement the closure, and it develops appropriate mitigation measures related to closure. The action addressed in this EIS begins with packing and dismantling of supplies and equipment at Mather AFB and ends with arrival of equipment, supplies, and personnel at Beale AFB. Only those personnel and equipment associated with the 323rd FTW would be moved to Beale AFB.

The 940th AREFG will remain at Mather AFB after closure. All other units at Mather AFB would be deactivated as appropriate. The 320th BMW was withdrawn from Mather AFB on October 1, 1989 (independent of base closure activities), to achieve a congressionally mandated reduction in the USAF's conventional B-52 force. The 320th BMW consisted primarily of 14 B-52 aircraft and about 1280 military and 12 civilian personnel. The unit was deactivated, and personnel were reassigned as appropriate. The disposition of the 14 aircraft is as follows: 11 were transferred to other bases, 2 were placed in storage, and 1 was placed on display. Personnel associated with the 320th BMW remained at Mather AFB in support of the mission of the 940th AREFG; these personnel are anticipated to be transferred from Mather AFB in 1991. Ground support equipment from the 320th BMW was reassigned to the 940th AREFG. The withdrawal of the 320th BMW was cited in the Commission Report as one of the reasons for its recommendation for closure of Mather AFB.

The Notice of Intent (NOI) to prepare an EIS and hold a scoping meeting for closure of Mather AFB was published in the *Fed. Regist.* 54 (Pt. 25), 6256 (Feb. 8, 1989). The public scoping meeting for the closure and reuse of Mather AFB was held in Rancho Cordova, California, on February 27, 1989. It was attended by approximately 250 interested

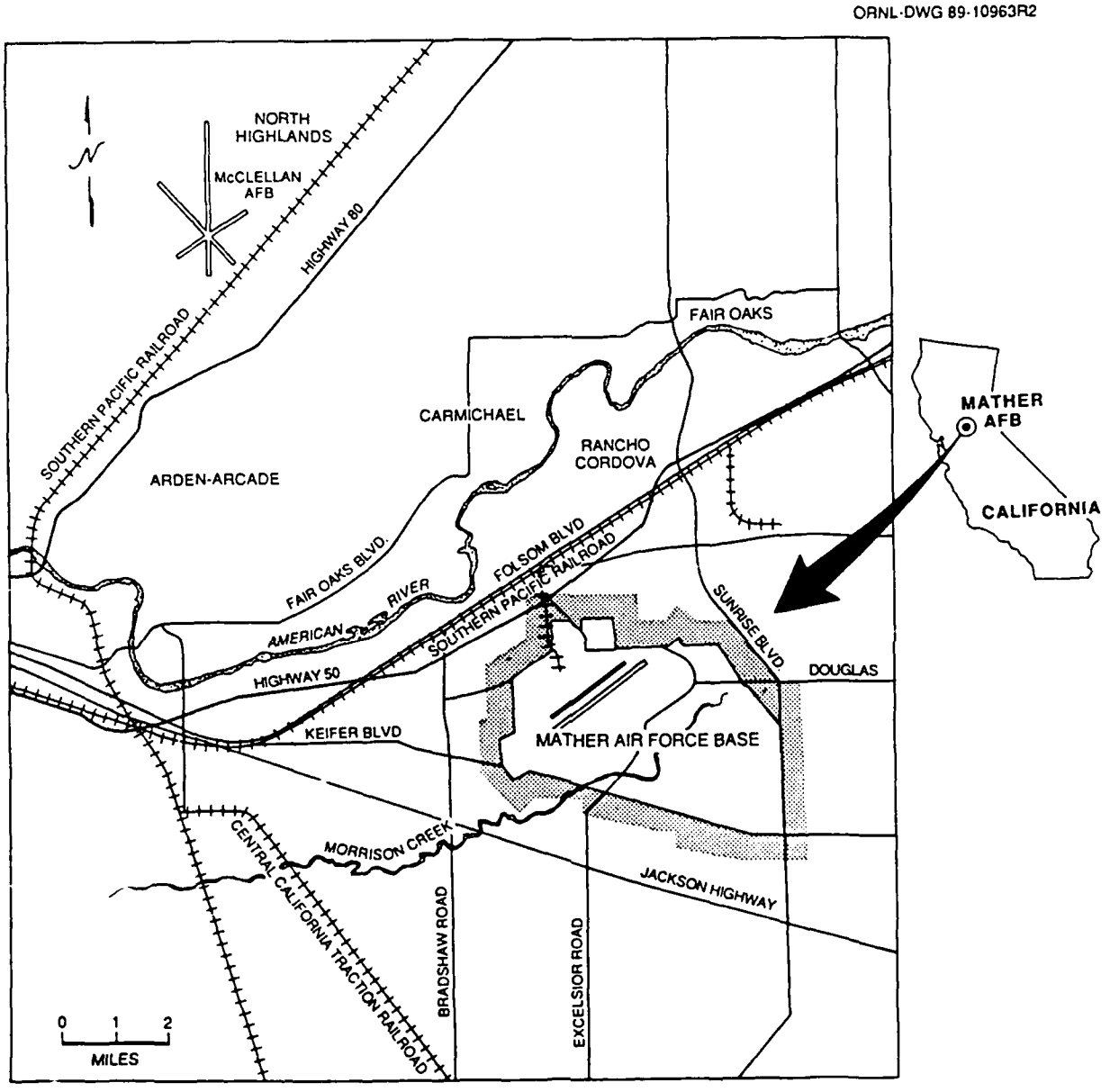

Fig. 1.1. Regional map of Mather Air Force Base.

members of the public, concerned agencies, and news media representatives. A total of 148 comments (verbal and written) was received in response to the NOI.

The scope of the issues to be addressed was identified from these comments, and the following issues related to the action were identified for analysis:

- noise;
- energy use;
- air quality;
- solid and liquid waste disposal [only those related to closure action (see Section 1.3.3)];
- transportation;
- land use; and
- ecology.

Socioeconomic issues were also identified during scoping. A detailed analysis of potential socioeconomic impacts associated with closure of Mather AFB will be conducted in the Reuse EIS. The net potential socioeconomic impacts stemming from closure and reuse will be addressed.

1.3.2 Related Environmental Studies

Several related environmental studies are planned, under way, or completed:

Environmental Assessment (EA) for Withdrawal of the 320th BMW from Mather AFB. The removal of the 320th BMW occurred independently of the base closure action and is the subject of an EA. The withdrawal of 320th BMW was a contributing factor in the decision to place Mather AFB on the list of bases to be closed. Withdrawal of the 320th BMW was planned prior to the Commission's recommendations and has occurred before closure of Mather AFB. This closure EIS incorporates by reference the key aspects of the EA, as appropriate for the consideration of cumulative impacts. The baseline in this closure EIS assumes that all units (including the 320th BMW) are currently operational.

Beale AFB Realignment EIS [See also: NOI (*Fed. Regist.*, 54 (Pt. 25), 6254 (Feb. 8, 1989)]. The beddown at Beale AFB of the 323rd FTW now located at Mather AFB is the subject of a separate, concurrent EIS.

Mather AFB Reuse EIS [See also: NOI (*Fed. Regist.*, 54 (Pt. 25), 6256 (Feb. 8, 1989)]. Many issues related to the reuse of the base facilities were identified during the scoping process. These issues will be addressed in a subsequent EIS, which will also address the future disposition of the 940th AREFG.

Installation Restoration Program (IRP) Studies. Environmental studies are under way at Mather AFB in support of the USAF IRP directed at cleanup of inactive hazardous waste sites. Activities to date have been primarily concerned with monitoring, identifying sites for cleanup, and removal of underground storage tanks. The next major phase is a Remedial Investigation/Feasibility Study (RI/FS) that will further characterize sites for possible cleanup and will develop and recommend alternative ways of cleanup. IRP activities are monitored by the State of California and U.S. Environmental Protection Agency (EPA) Region 9 as given in an Interagency Agreement (IAG) signed July 1989 (see Section 3.8).

1.3.3 Issues Beyond the Scope of the EIS

Socioeconomic impacts were identified during the scoping process. Such impacts would result not only from closure but also from reuse. Analysis of the net socioeconomic impacts will be done in the Reuse EIS, and will thus be less speculative than it would be were it undertaken today, when specific reuse options are not yet available for evaluation.

Issues related to reuse of Mather AFB are beyond the scope of this EIS and will be addressed in the Mather AFB Reuse EIS (Section 1.3.2). These issues include potential impacts associated with the 940th AREFG after reuse options are selected.

Since the IRP is being conducted independently of this action, potential effects of cleanup of the hazardous waste sites at Mather AFB are beyond the scope of this EIS and are addressed only to the extent that they are interrelated to closure actions and associated potential impacts. The U.S. Air Force, the State of California, and EPA (Region 9) have signed an IAG to ensure (in part) that cleanup of hazardous waste sites proceeds regardless of pending closure actions (see Section 1.4).

1.4 RELEVANT FEDERAL, STATE, AND LOCAL STATUTES, REGULATIONS, OR GUIDELINES

Statutes, regulations, and guidelines are relevant if they require approvals for carrying out closure or if they are related to existing permits that need to be changed after closure. A number of permits and other approvals are currently in effect at Mather AFB (e.g., hazardous waste storage, air emissions, wastewater discharge, solid waste disposal, etc.). After closure, ATC intends to terminate or transfer ownership (as appropriate) of these permits. Some permits and approvals would remain in place as needed to allow operations of the 940th AREFG; consequently, these would be transferred (or modified and transferred) from ATC to Headquarters (HQ)-AFRES. All other permits would be terminated or allowed to expire, unless such actions would jeopardize the future use of the installation (i.e., permits could be transferred to the new owner(s) of Mather AFB). Three areas are of interest: hazardous waste, air emissions, and wastewater/solid waste. In addition, transportation of hazardous materials must also be done in accordance with regulations.

Remedial cleanup actions are required at sites with releases or threats of releases of hazardous substances. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requires specific cleanup actions. Typically, these will be sites where soil and groundwater have been contaminated by former disposal practices and are being cleaned up under the IRP. Mather AFB is on the EPA's National Priority List for priority cleanup. CERCLA Section 120(h) requires that cleanup take place before transferring any real property. The IAG among the U.S. Air Force, the State of California, and EPA (Region 9) signed in July 1989 (Section 1.3.3) was developed under CERCLA Section 120. Its purpose is (1) to ensure that environmental impacts associated with past and present activities at Mather AFB are thoroughly investigated and appropriate remedial action taken as necessary to protect the public health, welfare, and environment; (2) to establish a procedural framework and schedule for conducting response actions in

accordance with laws, policies, and regulations; and (3) to facilitate cooperation and exchange of information.

Hazardous waste treatment, storage, or disposal (TSD) facilities require formal closure procedures and written approval from EPA prior to closing any TSD site [Resource Conservation and Recovery Act (RCRA)]. Federal regulations (40 CFR Pt. 264.110 relating to permitted status), and Pt. 265.110 (interim status) require specific planning that should aid closing installations in predicting time and cost of RCRA-required closure actions. Mather AFB has submitted, to EPA, Part B of the RCRA permit application, which contains closure plans for all TSD units on base. The only TSD unit at Mather AFB is the Hazardous Waste Conforming Storage Facility. Underground storage tanks (USTs) containing petroleum or hazardous substances are covered by RCRA.

Under the Clean Air Act, states are allowed to use a program of air emission credits and banking as an air pollution abatement tool. Emission credits identified and banked can have an economic benefit for other military installations in the area or can be sold to private industrial concerns. No formal emissions banking program exists in Sacramento County (Gary Glissmeyer, Sacramento County Air Pollution Control District, personal communication to D. B. Hunsaker, Jr., Oak Ridge National Laboratory, Oak Ridge, Tennessee, Feb. 28, 1989). Permits for sources needed to support operations of the 940th AREFG would be retained (Appendix E). The 940th AREFG would require the continued use of Bldg. 4150; the 7000 area; the petroleum, oil, and lubricant system; and the hydrant refueling system. In addition, some boiler operation may be necessary to provide steam heat and hot water; air permits for these areas are listed in Appendix E.

Closure may also require modifying contracts for wastewater discharge and solid waste disposal. Appendix E lists current permits at Mather AFB.

If any hazardous materials or substances are transported off base during closure, the transportation would be done in accordance with 49 CFR Pts. 171–173 (California has incorporated by reference 49 CFR Pts. 107, 171–179 and 393.86). Hazardous materials at Mather AFB would be transported to McClellan AFB for disposition through the Defense Reutilization and Marketing Office (DRMO). Key aspects of these regulations are proper labelling and packaging of the materials being transported. Transport of substances representing inhalation hazards and in quantities exceeding 118.5 gal requires written notification to the California Highway Patrol (D. Munier, California Highway Patrol, Sacramento, California, personal communication with J. T. Ensminger, Oak Ridge National Laboratory, Oak Ridge, Tennessee, June 29, 1989).

1.5 REFERENCES

Commission (The Defense Secretary's Commission on Base Realignment and Closure) 1988. *Base Realignments and Closures: Report of the Defense Secretary's Commission*, Washington, D.C., December.

2. ALTERNATIVES INCLUDING THE ACTION

2.1 THE ACTION

The action is (1) to relocate the 323rd FTW to Beale AFB, California; (2) to continue to operate the 940th AREFG at Mather AFB until a specific reuse option is identified; and (3) to relocate or deactivate all remaining tenant units of Mather AFB.

Detailed plans for closing Mather AFB are in preparation and thus are not available for evaluation in this document. Consequently, the following conceptual description of the closure process was developed to permit an analysis of potential environmental impacts associated with carrying out closure. In the absence of detailed information, conservative assumptions are used to analyze potential effects associated with the action.

For purposes of this document, closure is defined as the withdrawal of Air Force personnel and equipment associated with the 323rd FTW from Mather AFB and the transportation of same to Beale AFB, California, which is located about 60 road miles north of Mather AFB. The 323rd FTW consists of about 3200 military personnel and about 500 civilian employees; 14 T-43 aircraft; 25 T-37 aircraft; associated training equipment; and support equipment, supplies, facilities, and personnel. Only the Air Force equipment and personnel associated with the 323rd FTW (less base operating support) would move to Beale AFB. It is assumed for this EIS that the 940th AREFG continues to operate at Mather AFB as is until a specific reuse option is implemented. The 940th AREFG consists of approximately 250 personnel and 8 KC-135E aircraft; two additional KC-135E aircraft are to be added in FY 1990-91. Associated excess Air Force property (supplies and equipment) for deactivated units would be transported to and disposed of through the McClellan AFB DRMO. The action evaluated in this document thus begins with the packing of supplies and equipment at Mather AFB and ends with the arrival of the personnel and equipment at Beale AFB. Movement of personnel and equipment is scheduled to begin in FY 1993 and is estimated to take 11 months. Course relocations will begin in April 1993 and be completed in September 1993.

Closure of Mather AFB is assumed to consist of reducing the level of operations to reflect only the continued operation of the 940th AREFG (which uses primarily Bldg. 4150, the 7000 area, the POL system, and the hydrant refueling system). If the selected reuse option includes the operation of a commercial airfield at Mather AFB, the 940th would remain, and some new construction would take place to install fencing, isolate utilities, and construct necessary facilities. If reuse of Mather AFB does not involve a commercial airport, the 940th AREFG would move to McClellan AFB, which is located about 10 road miles northwest of Mather AFB. Potential impacts of the future disposition of the 940th AREFG will be addressed in the Reuse EIS. All other facilities and structures would be emptied of supplies and equipment and continue to be maintained to prevent deterioration. A caretaker force would be established to provide several services, such as conducting sufficient maintenance to prevent deterioration of buildings, performing minimal maintenance of grounds, maintaining the water supply system, and restricting access to the base. No demolition activities are planned. The minimum utilities and infrastructure needed to support the AREFG and ongoing hazardous waste cleanup efforts and to support the possible continued use of the Electronic Warfare Officer (EWO) T-5 combat simulator (see Section 2.2) would be maintained. Groundwater production would decrease. Gates not

needed for access by either the 940th AREFG or hazardous waste cleanup operations would be closed and locked, the base would be patrolled by a security force, and facilities and structures would continue to be maintained under contract. The scenario evaluated herein was developed to give a conservative estimate of potential environmental impacts of closure. The desired closure scenario is one in which the military activities at Mather AFB phase out as reuse activities phase in. The duration and timing of hazardous waste cleanup operations may affect the timing of the reuse and may also affect the areas available for reuse.

The T-37 and T-43 aircraft from the 323rd FTW would be flown to Beale AFB. Supplies, equipment, USAF personal property, and household goods to be moved to Beale AFB would be packed and shipped via truck by USAF teams and/or commercial carriers. Supplies and equipment unnecessary for continued operation of the 940th AREFG that are not moved to Beale AFB, and which are not necessary for reuse nor included in the property transfer, would be disposed of through the DRMO at McClellan AFB. These would include substances and materials with the potential to adversely affect the environment such as hazardous materials in storage (e.g., flammable/combustible liquids, acids and other corrosive substances, compressed gases, lubricating oils, hydraulic fluids, solvents, paint thinners, etc.); toxic substances [e.g., electrical equipment containing polychlorinated biphenyls (PCBs)]; pesticides, herbicides, fungicides, and rodenticides; and vehicle and aircraft fuels. Based on the relatively short distances to Beale AFB and to McClellan AFB and the time allowed for the move (11 months), it can be reasonably assumed that most of the move would be accomplished through the use of military and/or commercial tractor trailer rigs. Pathological wastes present at the completion of the closure process would be disposed of through the current procedure of contractor pick-up and delivery to a disposal facility (incinerator) located in Rancho Cordova, California. All wastes (including hazardous and pathological wastes) would be disposed of in accordance with current permits and approved procedures.

Using the assumptions given in Appendix H, it is assumed that a total of about 10,000 tons of USAF supplies, equipment, and personal belongings would be moved from Mather AFB to Beale AFB, which would require about 1130 truck loads, or about 2260 truck trips (assuming each truck travels to Beale AFB fully loaded and returns to Mather AFB empty). Transportation of personal (civilian owned) vehicles is estimated to result in about 1980 car trips, and transportation of personnel without personal vehicles would require about 61 bus trips. Each of the 318 vehicles of the 323rd FTW is assumed to be driven individually from Mather AFB to Beale AFB. Total vehicle activity associated with movement of the 323rd FTW is thus estimated at 4619 vehicle trips. If this activity occurs over an 11-month period (330 days), then the average transportation activity would be about 14 trips/day. Movement of supplies and equipment to the DRMO at McClellan AFB is estimated to require about 33 truck loads, or 66 truck trips. This would result in an average daily traffic load of 0.24 trips/day. These assumed conditions are sufficiently conservative (i.e., overestimates) to account for potential impacts from moves associated with the smaller tenant units (Table 2.1).

Table 2-1. Summary of tenant units at Mather Air Force Base (AFB), manpower, and expected future disposition

Unit	Command[a]	Total personnel	Future disposition[b]
940 AREFG	AFRES	246	Remain at Mather AFB[c]
2610 Res. Recruit	AFRES	1	McClellan AFB[d]
Audit Agency Det. 920	AAG	6	Beale AFB (2)
USAF Cap. Det. 8	AUN	7	McClellan AFB
2034 Comm. Sqn.	AFCC	177	Deactivate
Commissary SR 16 OG	AFCOMS	70	Deactivate
Area Defense Council	LCT	2	Beale (2)
24 Weather Sqn. Det. 7	MAC	19	Beale (3)
AFOSI Det. 1904	OSI	6	Beale (2)
12 Contngy. Hosp. Det. 1	RES	2	McClellan AFB
FAA Radar Facility	FAA	5	No decision
Mather Exchange Offcs.	AAFES	--	Deactivate
Det. 18 Hlth. Care Sci.	ATC	2	Sheppard AFB
Def. Investig. Service	DIS	8	Beale AFB (4)
Post Office	USPS	2	Deactivate
Boeing Acft., COMBS	Boeing	11	Beale AFB
Install. Asst. Offc-West	IAO-W	5	McClellan AFB
USPFO Audit Div., Calif.	ANG	4	No decision
American Red Cross	ARC	2	McClellan AFB
Calif. Army Aviatn. Offc.	CAAO	20	No decision
Army Avtn. SPT Facil.	Army	57	No decision
U.S. Army Corps. Engr.	Army	2	Deactivate
126 Medical Company	Army	194	No decision
Veterinary Service	Army	2	No decision
3506th USAF Recruiting Group	ATC	36	Williams AFB, Ariz.
3564th Recruiting Squadron	ATC	20	McClellan AFB
524th FTD OL-A	ATC	1	Deactivate
3621st AF Reserve Officer Training Corps	ATC	6	Williams AFB, Ariz.
3314 Management Engineer Squadron	ATC	12	Beale AFB (5)

[a]Major Command within the U.S. Air Force (or other organization as noted).
AAFES - Army Air Force Exchange Service.
AAG - Audit Agency Group
AFCC - Air Force Communications Command
AFCOMS - Air Force Commissary Service
AFRES - Air Force Reserves
ANG - Air National Guard
ARC - American Red Cross
ATC - Air Training Command
AUN - Air University
CAAO - California Army Aviation Office
DIS - Defense Investigative Service
FAA - Federal Aviation Administration
LCT - Legal Council Team
MAC - Military Airlift Command
OSI - Office of Special Investigations
RES - Reserve
USPS - United States Postal Service

[b]Disposition affects total personnel listed except as noted in parentheses. Numbers in parentheses represent personnel affected by future disposition; the remainder of the total are assumed to be deactivated.

[c]940th AREFG would remain at Mather AFB until a decision regarding reuse is made. If the future use of Mather AFB involves a commercial airport, then the 940th AREFG would remain at Mather AFB; if not, then the 940th AREFG would move to McClellan AFB.

[d]Assumes units are unable to remain at Mather AFB.

2.2 ALTERNATIVES

The provisions of the Base Closure and Realignment Act and the recommendations of the Defense Secretary's Commission preclude any alternative action to closure of the base. Accordingly, the only alternative analysis to be included in the environmental impact analysis process is that associated with clearly defined alternative ways to actually carry out the closure. For closure of Mather AFB, no alternative bases to Beale AFB for relocation of the 323rd FTW were identified for analysis. Similarly, no alternatives to deactivating remaining active support units at Mather AFB were identified. Lastly, the short distances involved in the movement of materials and equipment from Mather AFB require the use of trucks, thus precluding the consideration of alternative transportation modes for closure.

For the Mather AFB closure, an alternative within the action is phased closure, which involves closing the entire base with the possible delayed departure of the EWO T-5 electronic combat simulator. Due to the complicated nature of design and installation of new computer systems for the EWO, the movement of this training course may be delayed beyond the movement of all other 323rd FTW units and even beyond the projected base closure date. All efforts will be made to move EWO training on schedule; however, should that prove impossible, the facility would remain in operation along with necessary housing for students and instructors until the new facility can be completed at Beale AFB.

2.3 COMPARISON OF CLOSURE AND CURRENT OPERATIONS

The short-term impacts from carrying out closure are anticipated to result from (1) energy use (and associated air pollutant emissions) from transporting personnel and equipment; (2) generation of hazardous and nonhazardous wastes caused by the reduction in operations and the consolidation of materials and equipment in preparation for transportation to Beale AFB and/or McClellan AFB; and (3) noise impacts from transporting personnel and equipment from Mather AFB. Removing people and equipment from the base may cause some minor, temporary disruptions to ongoing activities in support of cleanup of past hazardous waste sites, but the potential for interference is low given the locations of the sites in light of the areas where most of the packing and moving activities would occur. Impacts to water quality, ecological resources, and historical and cultural resources are expected to be minor.

The long-term impacts from the reduction of base operations are expected to be primarily beneficial through the reduction of air emissions, wastewater effluents, and wastes (solid and liquid, hazardous and nonhazardous). Reduction in aircraft-associated noise levels is expected to have a beneficial impact as a result of the reduction in noise-related annoyance to persons currently affected by aircraft noise. Closure of the base would not necessarily result in any changes in land use restrictions because of continued flight operations of the 940th AREFG and the possible reuse of Mather AFB as a civilian airport. Areas currently within the base would remain under USAF control pending final disposal of the property, and areas outside the base would remain subject to the current zoning restrictions until modified by the local governments. Potential changes in land use resulting from disposal and reuse of the base will be addressed in the Reuse EIS. Improvements in traffic flow on local roads in the vicinity of Mather AFB would occur during peak commute

hours because of the reduced number of Mather AFB commuters. Last, closure of Mather AFB would have long-term potentially beneficial impacts due to the reduction of energy use on the base. The closure is not expected to result in adverse impacts to the ongoing activities directed at the cleanup of past hazardous waste sites. A number of the beneficial biophysical impacts result from a reduction in emissions, effluents, and wastes. The net effect (cumulative impacts) to the region is expected to be small.

Continued operation of the 940th AREFG at Mather AFB would reduce the magnitude of current environmental impacts from Mather AFB operations (noise, wastewater, air emissions, solid waste and hazardous waste generation, and energy use) because of the reduced number of people on base.

Potential ecological impacts associated with closure are expected to be minimal with mitigation as planned (Section 2.4). Minimal impacts to burrowing owl habitat and vernal pool areas are anticipated due to continued maintenance of restricted access after closure. Reduced activity on base could also result in increased availability of prey for owls and other raptors. Minimal impacts to the nature and extent of biota in Mather Lake are anticipated due to a continuation of USAF pumping to maintain the lake level after closure. Table 2.2 compares potential impacts for closure and continued operation for key impact areas.

2.4 MITIGATION

The following mitigation measures will be taken:

- Continue USAF pumping of water into Mather Lake to maintain its current level until Mather AFB is transferred into civilian hands. This would maintain the value of the lake as a recreational resource and avoid changes in lake biota caused by fluctuating lake levels that occur in the absence of pumping.
- Continue restricted access to burrowing owl habitat and vernal pool areas. The area(s) of the base where vernal pools may be found would be protected from development after closure and before the property is transferred from the U.S. Air Force.
- Conduct all moving activities during daylight hours (to the extent practicable) to minimize noise impacts in the Mather AFB vicinity and along transportation corridors.
- Carry out closure over at least an eleven-month period, as proposed, to minimize the potential for short-term adverse impacts on transportation systems and corridors.
- Minimize truck trips (and associated energy use and air emissions) by using vehicles at their safe capacity loads.
- Minimize transport activity during episodes of high ozone levels.

Table 2.2. Potential closure impacts for key impact areas

Impact area	Closure: Implementation*	Closure: Post closure	Current operations**	Notes
Noise	Negligible	Area inside 65 dB contour = 3,100 acres	Area inside 65 dB contour = 29,200 acres***	Land use changes could also occur from the change in area within the 65 dB contour. However, the USAF recommends deferring any rezoning until a decision has been made on reuse
Energy	•27,000 gal diesel fuel •10,000 gal gasoline •10,000 gal JP-4	•10,000 gal/yr diesel fuel •20,000 gal/yr gasoline •11,000,000 gal/yr JP-4	•100,000 gal/yr diesel fuel •200,000 gal/yr gasoline •40,000,000 gal/yr JP-4	Closure would also result in minor electricity savings
Air Emissions	Negligible (mobile source <.01% of current mobile source emissions)	CO = 201 tons/yr HC = 130 tons/yr NO_x = 37 tons/yr SO_x = 4 tons/yr PM = 4 tons/yr	CO = 2,060 tons/yr HC = 1,058 tons/yr NO_x = 428 tons/yr SO_x = 28 tons/yr PM = 48 tons/yr	Current emissions as % of county total: CO = 1% HC = 3% NO_x = 2% SO_x = 1% PM = .1%
Wastewater	Negligible	$.19 \times 10^6$ gal/yr	$.940 \times 10^6$ gal/yr total flow	Total flow is <1% of flow treated by municipal treatment plant
Solid waste				
- non-hazardous	100 tons generated by consolidation and packing	560 tons/yr	5,600 tons/yr	Mather AFB solid waste represents <1% of total annual landfill input
- hazardous	Negligible	7500 lbs/yr	100,000 lbs/yr	
Transportation	14 vehicle trips/day; 1 aircraft every 10 days	3,700 fewer commuters in Mather AFB vicinity. Mather AFB traffic about 660 vehicles/day for worker commute trips.	6,600 vehicles/day for worker commute trips	Traffic loads from implementing closure would be less than 1% of existing levels at key locations
Ecology	Negligible	•Minimal effects on burrowing owl habitat and vernal pool areas with continued maintenance as planned •Possible increased availability of prey for owls and other raptors •Minimal effects on Mather Lake biota with continued pumping as planned	Mather Lake level maintained. Burrowing owl habitat maintained.	

*Spread out over 11 months.
**Includes the 320th Bombardment Wing (BMW).
***Removal of the 320th BMW reduces the area by about 25%.

3. DESCRIPTION OF EXISTING CONDITIONS

3.1 HISTORY, MISSION, AND CURRENT OPERATIONS

3.1.1 Background

The history of Mather Air Force Base began in February 1918, when the Sacramento Chamber of Commerce donated 789 acres of land to the United States Government. Construction of the base began in March 1918, and, in May 1918, the airfield was named after Second Lieutenant Carl Spencer Mather who had been killed in an aircraft accident near Ellington Field, Texas.

The main entrance to the base is less than 1 mile from U.S. Highway 50 (Fig. 1.1). There are four other entrances: Commissary entrance at West Mather Drive, SAC/West Gate entrance at Old Placerville Road, Military Family Housing Gate entrance at Excelsior Road, and the East Gate entrance at Douglas Gate Road (Fig. 3.1).

The first aviators arrived at Mather Field in June 1918, and the first flight from the base was made 4 days later. Flight training was discontinued with the graduation of the 14th class in January 1919. In the months that followed, activities were reduced to mostly caretaker duties, with occasional air patrols by the forestry service. In June 1922, the field was deactivated. Mather Field was reopened in March 1930, in preparation for the "War Games" held by the Air Corps the following month. In November 1932, the field was again deactivated.

3.1.2 Mission

Reactivated in 1941, Mather Field was rebuilt as a school for pilot and navigator training. In 1944, the base became a port of aerial embarkation and later a port of debarkation under the Air Transport Command and many additional facilities were built. Most of the B-29's used against Japan in World War II departed from Mather AFB. To handle the big bombers, runways were lengthened and reinforced. Mather Field also resumed its training mission in December 1945, becoming the first and only school for navigator-bombardiers.

In the 1950s, Mather Field was assigned a Strategic Air Command (SAC) mission, and, in the 1960s, with the introduction of EWO training and with the use of B-52 heavy bombers, Mather AFB assumed a larger strategic role. In the mid-60s, Mather AFB was assigned all Air Force navigator training when undergraduate navigator training was transferred from Connally AFB, Texas.

The 1970s were years of new planes, more students, and a bigger role in training. The Boeing T-43 jet replaced the propellor-driven Convair T-29 as the navigator training aircraft. The first woman pilot and navigator were graduated during this time, and Mather AFB assumed navigator training responsibility for the Navy, Marines, and Coast Guard.

Today, Mather AFB's primary mission is to provide training in navigation and related specialties for all U.S. Department of Defense (DOD) services and several allied nations. Training is given in Boeing T-43s and Cessna T-37s, supplemented by many hours of instruction in ground-based simulators. The 323rd FTW is the organization providing this key training.

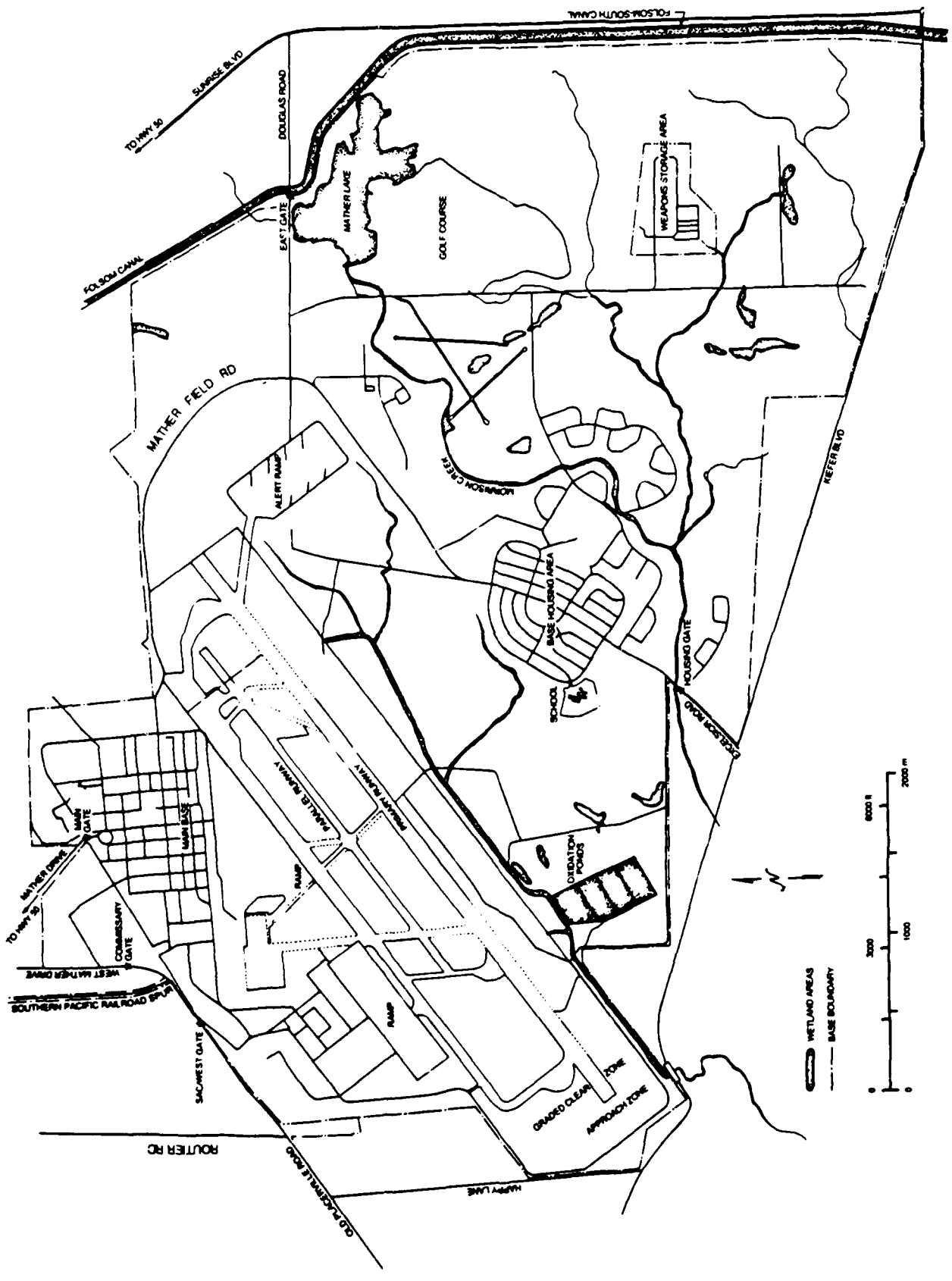

Fig. 3.1 Installation map of Mather Air Force Base.

The 323rd FTW also provides support services to the many flying and nonflying tenant organizations assigned to the base. Some of these services include: airport operations, medical, administration, personnel, chaplain, recreation, engineering, security policy, and logistics support.

In addition to the flying activities of the 323rd FTW and the 940th AREFG, other tenant organizations are also based at Mather AFB. These are shown in Table 2.1.

3.1.3 Current Operations

Mather AFB is located on about 5800 acres of government property, 12 miles east of the city of Sacramento in the unincorporated community of Rancho Cordova. There are currently about 5600 military and 2000 civilian personnel on base.

Flight facilities include two parallel runways. The primary runway is 11,300 ft by 300 ft and the secondary runway is 6100 ft by 150 ft. Both runways are lighted, and the primary runway is equipped with precision navigation systems for all weather operations. The two runways contain 870,000 yards^2 of asphalt and concrete. Other flight facilities include an integrated system of taxiways, aprons, parking aprons, and navigational aids capable of handling the C-5A Galaxy, the largest aircraft in the Air Force inventory.

The following is a list of aircraft currently assigned to Mather AFB:

Aircraft	Number
T-43A	14
T-37B	25
B-52G	0[a]
KC-135E (Reserve)	8[b]
UH-1H (helicopter)	7
UH-1V (helicopter)	15
UH-1M (helicopter)	5
UH-58A (helicopter)	4
T-42A	1
C-12D	1
Total	80

[a]Unit deactivated as of October 1, 1989. No B52s are currently based at Mather AFB.

[b]Two additional KC 135s are programmed for authorization in FY 1990–91.

During 1974–1985, flying operations at the base have ranged from a low of 96,004 to a high of 170,816. During this period, there were a total of 1,562,825 operations, which is an annual average of 130,235. Annual Mather AFB flight operations in 1988 totalled 82,210 (note that this is an approximate count of the actual number of aircraft landing and taking off, due to the manner in which flight operations are defined by the control tower).

3.2 NOISE

Aircraft operations at Mather AFB produce noise, which results in both direct effects (e.g., annoyance, health effects, and impacts to domestic animals) and indirect effects (e.g., land use) to the surrounding community. Land use effects from noise are addressed in Section 3.3; the remainder of this section addresses estimated direct effects of noise from current aircraft operations at Mather AFB.

Ground noise levels generated by aircraft activity at Mather AFB are estimated using the NOISEMAP computer program (Beckmann and Seidman 1978). NOISEMAP results are expressed in terms of average day/night sound levels (Ldn) using decibels on an A-weighted scale as units. The A-scale gives a good approximation of the human ear's response to noise and also correlates well with a person's judgment of the loudness of a noise event (EPA 1974). Ldn values are used by the EPA, U.S. Department of Housing and Urban Development, and DOD to describe noise exposure. In calculating Ldn levels, noises that occur between 10 p.m. and 7 a.m. are penalized by adding 10 dB to their actual noise levels. This penalty accounts for the fact that noises occurring at nighttime are usually judged to be more annoying than those occurring during the day.

The noise levels estimated by NOISEMAP are based on the flight parameters of the aircraft, including the engine type, altitude, and throttle setting, and on the aircraft type, flight path, and profile utilization. These input data were gathered in October 1989 by a team of U.S. Air Force representatives, and were verified in the field. Flight tracks were confirmed by reviewing them with aircraft pilots on appropriate maps. The input data were in turn entered into a central computer at the Air Force Engineering Services Center at Tyndall AFB, Florida. The NOISEMAP program calculates Ldn values in decibels (dB) and plots a map of the noise "footprint." Noise contours are plotted with a minimum Ldn value of 65 dB, because studies have determined that the percentage of persons highly annoyed increases rapidly above this level. Also, the HUD has adopted a Ldn value of 65 dB as the upper limit of acceptable noise for residential development, and the Federal Aviation Administration (FAA) uses a Ldn value of 65 dB to define residential noise impact areas around airports.

Flight operations at Mather AFB during 1989 primarily involve the 320th BMW, the 940th AREFG, and the 323rd FTW. Daily operations from the principal jet aircraft associated with these units (used as input to the NOISEMAP model) are as follows:

Aircraft	Operations/day
T-37	183
T-43	49
B-52	24
KC-135E	38

In addition, approximately 24 different types of transient aircraft add about another 96 operations/day, which brings the daily total for Mather AFB to about 390 operations/day. Deactivation of the 320th BMW (which occurred effective October 1, 1989) reduced the daily operations by 24, to a total of about 366. It is assumed that aircraft based on Mather AFB operate 260 days/year, and that transient aircraft operate 360 days/year.

Operations data are based on the concept of the average "busy day," as defined under the Air Installation Compatible Use Zone (AICUZ) program (Section 3.3 and Appendix B). Operations over a one year period are examined to determine if there are significant variations in aircraft activity from month to month. If there are, then the average of the operations for the three months of the year with the highest activity is used as a representation of typical monthly operations. After the average monthly operations are determined, then the number of flying days within that period is computed (if the average weekly flying activity totals more than twice the average weekend activity, then each week is considered as having five flying days). The number of total operations for an average month is divided by the number of flying days within that period to arrive at the total operations for the average "busy day." The "busy day" total operations are in turn divided into two periods, daytime (0701–2200) and nighttime (2201–0700).

This information was used as input to the NOISEMAP model to produce noise contours reflecting full operation of Mather AFB in 1989 (Fig. 3.2); the area inside of the 65 dB contour is about 29,200 acres. For the most part, the surrounding land uses are compatible or conditionally compatible with the noise levels generated by Mather AFB operations. Appendix B contains more detailed information on the compatibility of various land uses with specific noise levels. Deactivation of the 320th BMW reduced the area inside the 65 dB contour by about 25%; noise contours for 1989 operations at Mather AFB without the 320th BMW are shown in Fig. 3.3.

3.3 LAND USE

Much of the area to the north and northwest of the base is urbanized. Some vacant parcels are scattered through the area, including a few large areas of undeveloped land. To the northeast and southeast of the base, most of the area is low-density development, with some commercial and industrial activity along Folsom Boulevard and Sunrise Boulevard. South of the base, land use is primarily low density agricultural/residential.

Airfields, military and civilian, attract activity in their environs. Sizable new cities may grow up near an airfield or existing cities may grow outward toward an airfield. This encroachment hampers the ability of airfields to support flight operations. In some cases, sufficient adverse reactions against operations have arisen to contribute to the eventual elimination of flying.

Recognizing the critical nature of urban encroachment throughout the United States, the USAF developed the Air Installation Compatible Use Zone (AICUZ) concept (described in more detail in Appendix B). The purpose of AICUZ is to delineate land use districts and establish guidelines for compatible land use within areas impacted by aircraft operations. Airfield environs planning is concerned with three primary determinants: (1) accident potential to land users; (2) hazardous operations from land use (height, obstructions, etc.); and (3) aircraft noise. Aircraft noise at Mather AFB is addressed in Section 3.2; the remainder of this section addresses accident potential and obstruction criteria.

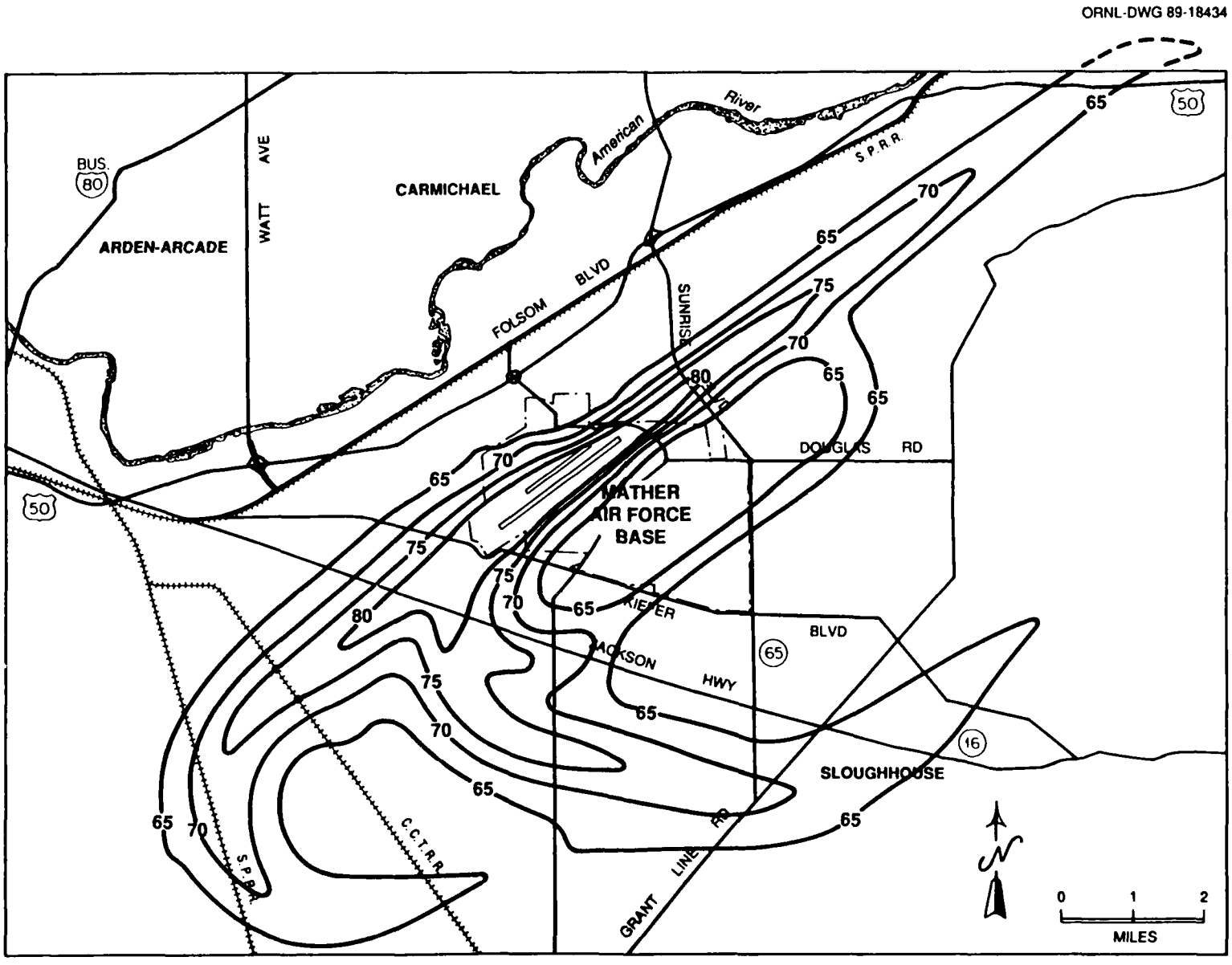

Fig. 3.2 Average day-night level (Ldn) noise contours for Mather Air Force Base operations including the 320th Bombardment Wing.

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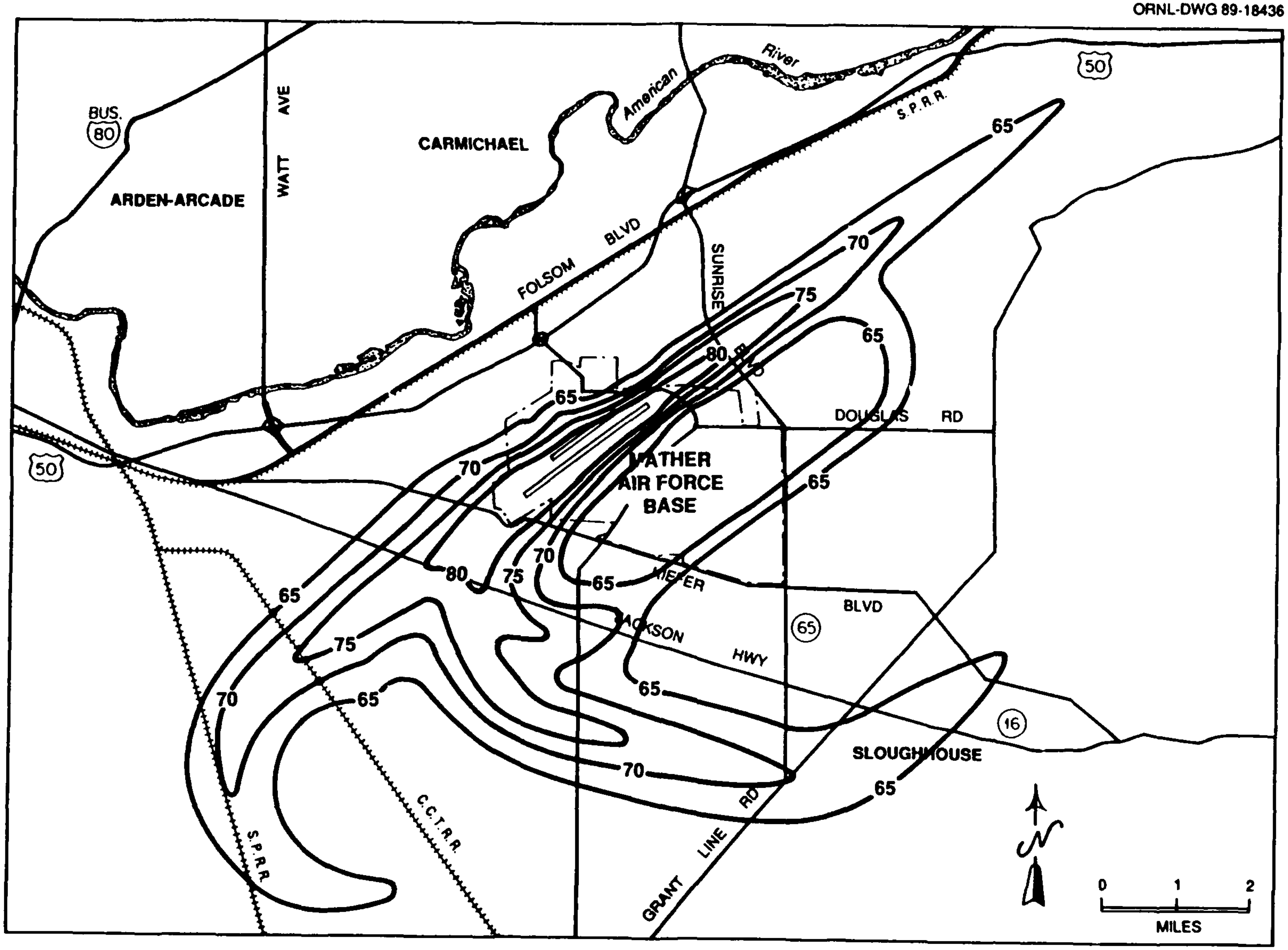

Fig. 3.3 Average day-night level (Ldn) noise contours for Mather Air Force Base operations without the 320th Bombardment Wing.

3.3.1 Accident Potential

To evaluate accident potential, the USAF has identified three types of areas characteristic of airfields. At both ends of the Mather AFB runways, expanded Clear Zones (CZs) and Accident Potential Zones (APZs) have been designated. Within the CZs, the overall risk is so high that necessary land use restrictions would prohibit reasonable economic use of the land. At Mather AFB, the Air Force has acquired the necessary real property interests in this area to prevent incompatible land uses. APZ I is less critical than the CZ but still has a significant risk factor. This area is 3000 ft by 5000 ft and has land use compatibility guidelines that are sufficiently flexible to allow reasonable economic use of the land. APZ II is less critical than APZ I but still has some risk. APZ II is 3000 ft by 7000 ft. The cumulative length of the CZs, APZ I, and APZ II extends to 15,000 ft from the runway threshold. At Mather AFB, all of the CZs are located on base. Most of the APZ I areas are outside of the base, as are all of the APZ II areas.

One important measure of accident potential is the rate of occurrence of a Class A mishap (i.e., an accident causing more than $500,000 in damages, destruction of aircraft, or a fatality). Class A mishap rates for the principal aircraft types of interest at Mather AFB are as follows (data represent statistics through September 30, 1988): B–52G, 1.33/100,000 flying hours (USAF 1989a); KC–135, 0.76/100,000 flying hours (USAF 1989a); and T–37, 1.3/100,000 flying hours (USAF 1989b). No Class A mishaps were reported for the T–43 aircraft.

3.3.2 Height and Obstruction Criteria

In addition to accident potential and noise, the AICUZ plan also addresses height and obstruction criteria for areas in the vicinity of airfields. These criteria, established by the USAF and the FAA, are concerned with land uses in the vicinity of airports and military airfields that are associated with the following activities: release into the air of any substances that would impair visibility or otherwise interfere with the operation of aircraft; production of illumination (either direct or reflected) that would interfere with pilot vision; production of electrical emissions that would interfere with aircraft communication and navigation systems; attraction of birds or waterfowl; or placement of any type of natural or man-made object in such a location and at such a height so as to interfere with approaches and departures of aircraft. The State of California prohibits construction of any structure that constitutes a hazard to air navigation (unless the California Department of Transportation issues a permit). These obstruction criteria also have been incorporated into the zoning laws of Sacramento County.

3.3.3 Present and Future Land Use

Existing land uses around the base reflect the planning considerations. The area north and northwest of Mather AFB is composed of single-family residential development, with major retail centers and other business uses centered along Folsom Boulevard and Mather Field Road; this area includes schools and outdoor public recreation facilities. The area to the west and southwest is mostly open rural land with farms and grazing. The area

to the east and northeast is mostly industrial, with some commercial and agricultural areas. The area to the south is mostly agricultural, with little commercial and industrial activity.

In general, land uses in the vicinity of Mather AFB are compatible with AICUZ considerations (noise, accident potential, and height and obstruction criteria). There are small incompatible areas to the northeast and south because of recreational zoning along canals and creeks, to the southwest because of existing residential zoning (low density and agricultural residential), and to the west (one area of low density residential and one public). Appendix B describes the compatibility of various land use types with specific AICUZ criteria.

Demand for future development is likely in the areas to the east, south, and southwest of the base. At present, these areas are mostly undeveloped and flight operations cause few complaints and pose little danger. Development in these areas would increase complaints and increase safety hazards, and almost certainly result in demands for restrictions on flight operations. The "East Area Transportation Study," completed for the Sacramento County Board of Supervisors in September of 1984 (East Area Plan 1984), addressed a 95,000-acre area of eastern Sacramento County. This study recommends a number of alternatives for new and upgraded highways and interchanges. Highway proposals for agricultural and undeveloped lands adjacent to Mather AFB and within affected outlying noise areas are included.

The Comprehensive Land Use Plan (CLUP) for Mather AFB (SACOG 1987), which is based on AICUZ considerations, was adopted and included in the County's General Plan in September 1987. The CLUP provides direction for mitigating and prohibiting incompatible land uses and development within the base environs. Local governments with jurisdiction over a geographic area subject to this plan must either amend their general plans and other land use controls to be consistent with the CLUP, or overrule by a 2/3 vote the portion of the CLUP with which they do not agree. It should be emphasized, however, that the AICUZ program provides only recommendations to surrounding communities, and that the only way that the USAF can control development in any area is by acquiring a real property interest through negotiated purchase or condemnation.

3.4 ENERGY USE

Operations at Mather AFB consume petroleum-based fuels for vehicles, equipment, and aircraft, natural gas for heating, and electricity. Each of these is discussed below.

Jet propulsion (JP)-4 fuel, the most common aircraft jet fuel, is delivered to Mather AFB by pipeline to two above ground storage tanks with capacities of 826,000 and 427,000 gal. From this storage, the fuel is moved by underground pipeline to 16 50,000-gal underground tanks which fuel the hydrant aircraft fueling system used for the 320th BMW and the 940th AREFG. For other aircraft, JP-4 is bottom-loaded into refueler trucks for flight line use. Diesel and gasoline are stored in two 25,000-gal and four 20,000-gal underground tanks. In addition, there are 24 underground tanks storing diesel, gasoline, or JP-4 for heating, power production, or equipment support that range in capacity from 200 to 8000 gal. Mather AFB has an aggressive program to remove abandoned USTs. More than 60 of these tanks have been removed as part of an ongoing base program. This program will remain active as base closure allows more tanks to be taken out of service.

During 1988, operations at Mather AFB used about 40,000,000 gal of JP-4, of which the 323rd FTW used about 21%, and the 940th AREFG used about 22%. About 200,000 gal of gasoline (unleaded), and about 100,000 gal of diesel fuel were used base-wide.

Natural gas is supplied to Mather AFB by Pacific Gas and Electric. In 1987, a total of about 247 M ft^3 of natural gas was consumed at Mather AFB. About 40% of the total was used by the housing area, and the remainder was used by commercial and industrial activities.

Mather AFB receives its electricity from Sacramento Municipal Utilities District (SMUD). In CY 1988, the base used about 64 M kWh of electricity. In 1988, SMUD electricity sales totalled about 8.8 billion kWh (EIA 1988).

3.5 CLIMATE AND AIR QUALITY

The climate in the Sacramento Valley portion of the Central Valley in California is characterized by dry, hot summers and moist, cool winters and is comparable to a Mediterranean to subtropical climate. Relative humidity ranges from 60 to 90% in winter and from 15 to 30% in summer. The amount of sunshine in January averages 44% (14 days) and increases gradually to more than 90% during June through August (USAF 1988a). In the winter (December, January, and February), over one-half of the total annual rainfall occurs on about ten days monthly. Excessive rainfall and damaging windstorms are rare in the Mather AFB vicinity (Base Plan 1988).

Mather AFB is located in Air Quality Control Region 28 in Sacramento County, which comprises the Sacramento County Air Pollution Control District (40 CFR Pt. 81.163). Air quality in the Sacramento area is classified as not meeting federal clean air standards for particulate matter, ozone, and carbon monoxide. Ambient levels of nitrogen dioxide and sulfur dioxide in the Sacramento area are below standards or cannot be classified due to a lack of data (40 CFR Pt. 81.305). Ozone is not directly emitted from pollution sources, but is formed in the atmosphere through chemical reactions involving nitrogen oxides and organic compounds (hydrocarbons) in the presence of sunlight.

Estimated pollutant emissions from current base operations at Mather AFB are summarized in Table 3.1 and compared to estimated total emissions in Sacramento County. For the county, mobile sources comprise 65% of the hydrocarbon emissions, 96% of the carbon monoxide emissions, 91% of the nitrogen oxides emissions, 96% of the sulfur oxides emissions, and 5% of the particulate matter emissions. Hydrocarbon emissions from Mather AFB are the most significant in comparison to the county totals, but still only represent about 3% of total hydrocarbon emissions. For Mather AFB, mobile sources largely account for emission totals affecting the existing environment, contributing between 50% and 90+% of each of the five pollutant totals.

Emissions at Mather AFB originate from a variety of sources including aircraft flight and ground operations, aircraft-related nonflight operations, and nonaircraft-related sources. Aircraft operations include both assigned and transient aircraft; aircraft related support operations include engine runups for maintenance and testing purposes, taxiing and engine warm-up, aircraft fueling, operation of aerospace ground equipment, and the application of surface coatings, solvents, adhesives, and paint removers. With the exception of hydrocarbon emissions from aircraft fueling operations, emissions from aircraft related

Table 3.1. Estimated annual air pollutant emissions from current operations at Mather Air Force Base and a comparison to regional emissions[a]

Pollutant	Annual regional emissions, Sacramento County (tons)	Estimated annual pollutant emissions, Mather AFB[b]	
		Emissions (tons)	Percent of regional total
carbon monoxide	200,750	2,060	1.0
hydrocarbons	40,150	1,058	2.6
nitrogen oxides	28,105	428	1.5
sulfur oxides	1,934	28	1.4
particulates	69,350	48	.1

[a]*Source*: Mather Air Force Base: Mather AFB Air Emissions Inventory, August 1, 1986–July 31, 1987. Sacramento County: Sacramento County Air Pollution Control District, 1983 Base Year Pollutant Emissions Inventory, Sacramento, California, Dec. 24, 1986.

[b]For the period August 1, 1986 through July 31, 1987.

nonflight operations are small in relation to the emissions resulting from flight operations. Emissions from fueling operations result from evaporation of JP-4 and include standing and working losses from storage tanks as well as from fuel transfer operations. Nonaircraft-related sources include government and privately owned vehicles, residences on base, and others. Carbon monoxide emissions emanate primarily from aircraft and private automobiles.

Appendix E lists permitted air pollution sources at Mather AFB. As indicated, sources include boilers, degreasers, furnaces, fuel dispensers, paint spray booths, and fuel equipment.

3.6 WATER RESOURCES

3.6.1 Surface Water

Surface water hydrology at Mather AFB is dominated by Morrison Creek, a tributary of the Sacramento River. The eastern part of Mather AFB is drained by small deeply carved tributaries of Morrison Creek, a seasonal stream that flows southwesterly across the base toward the Sacramento–San Joaquin River delta region (Fig. 3.1). The creek receives runoff from Mather AFB.

Mather Lake, a 64-acre recreational impoundment formed from Morrison Creek, is located along the east boundary of the base (Fig. 3.1). This lake receives and stores runoff from off-base via an aqueduct constructed over the concrete-lined Folsom South Canal which extends north-south along the eastern boundary of the base (Fig. 3.1). The Lake has a shallow, sloping edge reaching only 18 ft at maximum depths and contains about 300 acre-ft of water, replenished by rain and runoff water during the winter months. During the summer, with no year-round inflow, evaporation can reduce the water to about 100 acre-ft. However, about 300 acre-ft are pumped annually by the Air Force from the Folsom-South Canal to maintain an average lake volume of about 200 acre-ft throughout the summer (Base Plan 1988).

Some floodplain areas (100-year floodplain) are located on Mather AFB, primarily along Morrison Creek, along the small unnamed creek located to the south of the runways, miscellaneous drainage ditches, and Mather Lake (Fig. 3.1). Total floodplain acreage on Mather AFB is about 270 acres (USAF 1988b).

Wastewater generated at Mather AFB is discharged to the Sacramento County regional sewer and is then sent to the Sacramento Regional Wastewater Treatment Plant. The base has a contract with Sacramento County under which the county will accept 2 M gal of sewage per day. Flows in excess of the 2 M gal are stored on base and discharged during periods of low flow. A pump station on base pumps excess flow into one of four holding ponds with a total capacity of 27 M gal (83 acre-ft). Wastewater generated by Mather AFB is governed by the California Regional Water Quality Control Board (CRWQCB) Order No. 83-093 and the Sacramento Regional Sanitation District Sewer Use Permit #21. In 1988, the annual average of the daily average sewage flows from Mather AFB was 0.940 M gal; about 90% of the total represents sanitary sources, and the remainder is from industrial sources. Principal sources of industrial wastewater are aircraft washracks; metal cleaning, surface preparation, and painting operations; vehicle and equipment washing, and photographic and dental laboratories. The Mather AFB flow is less than 1% of current flows treated by the Sacramento Regional Wastewater Treatment Plant.

No National Pollutant Discharge Elimination System (NPDES) permits govern Mather AFB at this time. The Sacramento Regional Sanitation District requires semiannual sampling reports from the plating and cleaning effluents. The district conducts its own monitoring for biochemical oxygen demand, chemical oxygen demand, suspended solids, cyanide, and four heavy metals at the county sewage lift station and for cyanide and seven heavy metals at the plating and cleaning shop discharge.

Stormwater runoff at Mather AFB is discharged through drainage ditches into Morrison Creek at approximately the 7100 area (located north of the oxidation ponds shown in Fig. 3.1). The perimeter ditches have oil/water separators located at strategic points to

catch and hold contaminants (CH_2M Hill 1982). No compliance monitoring is required for stormwater runoff.

3.6.2 Groundwater

Fresh groundwater occurs at Mather AFB and the surrounding area in a wide variety of geologic materials beneath the Sacramento Valley. Most of the groundwater available for development is stored and moves through sand or sand and gravel strata which were deposited in the past by streams flowing into and through the valley.

Groundwater flow in the Mather AFB area is influenced by water withdrawals caused by irrigation in the Elk Grove area located south and southwest of the base. Thus, the general direction of groundwater flow in the Mather AFB vicinity is thought to be from the northeast to the southwest. Precipitation recharges the formations in the Mather AFB area, either directly as rainfall or indirectly as snow melt.

Groundwater is discharged from the aquifer system primarily by pumpage. Some water is lost by evapotranspiration and by discharge to streams (CH_2M Hill 1982). Pumpage rates (1964) in the Sacramento area were about 8.1×10^{11} gal/year for the Sacramento Valley Groundwater Reservoir (Todd 1983).

Mather AFB draws its potable water supply from 11 wells (four in the main base area, six in the housing area, and one in the weapons storage area). The water supply wells range in depth from 200 to 585 ft and are of screened/gravel pack construction. Total groundwater production at Mather AFB from all wells is about 1.1×10^9 gal/year, of which 60–70% is used by base housing. Contours for existing groundwater levels in wells in the Mather AFB vicinity show very little, if any, effect from Mather AFB well operations (U.S. Bureau of Reclamation 1988).

3.7 WASTE MANAGEMENT

This section addresses management of currently generated wastes at Mather AFB. Clean-up of past hazardous waste sites is described in Section 3.8 and Appendix G.

3.7.1 Solid Waste

Solid nonhazardous waste produced by Mather AFB is taken by a contractor to the Sacramento County landfill. Total solid waste production at the base for the period from February 1988 through January 1989 was 5621 tons, or 0.6% of the total landfill input for the period. The county landfill has an area of 656 acres and has about 40 years of capacity remaining at current rate of fill (George Lynch, Solid Waste Division, Sacramento County, Calif., personal communication with L. W. Rickert, Oak Ridge National Laboratory, Oak Ridge, Tenn., Mar. 9, 1989).

3.7.2 Hazardous Waste

Daily operations at Mather AFB involve the use of JP-4 fuel, automobile fuel, solvents, lubricating fluids, and pesticides. Hazardous waste generated is put into drums and shipped off-site for disposal through the DRMO (McClellan AFB) in accordance with permits. In 1989, about 100,000 lb of hazardous waste were generated by Mather AFB operations. The 940th AREFG contributed about 7.5% to this total. The federal legislation regulating management of hazardous waste is RCRA, amended in 1984 by the Hazardous and Solid Waste Amendments (HSWA). Mather AFB hazardous waste activities are regulated pursuant to RCRA and implementing regulations found in 40 CFR Pts. 240–399. California hazardous waste management regulations are found in Title 22, California Code of Regulations, Section 3.0. Mather AFB has one hazardous waste TSD facility operating under the interim status exemption in 40 CFR Pt. 270.70. This facility is for storage only. No hazardous wastes are treated or disposed of on Mather AFB. Numerous hazardous waste generation and accumulation points are also present at Mather AFB.

3.7.3 Polychlorinated Biphenyls

Polychlorinated biphenyls (PCBs) were commonly used as dielectric fluids in electrical equipment (transformers and capacitors) because of their excellent insulating characteristics. Research has indicated that contact with fluids containing significant amounts of PCBs can have adverse health effects. This substance is now regulated by the federal Toxic Substances Control Act (TSCA). PCBs have not been used in electrical equipment manufactured since the mid 1970s. The federal regulations that apply to the management of PCBs are contained in 40 CFR Pt. 761 (PCBs Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions). Below is a definition in parts per million of the various levels of Federal regulation:

Concentration (ppm)	Definition
0–49	Non-PCB item
50–499	PCB contaminated item
>500	PCB item

Title 22 of the California Administrative Code, which is more stringent than the federal law, identifies fluids containing 5 ppm or greater PCB as regulated hazardous wastes.

Mather AFB Electrical Shop conducted a nameplate survey of all transformers and capacitors and identified 20 transformers and 35 capacitors as likely to contain PCBs (based on date of manufacture). Seven of these transformers were actually tested and found to contain between 6.8 and 29 ppm PCB bringing them under regulation by California Administrative Code (federal law would consider these non-PCB items). The base electrical shop has removed four transformers containing PCBs from service. The transformers have been disposed of in accordance with California law. All known PCB containing items are inspected for leaks or other defects each week.

ATC has scheduled a PCB survey and testing program for Mather AFB which will be completed by April 1990. All electrical items found to contain PCBs will be programmed for removal. Removals will be completed before base closure.

3.7.4 Asbestos

Asbestos management at present consists of the removal of asbestos (when encountered during other construction activity) and storage near Facility 4303 in the Main Base area. All asbestos debris is crated/sealed, stored, and disposed of by contractors. Asbestos waste generated at Mather AFB is disposed of in accordance with regulations at the Kettleman City (California) disposal site. A preliminary asbestos survey of each building has been accomplished and lists are maintained at bioenvironmental engineering and base civil engineering. A complete asbestos survey is scheduled to be completed by September 30, 1990.

3.7.5 Underground Storage Tanks

Mather AFB has an ongoing program to identify and remove USTs that are abandoned, have failed tightness testing, or are no longer needed. To date, these efforts have resulted in the removal of over 60 USTs at Mather AFB. During tank removal, soil testing is performed at each site to assess contamination from tank leaks, overfills, or pipe failures. Former tank sites which require extensive remediation or may affect groundwater are usually added to the IRP site list to be further investigated as part of the Remedial Investigation (RI). Eleven sites have been added to the RI as a direct result of this program.

3.7.6 Other Wastes

Demolition wastes generated at Mather AFB by contractors are taken to a state-licensed county landfill. Demolition wastes generated by Mather AFB personnel are deposited in a county-inspected site on the base. The Sacramento County Authority inspects the site quarterly and has limited disposal to only qualified demolition wastes. The site's very limited and specific use does not require licensing as a landfill. A past practice of using the site for disposal of tree and grass clippings has been stopped and such organic wastes have been removed from the site to a licensed landfill. Pathological wastes generated by the base hospital are picked up and disposed of by contractor in accordance with Title 22, Article 13 of the California Code of Regulations. The final disposal site is an incinerator located in Rancho Cordova, California.

3.8 INSTALLATION RESTORATION PROGRAM

ATC is responsible for implementing the DOD IRP at Mather AFB. IRP is the tool for implementing and funding compliance with CERCLA. CERCLA directs remedial action to respond to environmental problems resulting from past hazardous waste management practices, which were generally in compliance with applicable legislation existing

at the time hazardous waste disposal occurred. Problems did not become evident until later. IRP deals with the identification, evaluation, and remediation of advanced environmental problems. Appendix G describes IRP activities in more detail.

Historically, generation of hazardous substances at Mather AFB has resulted primarily from industrial operations, fire protection training, and fuels management. These activities have generated varying quantities of waste oils, fuels, solvents, and cleaners. The USAF has identified 34 disposal or spill sites at Mather AFB, as shown in Fig. 3.4. These sites include landfills, chemical disposal areas, fire training areas, drainage ditches, asphalt rubble disposal areas, a septic tank, and a portion of the sanitary sewer system in the industrial area off base. In addition to these areas, major fuel spills and leaks have occurred in various locations on base. Additional sites have been located in conjunction with concurrent investigations to identify and remove leaking underground fuel storage tanks.

Landfills used in the past will be closed out under the Air Force's Installation Restoration Program (IRP) as appropriate based on the results of the ongoing investigation and remediation activities. Wastes present in previously used landfills at Mather AFP while not directly analyzed have been tested for by extensive soil gas test and groundwater wells. The sample analysis data could be used to identify general types of waste in the landfill(s) as necessary.

Beginning in 1981, CRWQCB (Central Valley Region) has intermittently sampled wellwater from 16 private shallow wells immediately west of Mather AFB. As of mid-1988, 10 of these wells have shown traces of trichloroethylene (TCE) or carbon tetrachloride. As a result, the Air Force assumed the responsibility of arranging potable water supplies for the population whose wells have shown TCE or carbon tetrachloride contamination.

One of the hazardous waste sites at Mather AFB [(the Aircraft Control and Warning (AC&W)] site, was placed on EPA's National Priority List (NPL) for cleanup in July 1987. In November 1989, the EPA listed the entire base on the NPL due to hazardous substance contamination, including contamination of a potable groundwater system.

The IRP at Mather AFB began in 1982 with a records search identifying 23 sites needing further study. It continued with three stages of confirmation and quantification studies that expanded the program to include 34 sites. In 1988 a hydrogeologic investigation compiled data from all existing wells on Mather AFB and within a 2-mile radius outside the base. Seventy-five ground water monitoring wells, 64 of which are still in use, were installed to provide the detailed data necessary for the IRP. A detailed accounting of the entire IRP process to date, including descriptions of each site, is provided in Appendix G.

Work plans are currently being developed for the remainder of the studies to take place at Mather AFB. Results of all investigations and studies will be reviewed and decisions will be made on what sites require remedial action and exactly what form that remedial action will take. All work plans and all remedial action plans will be submitted to the State of California and the EPA for approval before commencement of any future work.

In July 1989, the EPA (Region 9), the State of California, and the Air Force entered into an IAG covering the activities to take place under the IRP at Mather AFB. The purpose of the agreement is to provide for involvement of the three parties in the initiation, development, selection, and enforcement of remedial actions to be undertaken, including the review of all applicable data as they become available, and the development of studies, reports, and action plans. The IAG also provides for the three parties to identify and integrate State and Federal laws into the remedial action process.

	IRP SITES	USAF ID
1.	Runway Overun Landfill	LF01
2.	"8150" Area Landfill	LF02
3.	N.E. Perimeter Landfill No. 1	LF03
4.	N.E. Perimeter Landfill No. 2	LF04
5.	N.E. Perimeter Landfill No. 3	LF05
6.	Firing Range Landfill Sites	LF06
7.	"7100" Area Disposal Site	WP01
8.	Fire Dept. Training Area No. 1	FT01
9.	Fire Dept. Training Area No. 2	FT02
10.	Fire Dept. Training Area No. 3	FT03
11.	Fire Dept. Training Area	FT04
12.	AC&W Disposal Site	WP02
13.	Drainage Ditch No. 1	DD01
14.	Drainage Ditch No. 2	DD02
15.	West Ditch	DD03
16.	Electron Tube Burial Site	LL01
17.	Weapons Storage Area Septic Tank	WT01
18.	Old Burial Site	LF07
19.	Fuel Tank Sludge Burial Site	WP01
20.	MOGAS Spill Site	SS01
21.	Asphalt Rubble Storage Site	OT01
22.	Asphalt Rubble Storage Site	OT02
23.	Sanitary Sewer System E. of Eknas St.	OT03
24.	1983 JP-4 Spill Site	SS02
25.	Fuel Spill at Building 10100	SS03
26.	Fuel Spill at Building 10072	SS04
27.	Fuel Spill at Building 10060	SS05
28.	Fuel Spill at Building 16100	SS06
29.	P.O.L. YARD #4 Building 3171	SS07
30.	Fuel Spill at Building 10300	SS08
31.	Fuel Spill at Building 10090	SS09
32.	Fuel Spill at AAFES Station	SS10
33.	CE Paint Shop Bldg. 3008	LU04
34.	Fuel Spill at Bldg. 21030, Family Housing Service Station	SS11

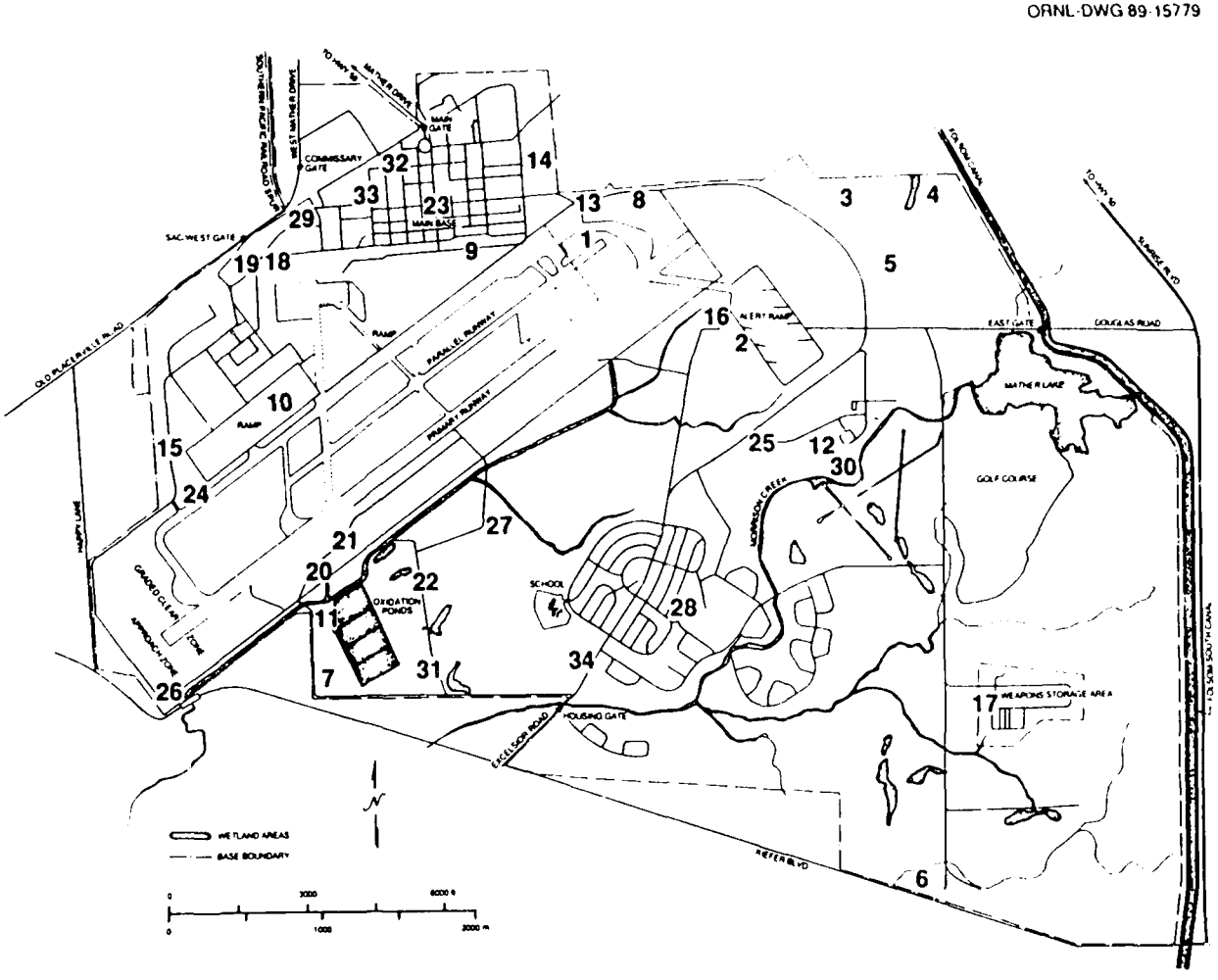

Fig. 3.4 Locations of Installation Restoration Program sites at Mather Air Force Base.

The closure of Mather AFB would have no major effect on the IRP. The program will continue with the joint involvement of the state, the EPA, and the Air Force in accordance with the tri-party IAG.

3.9 TRANSPORTATION

Closure of Mather AFB would require transport of the personnel, aircraft, and equipment associated with the 323rd FTW to Beale AFB, about 60 road miles from Mather AFB, and would be done by the USAF, commercial carriers, or both. This relocation is assumed (see Section 2.1 and Appendix H) to be accomplished by truck. Major transportation routes are shown in Fig. 3.5. Excess supplies and equipment not sent to Beale AFB would be disposed of through the DRMO located at McClellan AFB, which is about 10 road miles north of Mather AFB (Fig. 3.5).

The probable truck route from Mather AFB to Beale AFB consists of local roads (about 3 miles) to Highway 50 west, then highways (5 north, 70 north, and 65 north) to local roads south of Marysville; total highway distance is about 50 miles. From Route 65, local roads (about 6 miles) would be used to reach Beale AFB. The probable truck route from Mather AFB to McClellan AFB is Highway 50 west for about 5 miles and local roads north for about 6 miles. If hazardous materials are transported, the actual route would consist of roads designated for hazardous materials transport and thus may involve a longer distance [e.g., Highway 50 west to Highway 880 east, for a total distance of about 23 miles (about 12 additional miles)].

Major traffic carriers in the Mather AFB vicinity are Highway 50, Jackson Highway (State Route 16), Folsom Boulevard, Bradshaw Road, Mather Field Drive, and Coloma Road (East Area Plan 1984). Traffic loads for specific locations along these roads can be expressed in terms of volume-to-capacity (v/c) ratios that, in turn, are qualitatively associated with traffic condition descriptions to define a roadway level of service (LOS). LOS values—A, B, C, D, E, and F—range from "free-flowing" (A; v/c <0.61) conditions to "saturated flow" (F; v/c >1.00) conditions. Key locations near Mather AFB (see Figs. 1.1 and 3.1) and their peak-hour (afternoon/evening) traffic conditions are as follows:

Location	v/c ratio	LOS
Old Placerville Road and Routier Road	0.55	A
Folsom Boulevard and Mather Field Road	0.97	E
Hwy. 50 west off-ramp and Mather Field Road	0.74	C
Hwy. 50 east off-ramp and Mather Field Road	0.77	C
Douglas Road and Sunrise Boulevard	0.35	A

High traffic loads exist at Folsom Boulevard and also at the Highway 50 off ramps; commuter traffic associated with Mather AFB contributes to these traffic levels.

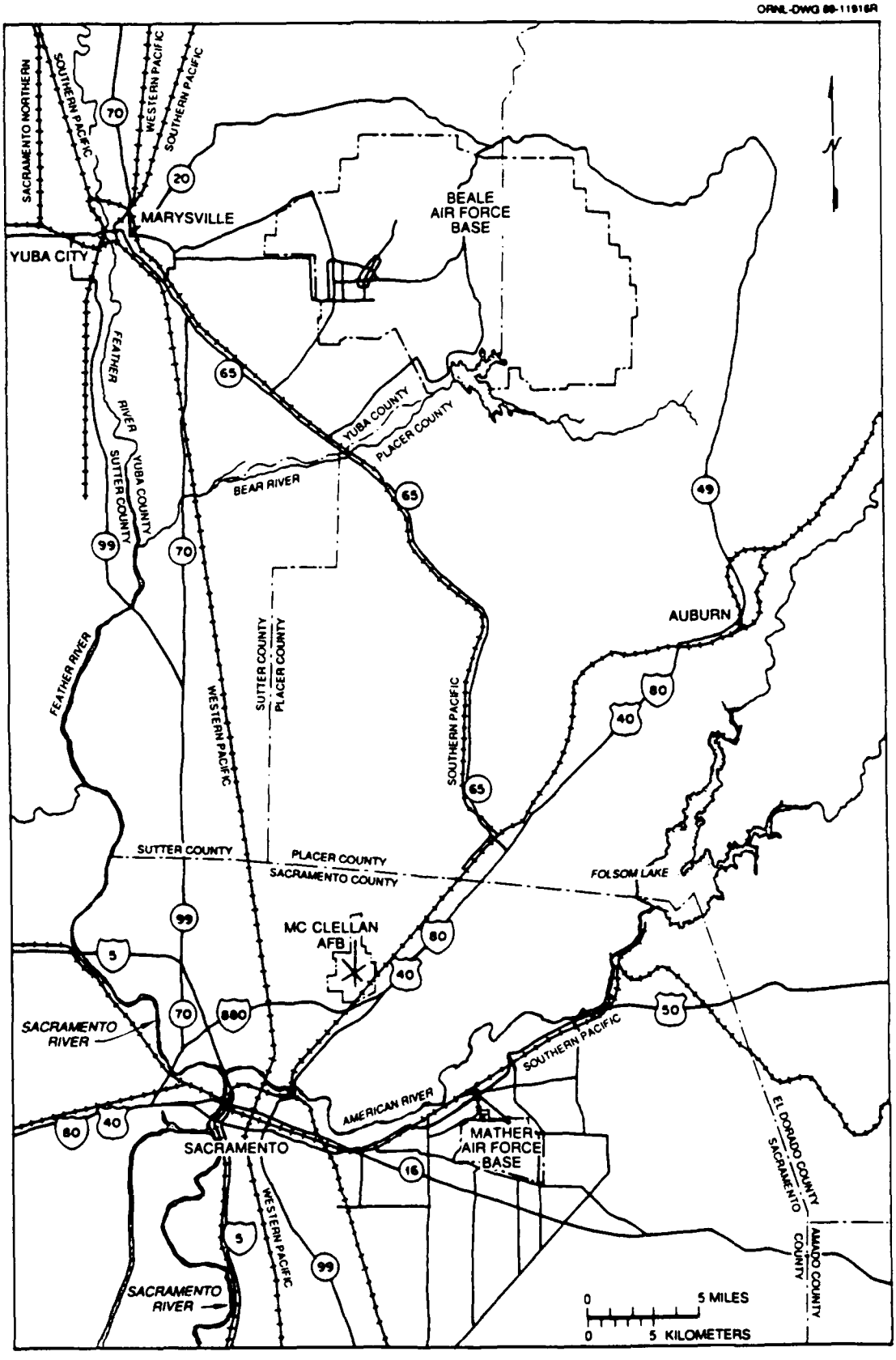

Fig. 3.5 Transportation routes from Mather Air Force Base to Beale Air Force Base and to McClellan Air Force Base.

In addition to v/c ratio and LOS, average daily traffic levels are also of interest. Traffic loading on Route 50 west to Route 5 ranges from about 130,000 to 140,000 vehicles/day on an annual average. At the junction with Route 5 the annual average volume increases to approximately 190,000/day. The annual average daily traffic volume on Route 70 drops drastically as it leaves the Sacramento vicinity to approximately 10,000 at the junction with Route 99 in Sutter County. The proposed route would continue north on Route 70 into Yuba County. Traffic volumes again increase to about 20,000 to 25,000 daily average after joining with the 65 expressway. The daily average traffic volume increases to approximately 48,000 at the North Beale Road Interchange (California Department of Transportation 1988).

Assuming that all personnel employed on base commute to work, and that the number of persons per vehicle is 1.15 (as measured in 1981) [MTMC 1981], then the daily traffic for Mather AFB is about 6600 vehicles.

3.10 ECOLOGY

3.10.1 Riparian Habitat/Vernal Pools

Several drainage ditches that collect storm and surface water runoff from the main base and industrial operations areas discharge into Morrison Creek and constitute riparian habitat. The West Ditch and that portion of Drainage Ditch No. 2 paralleling the runways through the central portion of the base provide about 4 of the total of 6 miles of riparian habitat on the base.

Northern hardpan vernal pools are known to occur in the grassland at Mather AFB (U.S. Bureau of Reclamation 1988) (R. L. Bittman, State of California Department of Fish and Game, personal communication to L. L. Sigal, Oak Ridge National Laboratory, Oak Ridge, Tenn., May 24, 1989). These pools develop in shallow basins that form in flat to hummocky terrain. An iron-silicate soil durapan underlies the pool basins and prevents water infiltration; the nearby level terrain inhibits surface runoff. Saturated soil conditions cause the water table to become exposed because it is "perched" on the durapan. Hence, surface water accumulates in the basins and forms a seasonal wetland. Vernal pools are important wetlands because of their current scarcity relative to historic extent. It is estimated that about 5% of the Central Valley's vernal pools are intact today (U.S. Bureau of Reclamation 1988). They support an ephemeral (i.e., recurrent), often unique flora.

Much of Morrison Creek has been cleared of former riparian vegetation, and some of the vernal pool areas have been ditched or filled in. However, many of these actions took place in the past before the significance of vernal pools was understood, and the existing vegetation growing on the unimproved areas of Mather AFB is generally healthy, vigorous, and supporting the appropriate fauna (U.S. Air Force 1988a).

3.10.2 Vegetation

Mather AFB is located on approximately 5800 acres, of which 2760 acres are unimproved grasslands with few trees and little woody vegetation except along the creek beds. Historically, perennial bunch grass species dominated the area, but these have given

way to a typical annual grassland community composed of wild oats, brome, fillarie, dandelion, and thistles. Coyote bush, thistle, and the grasses provide cover and food for pheasants, quail, and rabbits. Many species of trees, shrubs, ground cover, and grasses have been planted on 503 acres of improved grounds.

Mather Lake supports emergent species common in shallow lakes, such as bulrushes, spike rushes, cattails, and water primrose. Submerged species include pondweed, milfoil, coontail, and stonewort (Vanicek 1986). Vegetation along drainage and in seepage areas usually consists of kale, wild rice, and joint grass.

Vernal pools support recurrent flora dominated by terrestrial annual species, with perennial and aquatic species often contributing significant cover. A succession of patterns is formed throughout the spring as species bloom around the drying pool margins. A number of special-status plant species can occur in this specialized, relatively uncommon habitat. Five such plant species that are peculiar to the vernal pool habitat are identified with an asterisk in Appendix D. They are Boggs Lake hedge-hyssop, Green's legenere, Sacramento orcutt grass, San Joaquin Valley orcutt grass, and slender orcutt grass. Their suspected occurrence at Mather AFB is based on species habitat requirements and distributions and the presence of suitable habitat on the base. Moreover, these plants are found in vernal pools near the base (R. L. Bittman, State of California Department of Fish and Game, Natural Diversity Data Base, personal communication to L. L. Sigal, ORNL, May 24, 1989).

3.10.3 Fauna

A fish and wildlife management program for Mather AFB was initiated in 1958. A cooperative agreement was established in 1964 among Mather AFB, the California Department of Fish and Game, and what is now the U.S. Fish and Wildlife Service. The 1985 to 1990 update of this program was signed in 1985 (Crowl 1985). Its purpose is the protection, development, and management of the fish and wildlife resources at Mather AFB. This report lists 20 mammal, 60 bird, 9 reptile, and 3 amphibian species for the base. Most of the predatory birds (raptors) are transient, rarely nesting on the base because of the limited number of trees. Raptors that are considered residents include barn, burrowing, short-eared, and horned owls. Game species include black-tailed jack rabbit, audubon cottontail, ring-necked pheasant (stocked), mourning dove, California quail, and some waterfowl.

Morrison Creek and Mather Lake provide important habitat for both fish and wildlife. The lake is a haven for various waterfowl, such as ducks, geese, cranes, and gulls, but it does not support large numbers for any length of time. However, several thousand coots are semipermanent residents, with the population size varying from month to month. Herons and other wading birds are attracted to the shallow shoreline with its large numbers of minnows and other small fish. The lake has been stocked with largemouth bass, bluegill, redear sunfish, and channel catfish by the California Department of Fish and Game (Vanicek 1986).

Hunting and fishing by permit is allowed for active duty and retired military, their dependents, and DOD civilians assigned/attached to Mather and McClellan AFBs.

Special-status wildlife species that may occur at Mather AFB are listed in Appendix D. Suspected occurrence of six of the species is based on the availability of suitable habitat on the base. Of particular interest are the burrowing owls that nest on the base. A survey of developed areas on base identified several burrowing owl nesting locations (Fig. 3.6). The Mather AFB Fish and Wildlife Management Plan (Crowl 1985) discusses protection and management measures for the owls. These measures include location and mapping, and habitat improvement [i.e., mowing to provide short grass (7–14 in.) and open areas].

3.10.4 Special-Status Plant and Wildlife Species

No federally listed plant or animal species are currently known to exist on Mather AFB [G. C. Kobetich, U.S. Fish and Wildlife Service, Sacramento, Calif., letter to L. L. Sigal, Oak Ridge National Laboratory, Oak Ridge, Tenn., Apr. 18, 1989 (see Appendix F)]. However, a number of special-status plant and wildlife species are reported in the area of Mather AFB, including the threatened valley elderberry, longhorn beetle, and 15 candidate species for federal listing (see Appendix D). All of the species are of special interest to the California Department of Fish and Game (D. E. Warenycia, State of California Department of Fish and Game, Nongame Heritage Program, Sacramento, Calif., personal communication to L. L. Sigal, Oak Ridge National Laboratory, Oak Ridge, Tenn., Mar. 7, 1989 and May 23, 1989; R. L. Bittman, State of California Department of Fish and Game, Natural Diversity Data Base, Sacramento, Calif., personal communication to L. L. Sigal, Oak Ridge National Laboratory, Oak Ridge, Tenn., May 24, 1989). Some of these species are naturally rare, such as those that occur in specialized habitats, e.g. vernal pools. Others were historically widespread in the Central Valley of California, but are rare today because of habitat reductions because of land conversion for agricultural and urban uses.

In the absence of a systematic survey of Mather AFB, the possible occurrence and distribution of these plants and animals on the base are unknown.

3.11 SOCIOECONOMICS

The Sacramento Metropolitan Statistical Area (MSA) consists of Yolo, Placer, Sacramento, and El Dorado counties. Population statistics for the other areas in the MSA also show significant growth rates. The 1985 population (and growth rate from 1980 figures) is as follows: Yolo County, 129,298 (14%); Placer County, 135,965 (15.9%); El Dorado County, 100,515 (17.1%); Sacramento (city and county), 878,710 (12.1%).

The diversified nature of the local economy has contributed to the current economic health of the Sacramento County area. More than 40% of all jobs are held by trade and services workers; government provides another 33%. Food processing is the most important manufacturing industry; the ready availability of major transportation facilities enhances such commercial activity. Area land used for agriculture is predominantly devoted to field crops. Pears, grapes, and tomatoes are the most commercially valuable crops.

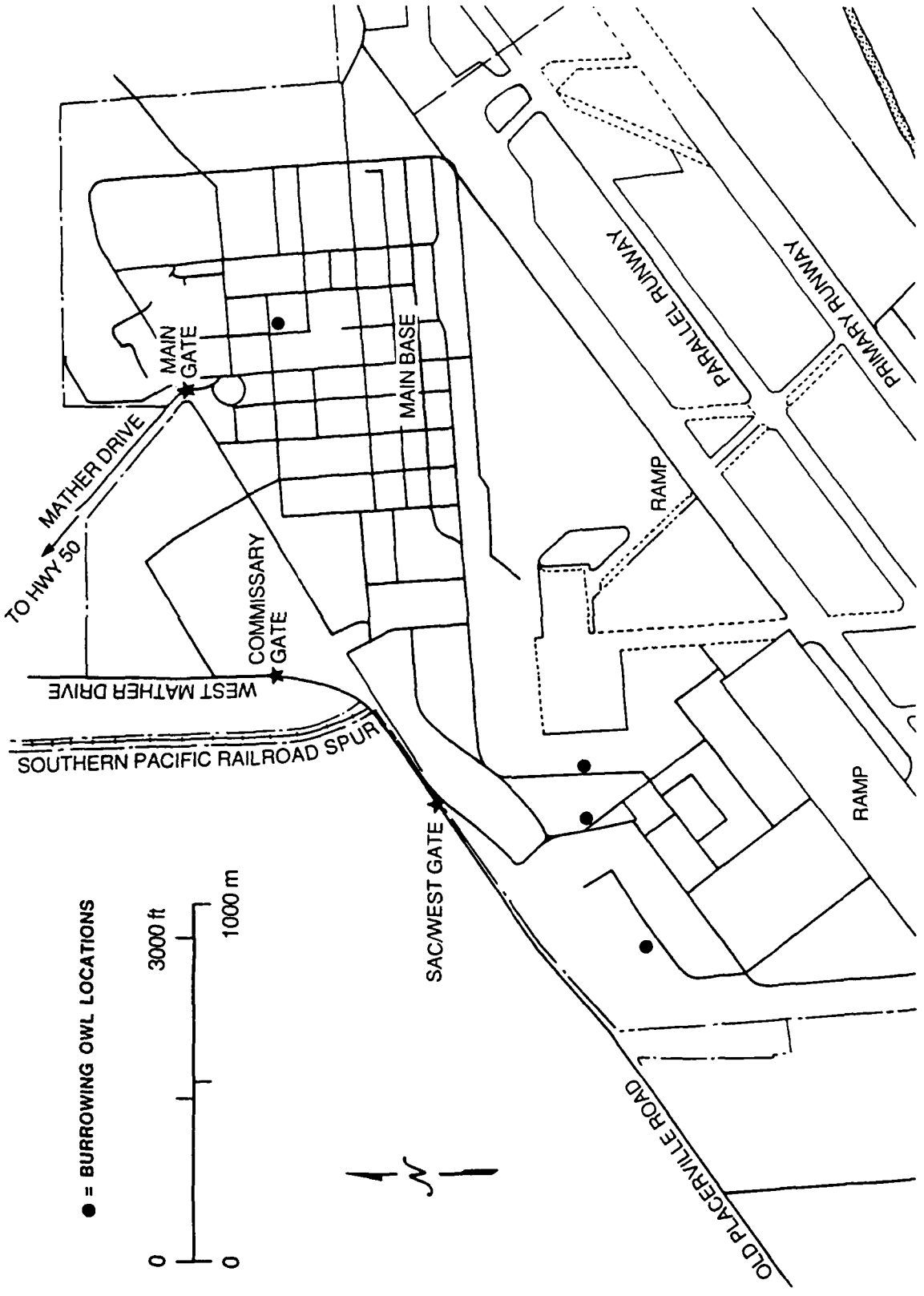

Fig. 3.6 Locations of Burrowing Owl sitings on Mather Air Force Base.

Recreational sites on Mather AFB include Mather Lake, a golf course, the Mather Rod and Gun Club, the Mather Circle M Riding Club, hunting, picnicking, hiking trails, and locations for Boy and Girl Scout troop activities. These recreational sites are made available to the public to the greatest extent allowed by military, environmental, and safety concerns. Off-base recreation locations include the American River Parkway, Nimbus and Folsom lakes, and ski resorts within 100 miles of the base.

3.12 CULTURAL RESOURCES

The goal of historic preservation at Mather AFB is to document, preserve, and enhance the historical perspective of those who live on, work at, or visit Mather AFB.

The objectives of the Historic Preservation Plan are to

- document, preserve, and enhance the historical perspective concerning the way of life of the Native Americans, Spanish and Mexican explorers, and later the Euro-American settlers within the Mather AFB environs;
- document, preserve, and enhance the history of military development at Mather AFB; and
- encourage an education program that examines the history of Mather AFB from the time of the Native American settlements to the present, to be managed by the Base History Office.

Mather AFB is located in the center of the portion of the Rio de los Americanos Land Grant on the south side of the American River. Any archeological sites that may have existed at the time of the arrival of Europeans have long since been destroyed. There are no records of burial grounds on the Mather AFB property, but there are ancient camps and burial grounds on the north and east sides of the base. However, these sites are not as well preserved as similar finds in Colorado, New Mexico, and Arizona. Gold mining in the vicinity of Mather AFB used floating dredges that moved several hundred tons of sediment per day. Vast areas of tailings (refuse materials from the dredging process) have replaced the natural landscape. The tailings are found within one-quarter of a mile on the north and one-half to three-fourths of a mile on the east of the base boundaries. Many of the areas covered by tailings have been leveled and new construction is occurring on them.

The Historic Preservation Plan for Mather AFB was completed in June 1985 by contract with the Archeological Study Center, California State University, Sacramento, California. The survey team's purpose was to complete an intensive cultural resources inventory of Mather AFB. The study and report were to comply with Headquarters (HQ) USAF and HQ ATC policy directives on Historic Preservation. The survey was conducted between April 23 and May 20, 1985.

No evidence of any historic or prehistoric sites was found at Mather AFB during this survey (McIvers 1985). In addition, the real property records for the base (which list all structures and construction dates) indicate that the oldest building on base is 47 years old, thus indicating little potential for buildings or structures at Mather AFB to be of potential historical significance (i.e., greater than 50 years old). Buildings dating from the World War II period may be subject to the 1986 Programmatic Agreement among the Department

of Defense, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Offices for the identification and evaluation of World War II temporary buildings. At the time of this FEIS, no such structures had been identified; however, the U.S. Air Force is conducting continuing discussions with the California Office of Historic Preservation to identify and evaluate such buildings.

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4. ENVIRONMENTAL CONSEQUENCES

Impact analyses in this section focus on the assumed closure scenario as defined in Section 2.1. Assumptions on which this scenario is based are presented in Appendix H.

4.1 MISSION AND OPERATIONS

Implementation of closure would change the mission of Mather AFB and would decrease the operations on base. After closure is implemented and before reuse begins, the primary USAF activity at Mather AFB would be the 940th AREFG, whose principal mission is to support the Strategic Air Command (SAC) in its overall worldwide refueling mission and to provide SAC with a fully qualified west coast tanker force in the event of a national crisis. If reuse of Mather AFB includes a commercial airport, then the 940th would remain at Mather AFB. Some new construction would be undertaken to consolidate operations, install fencing, and isolate utilities; the extent and location of any such construction will be determined after decisions on specific reuse options have been made. Potential impacts of the 940th's remaining at Mather AFB after decisions on reuse options have been made will be addressed in the Reuse EIS. If reuse does not include a commercial airport, then the 940th would move to McClellan AFB, about 10 miles northwest of Mather AFB.

Aircraft operations at Mather AFB would be significantly reduced due to closure. As shown in Section 3.2, aircraft operations of the 940th constitute about 10% of the daily aircraft operations on which the estimated noise impacts are based. Consequently, after closure, daily aircraft operations could be reduced by as much as about 90% from 1989 levels.

The base population would be reduced from current levels of about 7600 military and civilian personnel to about 250 personnel (plus some part-time personnel). A contract caretaker work force would be active on the base to provide maintenance and security. In addition, a small work force would support the ongoing IRP. It is estimated that the total base population after closure would be about 5–10% of that present before closure.

4.2 NOISE

Air and ground transportation activities would be expected to increase during the scheduled period of the proposed closure action. The closure action would result in 39 plane flights from Mather AFB to Beale AFB. However, assuming these flights are spread out over 11 months, the average daily aircraft activity at Mather AFB should not significantly increase, and the noise footprint shown in Fig. 3.2 should not measurably increase due to this activity.

Transporting equipment and personnel from Mather AFB may generate noise along the transportation corridors. Because the incremental average daily traffic added to the routes from Mather AFB to Beale AFB and from Mather AFB to McClellan AFB would be small, the movement of personnel and equipment should have a negligible impact on current noise levels along the routes. To mitigate possible adverse noise impacts to residential areas, moving activities would be conducted from 7 a.m. to 7 p.m. whenever practicable. Transportation during times of high traffic loads (e.g., rush hours) would be avoided.

Under the assumed closure scenario, the noise impacts associated with Mather AFB operations would be reduced because the only assigned flying mission would be that of the 940th AREFG. Consequently, the noise footprint would be smaller and fewer acres of land would be exposed to significant noise levels. Noise contours expected to result from aircraft operations for Mather AFB after closure were generated by the Air Force Engineering Services Center using the methodology described in Section 3.2. Figure 4.1 shows the noise footprint for only the 940th AREFG operations at Mather AFB. Total area within the 65 dB contour is about 3100 acres, a reduction of about 90% from the area within the 65 dB contour for full operation (1989) at the base. For the most part, the surrounding land uses would be compatible or conditionally compatible with noise levels generated by reduced operations at Mather AFB after closure. Future use of the base may include a commercial airport with associated aircraft activity (civilian and military). For these reasons it is recommended that no changes in local land use be implemented until a decision on reuse is made.

4.3 LAND USE

Carrying out the withdrawal of personnel, equipment, and supplies from Mather AFB would not change current land use on base, nor would it affect off-base land use in the vicinities of Mather, McClellan or Beale AFB's. However, land use could change after closure due to a change in aircraft activity.

Air safety, noise, and obstruction are the principal AICUZ criteria affecting off-base land use. As noted in Section 3.3, Mather AFB operations have extensive effects on the use of lands outside the base, especially within the control zones (CZ's) and accident potential zones (APZ's). Land use around Mather AFB is influenced by AICUZ guidelines (Appendix B) on the types and densities of developments that should occur within each area. Furthermore, the Air Force owns the area within the CZs where no development is permitted.

Reduced aircraft activity at Mather AFB would affect the three AICUZ criteria. The potential for aircraft accidents, as measured by the rate of occurrence of a Class A mishap (an accident causing more than $500,000 in damages, a fatality, or destruction of aircraft), should decrease considerably after closure. The Class A mishap rate for base operations after closure would be reflected primarily by that of the KC–135, which is about 60% of the rates for the B–52 and T–37 aircraft; in 1989, these latter two aircraft types represented about 53% of daily operations at Mather AFB (Section 3.2). After closure, the number of flying hours at Mather AFB would also be reduced. These factors combined should reduce the potential for a Class A mishap, and thus reduce accident potential. Also, as described in Section 4.2, the noise footprint for the base would decrease in size. Reduced aircraft activity would also reduce the need for height and obstruction criteria in the surrounding community. These changed AICUZ factors could result in changes in zoning to allow additional development, thereby affecting off-base land use. Future land use in the Mather AFB vicinity is expected to be generally residential and agricultural, which is not a significant departure from current land use. However, it is strongly recommended that any post-closure changes in zoning and land use be made after specific reuse options have

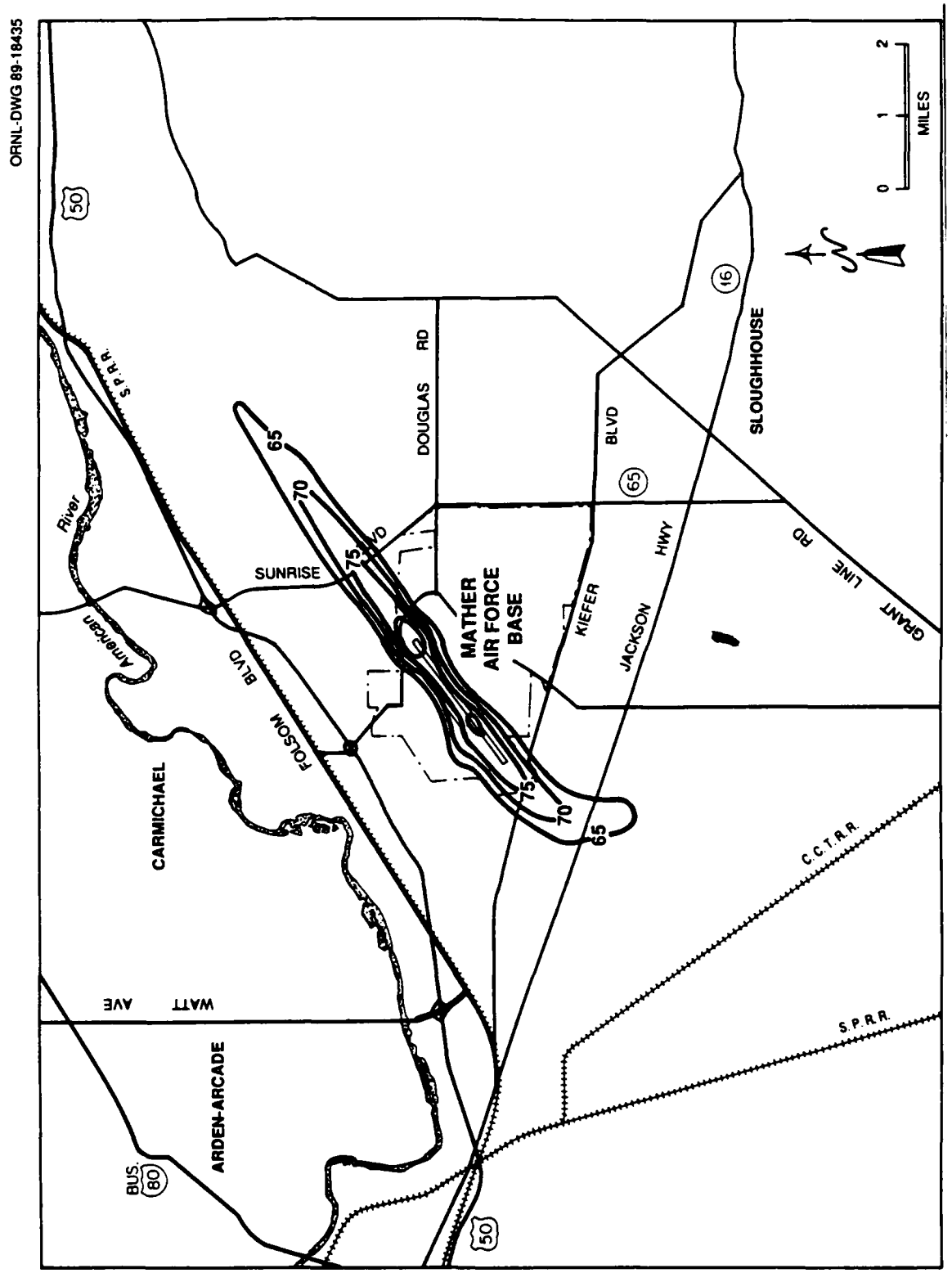

Fig 4.1 Average day-night level (Ldn) noise contours for Mather Air Force Base operations with only the 940th Air Refueling Group.

been decided. Potential impacts from such changes would then be addressed in the Reuse EIS.

4.4 ENERGY USE

The principal energy use resulting from implementing closure would be diesel fuel for transport vehicles. As estimated (Appendix H), approximately 2260 truck trips would be required to move the 323rd FTW operations to Beale AFB. At about 120 miles per truck trip (round trip) the total truck distance travelled for the move would be about 135,600 miles (Section 2.1). An average fuel mileage rate of 5.5 mpg for moving materials and equipment by truck (ORNL 1985) indicates that moving the 323rd FTW's materials and equipment from Mather AFB to Beale AFB would require about 25,000 gal of diesel fuel. The conservative fuel mileage rate for military buses carrying 16 or more passengers is 5.0 mpg (ORNL 1985). Sixty-one repetitions of the 120-mile round trip distance at 5.0 mpg would require approximately 1500 gal of diesel fuel. Movement of supplies and equipment to the DRMO at McClellan AFB would result in consumption of about 200 gal of diesel fuel. Therefore, the total estimated one-time use of diesel fuel for conducting the closure is about 26,700 gallons, which is 25–30% of the annual estimated diesel use at Mather AFB in 1988 (Section 3.4).

Transporting gasoline-powered U.S. Air Force and personal vehicles to Beale AFB would require an estimated 10,000 gallons of gasoline, assuming an overall average fuel mileage rate of 15 mpg (Homberger, Keefer, and McGrath 1982). This one-time energy use would be about 5% of the 1988 gasoline use at Mather AFB (Section 3.4).

Flight operations to move the aircraft from Mather AFB would be a small fraction (less than 0.1%) of total flight operations for Mather AFB. Therefore, the JP-4 needed to move the 39 aircraft to Beale AFB would be an insignificant fraction of the 1988 JP-4 consumption at Mather AFB.

Closure of Mather AFB would result in reduction of current base energy use patterns [primarily hydrocarbon fuels (JP-4, diesel, gasoline, and natural gas) and electricity]. The energy use associated with the 323rd FTW would be transferred to Beale AFB, and the remaining energy use at Mather AFB would be due to small energy needs associated with operations of the 940th AREFG, with base security and maintenance, and with IRP activities. The decrease in hydrocarbon fuel use due to the Mather AFB closure is expected to represent a minor net energy savings to the region. Diesel and gasoline use after closure should be about 10% of that before closure, assuming use is proportional to the assumed remaining number of personnel. JP-4 use should be about 28% of current levels, assuming future use for the 940th AREFG parallels 1988 totals, after adjustment for the increased number of KC-135E aircraft. An approximate 10% reduction in electricity use is expected, and would result in minor electricity supply savings [electricity used by Mather AFB typically represents less than 1% of the total electricity supplied by the SMUD (see Section 3.4)]. This minor decrease in electricity use would be beneficial in that it would reduce the electricity purchased by the SMUD to meet current demands (EIA 1988).

4.5 AIR QUALITY

Diesel powered tractor trailer rigs used to transport all personal belongings, equipment, and materials from Mather AFB to Beale AFB (approximately 60 miles) would emit hydrocarbons (HC), carbon monoxide (CO), and NO_x. Under the "worst-case" assumption that 135,600 miles by truck and 7,300 miles by bus are required to accomplish the move, and using the same emission rate for both trucks and buses, the estimated air pollutant emissions would be about 2,300 lb CO, 800 lb HC, and 3,500 lb NO_x (spread over the assumed 11-month period). These amounts are insignificant fractions (less than 0.01%) of current estimated mobile source emissions in Sacramento County, and thus would have a negligible effect on air quality. Given the much shorter distance from Mather AFB to McClellan AFB, air emissions for transporting materials to the DRMO at McClellan AFB, and their associated potential impacts, would be even less.

The short-term air quality impacts from implementation of closure are anticipated to result only from emissions from transport vehicles. No demolition of existing structures (potential fugitive dust source) is anticipated. Additionally, all hazardous materials to be removed will be in closed drums or other air-tight containers. The slight increase in mobile source (transport vehicle) emissions during the implementation period should be offset by the concurrent decrease in emissions due to reduction of normal base operations. To minimize the number of truck trips (and associated air emissions), trucks will be loaded to their rated capacity whenever possible. Also, transport activities will be minimized during episodes of high ozone levels.

After the base is closed, air pollutant emissions from Mather AFB would be reduced by 85–92% (Table 4.1), reflecting operations of only the 940th AREFG, the caretaker service, and IRP activities. Emissions from aircraft, ground vehicles, operations, heating, employee commuting, and other sources would be reduced. As shown in Section 3, Mather AFB emissions make up small proportions of the county-wide total annual emissions (0.1–3%). Reduction of these emissions to levels indicated in Table 4.1 would slightly improve the regional air quality. The reduction in carbon monoxide emissions is especially desirable because currently a portion of the county is in a nonattainment status.

Some of the civilian and military employees at Mather AFB may remain in the Rancho Cordova area. The pollutant emissions associated with these persons (e.g., vehicular pollution from commuting or pollution associated with home heating) in these cases would persist and would thus lessen the beneficial impacts postulated from a reduction in emissions. Given the estimated small number of persons involved, effects are likely to be minor.

4.6 WATER RESOURCES

The reduction in operations at Mather AFB would reduce the volume of wastewater by an estimated 75-80%; flows after closure would thus be about 0.19×10^6 gal/year. Since Mather AFB's contribution is less than 1% of total flows currently treated at the regional treatment plant receiving Mather AFB's effluent, the beneficial impacts should be minor. Reduction in operations would also reduce the potential for spills of petroleum products (e.g., JP-4 jet fuel, gasoline, diesel) and hazardous materials, with their associated potential

Table 4.1. Estimated air emissions for Mather Air Force Base after closure[a]

Pollutant	Estimated Mather AFB emissions after closure (tons/yr)	Percent of 1988 Mather AFB total[b]	Percent of County total[b]
carbon monoxide	201	10%	0.1%
hydrocarbons	130	12%	0.3%
nitrogen oxides	36.8	9%	0.1%
sulfur oxides	4.1	15%	0.2%
particulates	3.9	8%	0.01%

[a]Based on operation of only the 940th AREFG and caretaker and waste cleanup activities.

[b]See Table 3.2.

effects on surface waters. Closure of Mather AFB would also result in a minor beneficial impact on groundwater resources in the Sacramento County area through a slight reduction in the quantity of groundwater withdrawals. Current water resource impacts of the 323rd FTW would be transferred to Beale AFB, which has a different regional water resource than Mather AFB. Closure of Mather AFB also has the potential to improve groundwater quality by reducing the potential for spills and leaks of petroleum products and hazardous materials.

The Air Force has maintained Mather Lake as a viable recreational and wildlife resource by regularly pumping water to maintain its present level. Cessation of pumping would result in about a two-thirds decrease in the size of the lake; however, the USAF plans to continue maintenance of the lake level until the property is transferred to civilian hands.

Although some floodplain areas are present at Mather AFB, implementation of the closure action is not expected to significantly affect the floodplains or floodplain values (see Section 3.6). The areas of expected high activity during withdrawal actions are not located in the floodplain, and there will be no construction/demolition activities to affect floodplains or their values. Potential impacts to floodplains and floodplain values should be minor and beneficial given the reduction in base operations.

4.7 WASTE MANAGEMENT

The Sacramento County Landfill is the site of disposal of solid wastes produced at Mather AFB. Packing activities typically result in a temporary increase in solid waste production due to the discarding of unwanted materials, and the same should be expected as the closure and move activities at Mather AFB are implemented. If the total weight of waste generated during the move was 1% of the total weight of materials moved (over the assumed 11-month time frame), the waste (100 tons) would be about 2% of current levels generated by Mather AFB, and thus would have an insignificant effect on the life of the landfill.

Closure of Mather AFB would result in a slight beneficial impact due to the reduction of solid waste disposed of at the county landfill. Solid waste production after closure (from continued operation of the 940th AREFG) would be less than 10% of current base levels. Because Mather AFB's contribution to the total waste received at the county landfill is typically less than 1% on an annual basis, impacts are expected to be negligible.

The closure process itself is not expected to generate significant quantities of hazardous waste; as described in Section 2.1, hazardous materials in storage (including flammable and combustible liquids, acids and other corrosive substances, compressed gases, lubricating oils, hydraulic fluids, solvents, paint thinner, pesticides, fungicides, herbicides, rodenticides, and vehicle and aircraft fuel) are planned to be used to the maximum extent practicable, and thus represent minimal potential for becoming hazardous wastes.

Minor beneficial impacts would result from reduction of current hazardous waste disposal activities in accordance with permits. Since all PCB-containing items would be removed from Mather AFB under the assumed closure scenario, potential effects from the use and storage of PCBs would be eliminated from the immediate vicinity of Mather AFB. To the extent that it is present in existing structures in good condition, asbestos would remain at Mather AFB but would represent little potential for adverse environmental impacts. Any asbestos at Mather AFB awaiting disposal would be removed before closure is completed, and thus would not represent a source of potential impacts. Buildings at Mather AFB containing asbestos will be maintained so that they do not constitute a health hazard. Appendix J presents the Air Force Policy for management of asbestos at closing bases. Pathological wastes awaiting disposal would be removed before closure is completed and disposed of under contract in accordance with regulations and standards. All process-related hazardous wastes would be removed from Mather AFB at least 30 days before closure is complete, and disposed of through a contractor, in accordance with applicable laws and regulations. After closure, operations of the 940th AREFG would generate hazardous waste at a rate of about 7500 lb/year, which is about 7.5% of existing levels. These wastes would be disposed of by contractor in accordance with regulations and standards.

4.8 INSTALLATION RESTORATION PROGRAM

Current Installation Restoration Program (IRP) activities directed at cleanup of past hazardous waste disposal sites (Appendix G) would continue at Mather AFB after the base is closed. IRP remedial investigation/feasibility studies and subsequent remedial action will continue until cleanup is complete.

Closure would result in little potential for adversely affecting cleanup of hazardous waste sites under IRP. Since an approved work plan for the cleanup is not available, information on the timing, nature, and extent of cleanup operations is not available for evaluation. However, most of the IRP sites are located away from base housing and the main base area, where the heaviest activity of packing and moving is expected, and thus there is little potential for closure to adversely affect activities at these sites. IRP activities will continue in accordance with state and federal laws and regulations designed to protect worker health and public health.

After closure, a reduction in groundwater use at Mather AFB could change the existing groundwater regime, with possible resultant impacts on the design and implementation of cleanup activities. The potential for such an impact would depend upon the timing of the groundwater monitoring and on the timing and extent of reuse of the base (i.e., if the base becomes a civilian airport shortly after closing, there may be little impact). If a major change in groundwater movement does occur, appropriate corrective actions will be taken. After closure, a caretaker service will maintain base security to restrict public access. Some portions of the base may be restricted within the base in the long term to keep nonessential personnel from exposure to either mechanical hazards (operating cleanup equipment) or environmental hazards.

4.9 TRANSPORTATION

Implementing the closure would result in additional vehicle traffic (usually expressed as average daily traffic, which is the average number of vehicles passing a given point per day). Average daily traffic loads, assuming all vehicle trips are spread uniformly over the 11-month closure period, would be about 14 for the move from Mather AFB to Beale AFB, and about 0.24 for the move from Mather AFB to McClellan AFB. The traffic from the trips to Beale AFB and to McClellan AFB would be less than 1% of average daily traffic for key intersections located along the routes, assuming that the moving activities are spread out over 11 months. In the event that the truck shipments to Beale AFB would need to be completed in a shorter time, the average daily traffic from the activity would increase, but is likely to remain insignificant. For example, if all truck trips to Beale AFB were accomplished in two weeks, the incremental traffic loading would still be about 1% of the current levels at key intersections. All trips to Beale AFB would be mainly on interstate highways or U.S. highways. Movement of equipment and supplies to McClellan AFB would likewise produce only minimal impacts on transportation systems. Although the additional traffic could, at some locations, contribute to existing congestion, the potential effects would be temporary and minimal. The timing and routes of the transportation activities would be adjusted to minimize interaction with congested areas at key commute times.

Accidents could occur during truck transport associated with the action. In 1987 the accident rate for heavy trucks was 1.2 accidents (fatal and nonfatal) per million miles traveled (NSC 1988). Using this rate, there would be a 0.16 probability of an accident involving a truck during the entire move operation to Beale AFB. The 66 truck trips for moving materials to be excessed at the DRMO at McClellan AFB would result in a total of about 1,122 miles. This assumes that all cargo is hazardous, thus requiring trucks to use the long route (23 miles) when full and the short route (11 miles) when empty. The estimated

probability of accident occurrence for the entire move would then be about 0.0013 using the previously stated accident rate. Accidents involving hazardous materials have the potential for environmental impacts of greater severity than accidents involving movement of personal belongings and equipment. To minimize the potential for adverse impacts, all hazardous materials shipments would be done in accordance with applicable laws and regulations (Section 1.4).

Closure of Mather AFB is estimated to result in about a 90% reduction in daily worker commute trips in the Mather AFB vicinity. Assuming that the occupancy rate of vehicles entering Mather AFB is 1.15 [as measured in 1981 (MTMC 1981)], then there would be about 662 daily worker commute trips after closure in support of activities of the 940th AREFG and other on base activities. This level of traffic reduction would represent a beneficial impact in that some of the key intersections near Mather AFB are approaching capacity. However, impacts should be minor because the estimated Mather AFB traffic loads are only 1% of current traffic (Section 3.9). Reduction in deliveries of supplies to Mather AFB would also reduce traffic levels and help improve flow.

4.10 ECOLOGY

Withdrawal of personnel, equipment, and supplies from Mather AFB would not result in any construction or demolition activities, nor would it be expected to produce any liquid effluents. For these reasons, implementation of the action would have little potential to affect ecological resources. Withdrawal actions are expected to be confined to the main base, housing area, and roadways and runways, and thus should not adversely affect vernal pools, Mather Lake, or burrowing owl habitat. Air pollutant emissions from transportation equipment are small compared to existing Mather AFB emissions and to current estimated Sacramento County emissions, and should also have minimal effects on ecological resources.

Cessation of pumping of Mather Lake would allow water levels to fluctuate with the wet and dry seasons. These changes would decrease the recreational value of the lake and the numbers and the species of fish in the lake due to overcrowding of the fish and changes in depth and temperature of the lake during the dry periods. In addition, the lake would no longer support as many migrating waterfowl, wading birds, and coots. However, the Air Force will continue to maintain the lake level until the property is transferred into civilian hands.

After closure, habitat improvement activities (Sect. 3.10.3) for the burrowing owl would be discontinued, and the resulting impacts on the species are uncertain. However, there is evidence that burrowing owls nest in areas of high grass (as well as short grass and open areas) (B. Johnson, University of California, Department of Zoology, Berkeley, Calif., personal communication to L. L. Sigal, Oak Ridge National Laboratory, Oak Ridge, Tenn., February 2, 1990). Also, because of decreased activity, closure of Mather AFB could result in potential benefits to the burrowing owl populations in the short term by increasing numbers of species for prey (e.g., rodents, small mammals, etc.). Some impacts to this California species of special concern might be expected if habitat conditions change due to reuse of the base.

The area(s) of the base where vernal pools and burrowing owl habitat may be found would be protected from development (by a caretaker service) after closure and before the property is transferred from the U.S. Air Force.

4.11 SOCIOECONOMICS

An EIS is required to discuss socioeconomic effects only when such effects are interrelated with natural or physical effects. During preparation of this EIS, the Air Force considered whether there might be any indirect biophysical effects that could be attributed to socioeconomic impacts. No such effects or interrelationships were found. Therefore, it was not necessary for the completeness of the environmental analysis to forecast socioeconomic consequences, and this EIS does not attempt to do so.

However, the Air Force is sensitive to the community upheaval caused by changes in employment when an Air Force base is closed. Therefore, the Air Force is working with the Office of Economic Adjustment to assist those communities expected to be hardest hit as a result of base closure.

Also, a second EIS, including the consideration of community reuse, will be prepared to cover the Air Force's proposed final disposition of the base property. The second EIS will include a study of the overall effects of base closure on socioeconomic factors. This study will include (for example) anticipated loss of tax revenues, housing and school impacts, and the loss of employment from base closure as if there were no positive benefits from reuse. These elements will then be compared to the gains expected as a result of the reuse options for the base. The impacts, both positive and negative, will be discussed in the second EIS to help the Air Force in its decision making with respect to disposal and reuse. Such analysis will be less speculative than it would be were it undertaken today, since an important component, developed reuse options including a community reuse plan, will then be available.

The OEA, located in the Office of the Assistant Secretary of Defense, provides the chief staff arm for the President's Economic Adjustment Committee (EAC). The EAC, consisting of federal department and agency heads, was established under Executive Order 12049 on March 27, 1978, to bring to bear the resources of various federal agencies in assisting communities affected by base closures.

One of OEA's activities is to assist these communities in developing and implementing a comprehensive economic recovery program. The EAC then affords priority assistance to community requests for federal technical assistance, financial resources, excess or surplus property, or other requirements that are part of this program.

Economic adjustment programs have been initiated in the communities affected by the Commission on Base Realignments and Closures. OEA is providing impact planning grants where required for community base reuse plans.

4.12 CULTURAL RESOURCES

Given the low potential for historical resources to be present on base (including buildings and structures), and due to the nature of the action (i.e., no planned construction or demolition), closure of Mather AFB would have little potential for initial or residual impact on cultural and historical resources (see Appendix F).

4.13 CUMULATIVE IMPACTS

Potential short-term impacts from this action may occur in the areas of energy use, air emissions, traffic, and noise generation associated with packing, dismantling, and moving current operations. Such effects are likely to be insignificant when considered in the context of existing impacts from other sources in the region of influence of Mather AFB, and when considered in the context of the time frame (11 months) over which they are expected to occur.

Potential long-term effects to the biophysical environment are primarily beneficial due to the reduction of emissions, effluents, traffic, and energy use. For the impact areas of ecology, water resources, traffic, energy use, solid waste, and localized air quality problems such as high carbon monoxide levels, Beale AFB can be generally assumed to be located outside of the region of influence of Mather AFB, thus offering little potential for cumulative impacts (i.e., impacts are transferred from one region to another rather than "accumulating" in a given region). For regional pollution problems such as high ozone levels, the same affected region may experience a very small net decrease in ozone levels due to this action.

Long-term cumulative impacts may result from the reuse of Mather AFB. These impacts will be addressed in the EIS addressing reuse of Mather AFB [*Fed. Regist.* 54, 6256 (Feb. 8, 1989)].

One potential residual cumulative impact is that reducing operation of Mather AFB's production wells may affect water levels in groundwater monitoring wells associated with the clean-up activities. A sufficient amount of groundwater data collected before and after closure will allow understanding of the potential effects of Mather AFB's production wells on groundwater, and cleanup activities can be designed accordingly. If reuse of Mather AFB is deferred or delayed for only a brief time period, the net effect of closure on the groundwater regime would be minimal, with correspondingly minor effects on hazardous waste cleanup. If major changes in groundwater behavior result from the reduced pumping associated with closure, then corrective actions will be taken. The Air Force is committed to conducting cleanup activities in accordance with plans approved by federal and state regulatory agencies.

4.14 MITIGATION

Mitigation measures to reduce the impacts of closure on wetlands and plant and wildlife species depend on preliminary investigations to locate and describe the resources. Available information on the distribution of the burrowing owl nest sites and location and value of the vernal pools could be used by the new owners to develop a management plan to aid decisions involving habitat protection, manipulation, and future land use. A constant water level would be maintained in Mather Lake by continued pumping during the dry season. The lake is a valuable resource for wildlife and recreation. Restricted access to areas of burrowing owl habitat and vernal pools would be maintained by a caretaker service until the property is transferred from the U.S. Air Force. An overall management plan should be developed by the new owners to preserve and enhance the wetlands, wildlife, and plants and to ensure their protection when the base is no longer a military reservation. The

U.S. Environmental Protection Agency (U.S. EPA) recommends preservation and enhancement of existing wetland and riparian resources. The Agency suggests that the Air Force consider the transfer of sensitive or valuable habitat and natural resources to resource agencies in order to optimize environmental benefits (J. Wyland, Chief, Office of Federal Activities, U.S. Environmental Protection Agency, personal communication to Lt. Col. R. Voorhees, U.S. Air Force, April 5, 1989).

To mitigate potential impacts on residents in the vicinity of Mather AFB from noise of moving operations, the U.S. Air Force would conduct operations during daylight hours whenever practicable.

The U.S. Air Force would establish transportation routes and timing to minimize adverse contributions to areas of high traffic loads.

Closure activities would be carried out over at least an 11-month period to distribute over time potential effects from withdrawal of personnel, equipment, and supplies.

After closure and before reuse, the U.S. Air Force would maintain structures on Mather AFB that are found to contain asbestos to ensure that they have not become damaged during severe weather, and thereby exposed the environment to asbestos. Disposable asbestos will be moved before closure.

To minimize energy use by and air pollutant emissions from transport vehicles, vehicles will carry safe capacity loads. Transport vehicle activity will be minimized during episodes of high ozone levels.

4.15 UNAVOIDABLE ADVERSE IMPACTS

Most of the avoidable impacts associated with the action are primarily beneficial due to the reduction of emissions, effluents, and solid wastes. Implementing the action would result in the following minor unavoidable adverse impacts:

- A temporary increase in noise would be expected due to increased air and ground transportation associated with closure.
- Implementation of closure would result in a temporary decrease in air quality as a result of the increased air and ground transportation required by closure.
- Increased traffic would result from transporting materials to Beale AFB and to McClellan AFB.
- A temporary increase in solid waste is expected due to the consolidation of materials for packing and due to the discarding of materials not planned for relocation to Beale AFB or for excessing through the DRMO at McClellan AFB.

4.16 RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

Typically, a "short-term use" involves the construction and operation of a proposed facility over a specified time frame. The short-term "use" under evaluation in this EIS is actually a suspension of full operation of Mather AFB. Operation of Mather AFB at a reduced level (i.e., only the 940th AREFG, caretaker service, and IRP activities) offers little

potential to enhance or detract from the long-term productivity of the base. Long-term productivity is most relevant in terms of the potential future uses of the Mather AFB, which will be addressed in the Reuse EIS. Given surrounding land uses and the geologic history of the area, the site of Mather AFB offers potential for agriculture and mineral resource extraction (gold mining). These and other potential uses will be addressed as appropriate in the Reuse EIS.

4.17 IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF RESOURCES

There would be a temporary energy use (gasoline and diesel fuel) resulting from the transportation requirements of the closure action. Other minor resources that would be irretrievably committed are landfill capacity and resources used to manufacture packing materials and tires on moving vans. Because there is no construction or demolition planned for the proposed closure of Mather AFB, the potential for irreversible and irretrievable commitments of resources is low.

4.18 REFERENCES

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Oak Ridge National Laboratory (ORNL) 1985. *Data Source Compendium of Non-Residential Transportation Energy Use*, ORNL/TM-9329, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

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APPENDIX A

NOISE METRICS

APPENDIX A - NOISE METRICS

A.1 BASIC ATTRIBUTES OF SOUND

The word noise is in wide use in many fields of technology today, but, limiting discussion to its use in relation to sound, one may define noise loosely as unwanted sound. For our purposes, an acceptable definition of sound is that it is a physical disturbance of the atmosphere that can be detected by the human ear. Factors which influence people's perception of such physical disturbances as "noise" are:

- the magnitude of the sound level,
- the duration of the sound event,
- the number of such events in a given time period (such as a day), and
- the time of day of these events.

The results of this analysis quantify these effects in terms of the noise metrics used in this report. These are described in the following sections.

A.2 A MEASURE OF INSTANTANEOUS SOUND LEVEL

A basic fact of human audition is that the human ear is more sensitive to sound energy at higher frequencies than at lower frequencies (that is, the ear does not have a "flat" frequency response). Furthermore, the ear's relative sensitivity to different frequencies changes somewhat with the level of the sound. This effect, however, is most pronounced at lower sound levels. Any sound level measure that purports to correlate well with people's subjective assessment of the loudness or noisiness of sound must account for this variable sensitivity to differing frequencies.

One early approach for obtaining good correlation between measured sound levels and subjective human response was the introduction of frequency weighting networks in sound level meters.* With origins dating back to the mid 1930s, the A-weighting network is still in widespread international use today. This network discriminates against the lower frequencies and very high frequencies, to which the ear is less sensitive, according to a relationship approximating a person's subjective reaction in terms of loudness at moderate sound levels.

In past laboratory and field studies, it has been found that people make relative judgments of the "loudness," or the "annoyance" or "disturbance" of sounds that correlate quite well with the A-scale levels of those noises. However, a change of 10 dB in the A-level corresponds roughly to a subjective judgment of the halving or doubling of the loudness or noisiness. In other words, a sound judged to be twice as loud as another sound would have a sound level approximately 10 dB greater than the first sound (even though the

*The sound level meter is a device for measuring sound pressure levels. The small pressure fluctuations are detected by an extremely sensitive microphone and transformed into an electrical signal. By means of electronic circuitry this electrical signal is amplified and displayed on a meter in decibels.

10 dB change corresponds to a factor of 10 in actual sound energy). On the other hand, a difference of one or two dB between sounds, although probably detectable if heard within a short time interval, would not be judged to be significantly different in loudness by most observers. Figure A.1 shows the relationships between A-weighted sound level and relative loudness for every-day noise sources.

A.3 A MEASURE OF INDIVIDUAL NOISE EVENTS

Of major interest in this report is the noise produced by aircraft during takeoff and landing operations. These noises fall into the broad category of "transient" noises, which come and go in a finite period of time. As illustrated in Fig. A.2, aircraft takeoff, landing, and flyover noises may be characterized as sound signals that increase in level, generally over a period of several seconds, to a maximum value and then decrease and eventually merge into the fluctuating background noise.

Dependent primarily upon the type of aircraft, type of operations, and distance from the observer to the aircraft, the maximum flyover noise levels will vary widely in magnitude, ranging from levels unnoticed in the presence of other background noises to levels sufficiently high to create feelings of annoyance or to interfere with speech communication or sleep.

The duration will also vary depending on the proximity of the aircraft, speed, and orientation with respect to the observer. Unfortunately, the maximum noise level rating ignores the duration aspect of the event. Extensive psychophysical research has shown that for two events of the same maximum level, the longer of the two will invariably be rated as the noisier or more annoying.

Over the years, several mathematical models have been proposed to account for this not-so-surprising observation. The model which is in common usage today asserts that subjective annoyance is related to the total amount of perceived acoustic energy in the noise intrusion. Computationally, the total energy is determined by measuring the instantaneous A-level at closely spaced intervals in time (e.g., every 1/2 second) and summing these readings by logarithmic addition.

The analyses in this report are based on the SEL (Sound Exposure Level), which is the energy summation of the A-level over the upper 10 dB of the noise signal. The SEL is computed by the following formula:

$$SEL = 10 \log \sum_{i=1}^{N} 10^{\frac{A_i}{10}} - 3 .$$

The 3-dB constant normalizes the duration to 1 second.

The SEL is being widely used to describe the noise of a variety of transportation noise sources, with application not restricted to aircraft. Figure A.2 illustrates the relationship between A-level and SEL for a typical noise event.

SOUND	SOUND LEVEL[1] dB(A)	RELATIVE LOUDNESS (Approx.)	RELATIVE SOUND ENERGY
Jet Plane, 100 Feet	130	128	10,000,000
Rock Music with Amplifier	120	64	1,000,000
Thunder	110	32	100,000
Boiler Shop, Power Mower	100	16	10,000
Orchestral Crescendo at 25 Feet, Noisy Kitchen	90	8	1,000
Busy Street	80	4	100
Interior of Department Store	70	2	10
Ordinary Conversation 3 Feet Away	60	1	1
Quiet Automobile at Low Speed	50	1/2	.1
Average Office	40	1/4	.01
City Residence	30	1/8	.001
Quiet Country Residence	20	1/16	.0001
Rustle of Leaves	10	1/32	.00001
Threshold of Hearing	0	1/64	.000001

[1] U.S. Department of Housing and Urban Development Circular 1390.2

Fig. A.1. Sound level of common sounds.

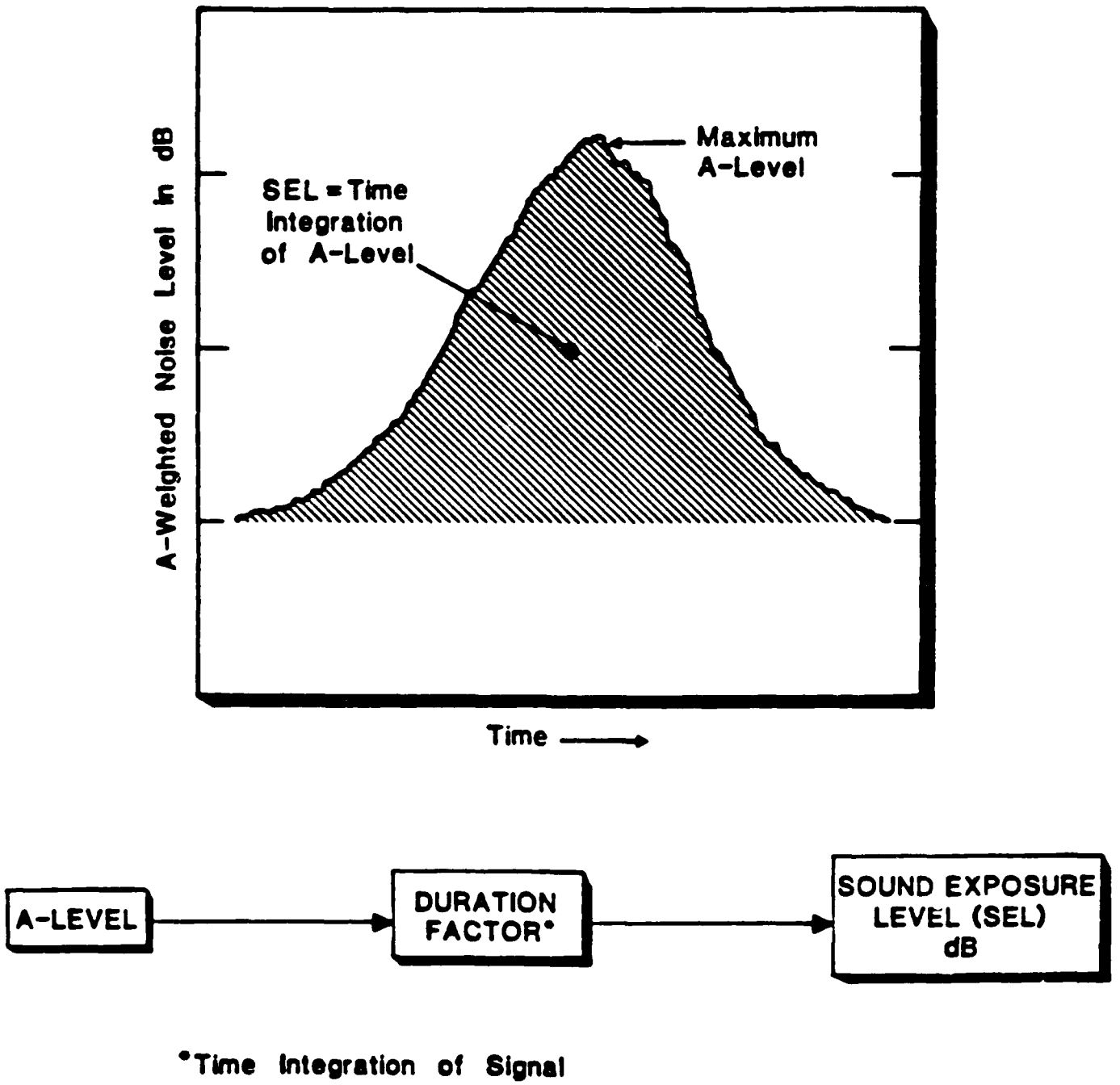

Fig. A.2. Noise measures for single events.

A.4 A MEASURE OF DAILY NOISE EXPOSURE

Descriptors of individual aircraft noise intrusions are helpful in comparing one aircraft with another or in relating the aircraft noise to other sources of noise in the community. However, community response to aircraft noise is not based on a single event, but on a series of events over the day. Factors which have been found to affect subjective assessment of the daily noise environment include (1) the noise levels of individual events, (2) the number of events per day, and (3) the time of day at which the event occurs. Most environmental descriptors of noise in use in the world today are based on these three factors, although they may differ considerably in the manner in which the factors are taken into account.

Any single-number descriptor of a complex noise environment represents a drastic simplification of the real-world conditions. However, the administrative and general usefulness and the simplicity of a single number descriptor results in widespread use of such measures for regulatory, administrative and planning purposes. The U.S Air Force has adopted the Average Day-Night Sound Level (Ldn) as the measure of the noise environment over a 24-hour period, which is in use in several different state noise regulations and is widely employed throughout the country as a descriptor of community noise environment.*

The Ldn represents the equivalent level (also denoted as average level) over a 24-hour period with the noise occurring at night (10 p.m. to 7 a.m.) multiplied by a factor of 10 (10 dB). The Ldn incorporates a 10-dB nighttime weighting for noises occurring between 10 p.m. and 7 a.m. to account for the presumed greater potential disturbance of people by nighttime noise. This presumption is partially substantiated by community complaint studies and social survey data which indicate that the same noise environment is considered more disturbing or annoying during the nighttime than during the daytime. There is a greater need at night for a quiet environment in which to sleep and relax. In most communities the exterior background noise level decreases during the night by 10 dB or more, and the activity inside homes also decreases. These both contribute to a general lowering of interior noise levels. Consequently any high-level intrusive noise can be expected to be more disturbing during the night.

The Ldn may be determined in two different ways. It may be calculated by measuring the noise either continuously or on a discrete sampling basis throughout the 24-hour period. In practical applications, Ldn is usually computed by sampling the noise one or more times a second and calculating the equivalent level (as described above) for each hourly period to obtain hourly noise levels. The Ldn is then computed from the set of 24 hourly levels, after adding the appropriate weightings to the evening and night levels.

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*The National Research Council Committee on Hearing, Bioacoustics and Biomechanics favors Ldn as the fundamental measure for assessing potential impacts to the noise environment, in conjunction with an Environmental Impact Statement. The Ldn is used by the Department of Defense in describing the noise exposure in the vicinity of military air bases, and it is one of the noise measures employed by the Federal Aviation Administration (FAA) in describing the noise environment around airports. The Ldn was adopted by the U.S. Department of Housing and Urban Development (HUD) in its noise policy regulations.

For most airport situations, where the noise environment is determined primarily by the noise from a finite number of discrete noise events, the Ldn may be determined from knowledge of the level and numbers of the discrete noise events alone. Thus, for a single class of aircraft (i) and mode of operations (j)

$$Ldn(i,j) = SEL(i,j) + 10 \log_{10} N_w(i,j) - 49.4$$

$$\text{with } N_w(i,j) = N_d(i,j) + 10\, N_n(i,j),$$

where, N_w = weighted number of events,

N_d = number of daytime events, and

N_n = number of nighttime events.

The SEL(i,j), the first term in the above equation, is the sound exposure level which is dependent upon the type of aircraft, its power setting, and the distance of the aircraft from the listener at the closest point along its flight track. The second term of the equation, 10 log $N_w(i,j)$, involves the number of operations for the given type of aircraft and mode of operation. The last term, a constant of -49.4, reflects the normalization of Ldn to a 24-hour day, rather than to the 1-second reference value for SEL.*

Where there are more than one class of aircraft and mode of operation, Ldn(i,j) is a contributor to the total CNEL value, and is termed a "partial" Ldn value.

To calculate the total airport Ldn at a point, the partial Ldn values may be calculated separately, and then summed on an energy basis:

$$Ldn = 10 \log_{10} \sum_i \sum_j 10^{\frac{Ldn(i,j)}{10}}$$

Close to major airports, the Ldn contributions from aircraft noise will generally be much greater than those from other sources. Hence, the total Ldn value due to aircraft will equal the total Ldn value for the site. At distances farther from the airport, at smaller airports, or near other major noise sources, the Ldn values resulting from aircraft may not fully account for the noise exposure at the site. In such situations, noise from other sources must be taken into account in determining the total Ldn for that site.

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*The constant of 49.4 equals 10 log (number of seconds in a 24-hour day), or 10 log (86,400).

Figure A.3 shows the average SEL and weighted number of noise events, per 24-hour day, required to reach specified Ldn values. For a weighted number of ten events per day, the SEL must be approximately 104.5 dB to have a Ldn of 65 dB. For a weighted number of 100 events, SELs of approximately 94.5 dB are required for a Ldn of 65 dB.

A.5 Ldn CRITERION VALUES

Current Air Force guidelines, in the Air Installation Compatibility Use Zone (AICUZ) programs, stipulate Ldn 65 as the upper limit for residential development unless special noise insulation features are incorporated in buildings. The choice of 65 dB involves an administrative decision that necessarily involves tradeoffs between desire to eliminate all community annoyance with aircraft noise, consideration of economic and political factors, and community and military needs for air transportation.

The choice of a 65 dB Ldn criterion is supported by regulations and administrative standards adopted by other governmental agencies. For example, HUD has adopted an Ldn level of 65 dB as the upper limit of acceptable aircraft and non-aircraft noise with regard to residential development and governmental funding for community planning. The Ldn value used by the FAA to define residential noise impact areas around airports is 65 dB. A recent American National Standard Institute standard on land use planning with respect to noise also suggests a limit of Ldn 65 for residential land use.

The above discussion suggests that the criterion of 65 dB Ldn is reasonable in order to achieve a balance that takes into consideration the air transportation needs of the community and the desired goals to minimize annoyance and noise interference. However, it is clear that setting a 65 dB Ldn criterion will not eliminate all annoyance or community dissatisfaction. And for some activities, the Ldn criterion should be supplemented with other criteria regarding levels of individual noise intrusions.

Information on the amount of community response for differing intensities of noise exposure and the levels of the noise environment due to community sources other than aircraft noise can provide useful guidance in evaluating criterion values.

Figure A.4 shows an estimate of the percentage of the community judged as highly annoyed as a function of increasing day-night noise levels. This curve represents the synthesis of a number of social surveys involving people exposed to various community noise sources including aircraft. According to this study a criterion level of less than 50 dB would have to be selected to minimize the number of highly annoyed responses.* Conversely, above levels of 60 to 65 dB, the percentage of people highly annoyed increased rather dramatically.

In the absence of aircraft noise, people in suburban and urban areas are exposed to considerable noise due to other sources, the most prevalent of which is motor vehicle traffic noise. Figure A.5 shows the approximate range of day-night levels for different types of community noise exposure.

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*The U.S. Environmental Protection Agency has selected an Ldn of 55 dB as a long term goal for the outdoor noise environment.

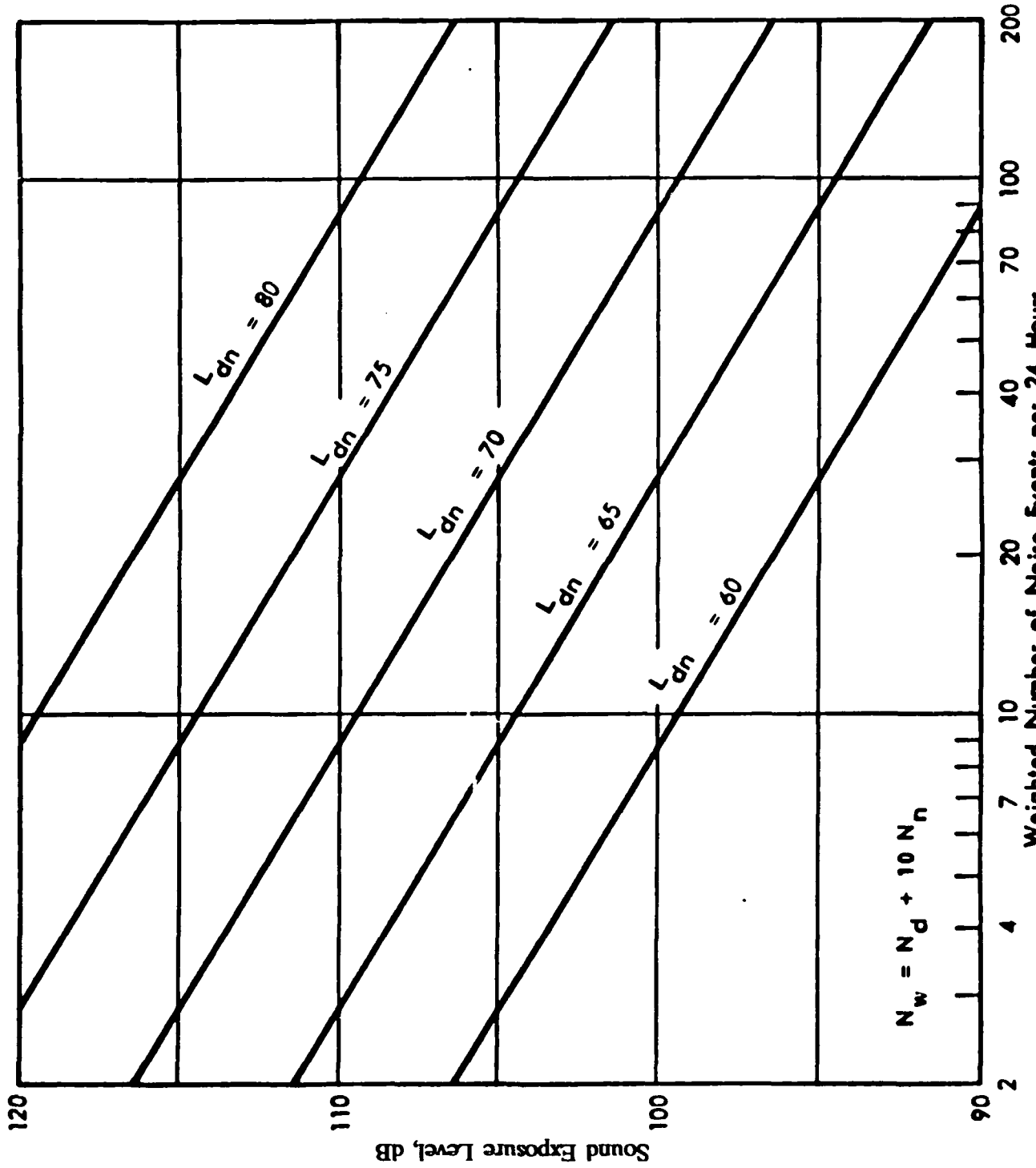

Fig. A.3. Relationship between Ldn and the noise level and number of noise events.

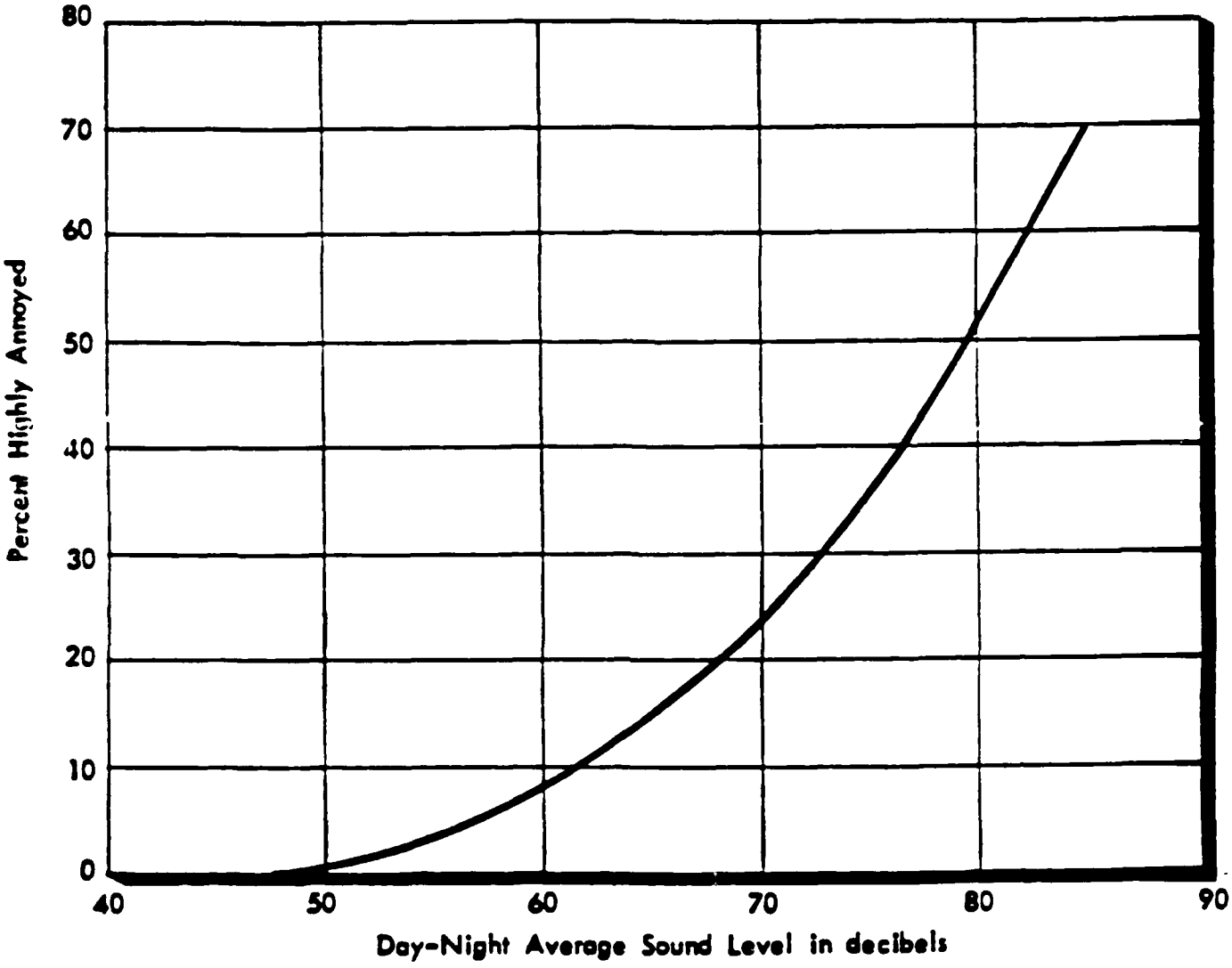

Fig. A.4. Synthesis of social survey results to indicate the degree of annoyance due to noise of all kinds.

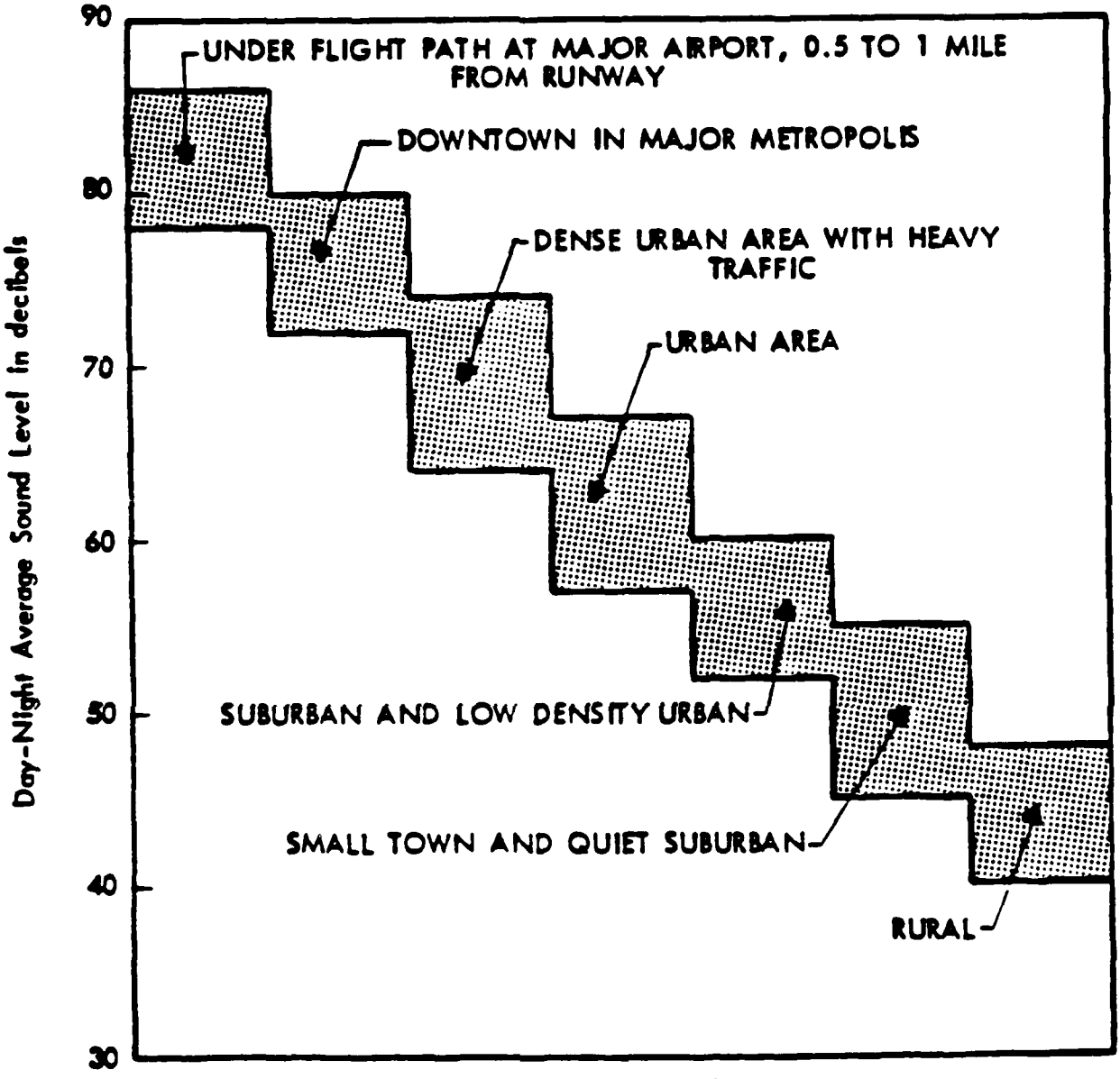

Fig. A.5. Typical range of outdoor community noise exposure levels.

The Department of the Navy has developed land use compatibility criteria for noise. The breakdown of compatible land use categories is summarized in Fig. A.6.

A.6 METHODOLOGY, DATA, AND ASSUMPTIONS USED FOR CALCULATING NOISE CONTOURS

The input data set used to model existing operations at Mather AFB was provided by the Air Force Engineering Services Center (AFESC) at Tyndall AFB, Florida. This data set was used by AFESC to produce the noise contours using the NOISEMAP program.

LAND USE COMPATIBILITY IN NOISE AREAS

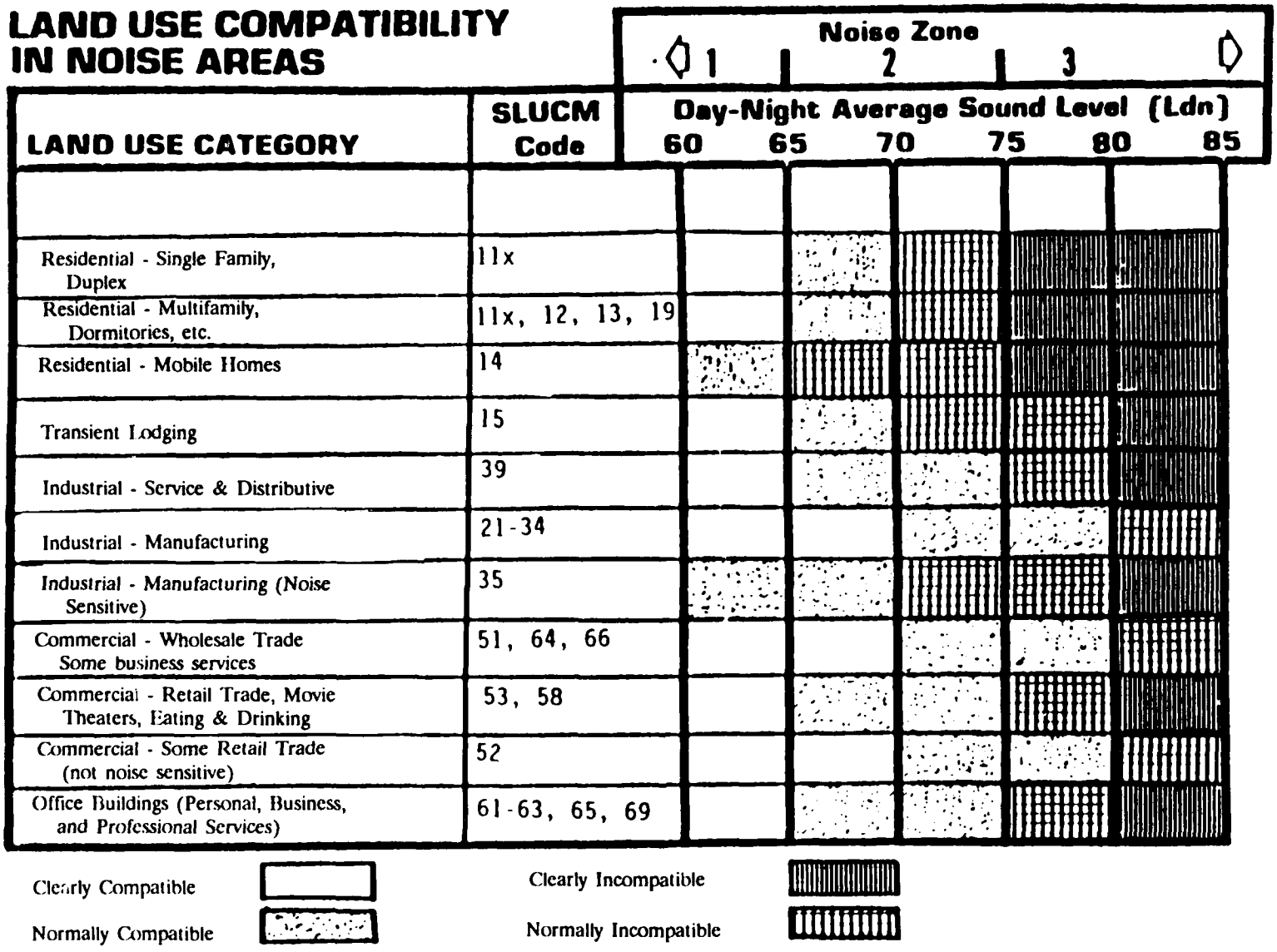

Fig. A.6. Land use compatibility by land use category for Ldns.

LAND USE COMPATIBILITY IN NOISE AREAS

LAND USE CATEGORY	SLUCM Code	Noise Zone 1 / 2 / 3 — Day-Night Average Sound Level (Ldn) 60 65 70 75 80 85
Classrooms, Libraries, Churches	68, 711	
Hospitals, Medical Facilities, Nursing Homes (24hr occupancy)	651	
Auditoriums, Concert Halls	721	
Outdoor Music Shells	721	
Outdoor Sports Arenas, Outdoor Spectator Sports	722	
Playgrounds, Neighborhood Parks, Active Sport Recreational Areas	761, 762	
Golf Courses, Riding Stables, Water Recreation	741x, 743, 744	
Outdoor - Frequent Speech Communication		
Outdoor - Infrequent Speech Communication		
Agricultural (except livestock), Mining, Fishing	81-85	
Livestock Farming, Animal Breeding	815-817	

Clearly Compatible

Normally Compatible

Clearly Incompatible

Normally Incompatible

Fig. A.6. (Continued)

Fig. A.6. (Continued).

NOTES FOR MATRIX ON
LAND USE COMPATIBILITY IN
NOISE AREAS

1. CLEARLY COMPATIBLE: The noise exposure is such that the activities associated with the land use may be carried out with essentially no interference from aircraft noise. (Residential areas: both indoor and outdoor noise environments are pleasant.)

2. NORMALLY COMPATIBLE: The noise exposure is great enough to be of some concern, but common building construction will make the indoor environment acceptable, even for sleeping quarters. (Residential areas: the outdoor environment will be reasonably pleasant for recreation and play.)

3. NORMALLY INCOMPATIBLE: The noise exposure is significantly more severe so that special building construction is often necessary to minimize adverse impacts on people and reduce interference with performance of normal activities. (Residential areas: barriers are sometimes erected between the site and prominent noise sources to improve the outdoor environment; sound attenuation is recommended in some buildings.)

4. CLEARLY INCOMPATIBLE: The noise exposure at the site is so severe that construction costs to make the indoor environment acceptable for performance of activities are significantly increased. (Residential areas: the outdoor environment would be significantly impacted for normal residential use.)

5. SLUCM: Standard Land Use Coding Manual. "X" represents a SLUCM category broader or narrower than, but generally inclusive of, the category described.

6. The compatibility matrix has been determined by a number of noise sensitivity factors including: speech communication needs, subjective judgments of noise compatibility and relative noisiness, need for freedom from noise intrusions, sleep sensitivity criteria, accumulated case histories of noise complaint experience, and typical noise insulation provided by common types of building construction.

7. For many land uses, higher levels of exterior noise exposure may be acceptable provided there is a proper degree of building noise insulation. Such tradeoffs are possible for land uses where indoor activities pre-dominate.

APPENDIX B

AIR INSTALLATION COMPATIBLE USE ZONE

APPENDIX B. AIR INSTALLATION COMPATIBLE USE ZONE

B.1 BACKGROUND

Federal legislation, national sentiment, and other external forces have served to greatly increase the Air Force role in environmental planning issues. Problems of airfield encroachment, noise, air and water pollution, and socioeconomic impacts require continued and intensified Air Force involvement. The nature of these problems dictate Air Force participation in the process of comprehensive community and land use planning. Effective coordinated planning, which bridges the gap between the federal government and the local citizen, requires the establishment of good working relationships with local communities and planning officials which, in turn, depends upon creating an atmosphere of mutual trust and cooperation. The Air Installation Compatible Use Zone (AICUZ) concept has been developed to protect local citizens from the noise and accident hazards associated with flying activities and to prevent degradation of mission capability from encroachment.

AICUZ is a refinement of the Air Force "Greenbelt" concept, an environmental protection program begun in 1971. The "Greenbelt" program called for a 2-1/2 mile × 2 mile rectangle at the end of each runway to be completely uninhabited. For legal and practical reasons the more refined AICUZ concept replaced the "Greenbelt" in 1973 following the Department of Defense adoption of AICUZ for all military airfields.

The AICUZ uses the latest technology to assess noise levels and a statistical analysis to determine aircraft accident potential zones. Height obstruction regulations developed by the Air Force and the Federal Aviation Administration (FAA) are also considered. This information is presented as Clear Zones (CZs), Accident Potential Zones (APZs), Noise Zones (NZs), and height and obstruction criteria. CZs and APZs are based on a statistical survey of major Air Force aircraft accidents within 10 miles of airfields between 1968 and 1972. NZs are expressed in average day/night sound level (Ldn), with NZ contour lines developed by a computer. Height and obstruction criteria were developed to permit safe aircraft operation in the airfield vicinity.

Development of the AICUZ requires a study of the types of aircraft which use a base, where they fly, how high they fly, how many times they fly over a given area, and the time of day or night they operate. Data from this study are used to change air base flying operations as much as possible to reduce noise exposure and to develop the APZs and NZs for each base.

The APZs and NZs are overlaid on a map to form Compatible Use Districts (CUDs), the basic building block for land-use planning with AICUZ data. A wide variety of compatible land uses in each CUD are specific. Recommendations on building materials and standards to reduce noise levels inside structures are provided.

In CZs, risk of an aircraft accident is much higher than in any of the CUD's. CZ land use controls must be so restrictive that it is Air Force policy to request funds from Congress to acquire the necessary real property interest by fee or as an easement to give the Air Force control of the use of property within these zones. There are two types of APZs. APZ I is less critical than the CZ but still possesses a significant risk factor. APZ II is less critical than APZ I but still possesses some risk.

Guidelines for compatible land uses within the CUD's are shown in Table B.1. These guidelines are flexible to allow reasonable economic use of the land in the vicinity of USAF bases. The aims of the guidelines are to limit high population densities in those

Table B.1 Land Use Compatibility Guidelines
Extract from Department of Defense Instruction 4165.57 (November 8, 1977, Enclosure 4)

SLUCM* CODE	LAND USE CATEGORY	COMPATIBLE USE DISTRICTS												
		1	2	3	4	5 *	6	7	8	9	10	11 *	12	13
		L_{dn} 85	APZ I L_{dn} 80-85	APZ I L_{dn} 75-80	APZ I L_{dn} 70-75	APZ I L_{dn} 65-70	L_{dn} 80-85	L_{dn} 75-80	APZ II L_{dn} 80-85	APZ II L_{dn} 75-80	APZ II L_{dn} 70-75	APZ II L_{dn} 65-70	L_{dn} 70-75	L_{dn} 65-70
	RESIDENTIAL													
11x	Single family	N	N	N	N	N	N	N	N	N	30[1,2]	25[1,2]	30[2]	25[2]
11x	Two family	N	N	N	N	N	N	N	N	N	N	N	30[2]	25[2]
11x	Multi-family dwelling	N	N	N	N	N	N	N	N	N	N	N	30[2]	25[2]
12	Group quarters	N	N	N	N	N	N	N	N	N	N	N	30[2]	25[2]
13	Residential hotels	N	N	N	N	N	N	N	N	N	N	N	30[2]	25[2]
14	Mobile home parks or courts	N	N	N	N	N	N	N	N	N	N	N	30[2]	25[2]
15	Transient lodging - hotels, motels	N	N	N	N	N	N	35[2]	N	N	N	N	30[2]	25[2]
19	Other residential	N	N	N	N	N	N	N	N	N	N	N	30[2]	25[2]
	INDUSTRIAL/MANUFACTURING[3]													
21	Food and kindred products	N	N	N	N	N	Y[4]	Y[5]	Y[4]	Y[5]	Y[6]	Y	Y[6]	Y
22	Textile mill products	N	N	N	N	N	Y[4]	Y[5]	N	N	N	N	Y[6]	Y
23	Apparel	N	N	N	N	N	Y[4]	Y[5]	N[4]	N[5]	N[6]	N	Y6	Y
24	Lumber & wood products	N	Y4	Y5	Y6	Y	Y[4]	Y[5]	Y[4]	Y[5]	Y[6]	Y	Y6	Y
25	Furniture & fixtures	N	Y4	Y5	Y6	Y	Y4	Y5	Y4	Y5	Y6	Y	Y6	Y
26	Paper & allied products	N	Y4	Y5	Y6	Y	Y4	Y5	Y4	Y5	Y6	Y	Y6	Y
27	Printing, publishing	N	Y[4]	Y[5]	Y[6]	Y	Y[4]	Y5	Y4	Y5	Y6	Y	Y6	Y
28	Chemicals & allied products	N	Y3,4	Y3,5	Y3,6	Y[3]	Y4	Y5	Y3,4	Y[3,5]	Y3,6	Y3	Y[6]	Y
29	Petroleum refining and related industries	N	N	N	N	N	Y[4]	Y[5]	N	N	N	N	Y6	Y

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Table B.1 Land Use Compatibility Guidelines (continued)

SLUCM* CODE	LAND USE CATEGORY	COMPATIBLE USE DISTRICTS												
		1	2	3	4	5 *	6	7	8	9	10	11 *	12	13
		L_{dn} 85	APZ I L_{dn} 80-85	APZ I L_{dn} 75-80	APZ I L_{dn} 70-75	APZ I L_{dn} 65-70	L_{dn} 80-85	L_{dn} 75-80	APZ II L_{dn} 80-85	APZ II L_{dn} 75-80	APZ II L_{dn} 70-75	APZ II L_{dn} 65-70	L_{dn} 70-75	L_{dn} 65-70
	INDUSTRIAL/MANUFACTURING[3]													
31	Rubber & misc plastic	N	Y[4]	Y[5]	Y[6]	Y	Y[4]	Y[5]	Y[4]	Y[5]	Y[6]	Y	Y[6]	Y
32	Stone, clay & glass products	N	Y[4]	Y[5]	Y[6]	Y	Y[4]	Y[5]	Y[4]	Y[5]	Y[6]	Y	Y[6]	Y
33	Primary metal industries	N	Y[4]	Y[5]	Y[6]	Y	Y[4]	Y[5]	Y[4]	Y[5]	Y[6]	Y	Y[6]	Y
34	Fabricated metal products	N	Y[4]	Y[5]	Y[6]	Y	Y[4]	Y[5]	Y[4]	Y[5]	Y[6]	Y	Y[6]	Y
35	Professional, scientific & controlling instru	N	N	N	N	N	N	30	N	N	N	N	25	Y
39	Misc manufacturing	N	Y[4]	Y[5]	Y[6]	Y	Y[4]	Y[5]	Y[4]	Y[5]	Y[6]	Y	Y[6]	Y
	TRANSPORTATION, COMMUNI-CATIONS & UTILITIES[7]													
41	Railroad, rapid rail transit	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
45	Highway & street ROW	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
46	Auto parking	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
47	Communications (noise sensitive)	N	N	30	25	Y	N	30	N	30	25	Y	25	Y
48	Utilities	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
42/43	Other trans, comm, & util	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

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Table B.1 Land Use Compatibility Guidelines (continued)

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		L_{dn} 85	APZ I L_{dn} 80-85	APZ I L_{dn} 75-80	APZ I L_{dn} 70-75	APZ I L_{dn} 65-70	L_{dn} 80-85	L_{dn} 75-80	APZ II L_{dn} 80-85	APZ II L_{dn} 75-80	APZ II L_{dn} 70-75	APZ II L_{dn} 65-70	L_{dn} 70-75	L_{dn} 65-70
	COMMERCIAL/RETAIL TRADE													
51	Wholesale trade	N	Y[4]	Y[5]	Y[6]	Y	Y[4]	Y[5]	Y[4]	Y[5]	Y[6]	Y	Y[6]	Y
52	Building materials-retail	N	Y[4]	Y[5]	Y[6]	Y	Y[4]	Y[5]	Y[4]	Y[5]	Y[6]	Y	Y[6]	Y
53	General merchandise-retail	N	N	N	N	N	N	30	N	30	25	Y	25	Y
54	Food-retail	N	N	N	N	N	N	30	N	30	25	Y	25	Y
55	Automotive, marine	N	N	30	25	Y	N	30	N	30	25	Y	25	Y
56	Apparel & accessories - retail	N	N	N	N	N	N	30	N	30	25	Y	25	Y
57	Eating & drinking places	N	N	N	N	N	N	30	N	N	N	N	25	Y
58	Furniture, home furnishing retail	N	N	30	25	Y	N	30	N	30	25	Y	25	Y
59	Other retail trade	N	N	N	N	N	N	30	N	30	25	Y	25	Y
	PERSONAL & BUSINESS[8] SERVICES													
61	Finance, insurance & real estate[8]	N	N	N	N	N	N	30	N	30	25	Y	25	Y
62	Personal services	N	N	N	N	N	N	30	N	30	25	Y[1]	25	Y
63	Business services	N	N	N	N	N	N	30	N	30	25	Y	25	Y
64	Repair services	N	Y[4]	Y[5]	Y[6]	Y	Y[4]	Y[5]	Y[4]	Y[5]	Y[6]	Y	Y[6]	Y
66	Contract construction services	N	N	N	N	N	N	30	N	30	25	Y	25	Y

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Table B.1 Land Use Compatibility Guidelines (continued)

SLUCM CODE	LAND USE CATEGORY	COMPATIBLE USE DISTRICTS												
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	PERSONAL & BUSINESS[8] SERVICES (cont)													
	Indoor recreation services	N	N	N	N	N	N	30	N	30	25	Y	25	Y
69	Other services	N	N	N	N	N	N	30	N	30	25	Y	25	Y
	PUBLIC & QUASI PUBLIC SERVICES													
67	Government services	N	N	N	N	N	N	30	N	30[8]	25[8]	Y[8]	25	Y
68	Educational services	N	N	N	N	N	N	N	N	N	N	N	30	25
711	Cultural activities incl churches	N	N	N	N	N	N	N	N	N	N	N	30	25
651	Medical & other health services[9]	N	N	N	N	N	N	N	N	N	N	N	30	25
624	Cemeteries	Y	Y[4,10]	Y[5,10]	Y[6,10]	Y[10]	Y[4]	Y[5]	Y[4,10]	Y[5,10]	Y[6,10]	Y[10]	Y[6]	Y
69x	Non profit organization	N	N	N	N	N	N	N	N	N	N	N	30	25
	Other public and quasi-public services	N	N	N	N	N	N	N	N	N	30	25	30	25
	OUTDOOR RECREATION													
761x	Playgrounds, neighborhood parks	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y
762x	Community & regional	N	N	N	Y[11]	Y[11]	N	N	N	N	Y	Y[11]	Y[11]	Y

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Table B.1 Land Use Compatibility Guidelines (continued)

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	OUTDOOR RECREATION (cont)													
712	Nature exhibits	N	N	N	N	Y	N	N	N	N	N	Y	N	Y
722	Spectator sports incl arenas	N	N	N	N	N	N	N	N	N	N	N	N	Y
741x	Golf course[12], riding stables[13]	N	N	Y[14]	Y[15]	Y	N	Y[14]	N	Y[14]	Y[15]	Y	Y[15]	Y
743/ 744	Water based recreational areas	N	N	Y[14]	Y[15]	Y	N	Y[14]	N	Y[14]	Y[15]	Y	Y[15]	Y
75	Resort & group camps	N	N	N	N	N	N	N	N	N	N	N	Y	Y
721x	Auditoriums, concert halls	N	N	N	N	N	N	N	N	N	N	N	N	Y
721x	Outdoor amphitheaters, music shells	N	N	N	N	N[11]	N	N	N	N	N	N	N	N
	Other outdoor recreation	N	N	N	Y[11]	Y[11]	N	N	N	N	Y	Y	Y	Y
	RESOURCE PRODUCTION, EXTRACTION, & OPEN SPACE													
81	Agriculture (except live-stock)	Y[17]	Y[17]	Y[17]	Y[18]	Y[19]	Y[17]	Y[17]	Y[17]	Y[17]	Y[18]	Y[19]	Y[18]	Y[19]
815/ 817	Livestock farming, animal breeding	N	N	Y[17]	Y[18]	Y[19]	N	Y[17]	N	Y[17]	Y[18]	Y[19]	Y[18]	Y[19]
83	Forestry activities	Y[17]	Y[17]	Y[17]	Y[18]	Y[19]	Y[17]	Y[17]	Y[17]	Y[17]	Y[18]	Y[19]	Y[18]	Y[19]

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Table B.1 Land Use Compatibility Guidelines (continued)

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	RESOURCE PRODUCTION, EXTRACTION & OPEN SPACE (cont)													
84	Fishing activities & related services	Y	Y[11]	Y[11]	Y[11]	Y[11]	Y	Y	Y	Y	Y	Y	Y	Y
85	Mining activities	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
91	Permanent open space	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
93	Water areas	Y	Y[11]	Y[11]	Y[11]	Y[11]	Y	Y	Y[11]	Y[11]	Y[11]	Y[11]	Y	Y

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*Land Use Compatibility for CUDs 5a and 11a is the same as CUDs 5 and 11 except NLR guidelines are not applicable.

LAND USE COMPATIBILITY GUIDELINES
[Extract from Department of Defense Instruction 4165.57 (November 8, 1977, Enclosure 4)]

NOTES

N (NO) - The land use and related structures are not compatible and should be prohibited.

Y (YES) - The land use and related structures are compatible without restriction and should be considered.

Y^X (YES WITH RESTRICTIONS)
- The land use and related structures are generally compatible; however, some special factors should be considered.

35, 30 or 25
- The land use is generally compatible; however, a Noise Level Reduction (NLR) of 35, 30 or 25 must be incorporated into the design and construction of the structure.

35^X, 30^X or 25^X
- The land use is generally compatible with NLR; however, such NLR does not necessarily solve noise difficulties and additional evaluation is warranted.

1 - Because of the accident hazard potential, the residential density in these CUDs should be limited to the maximum extent possible. It is recommended that residential density not exceed one dwelling unit per acre. Such use should be permitted only following a demonstration of need to utilize this area for residential purposes.

2 - Although it is recognized that local conditions may require residential uses in these CUDs, this use is strongly discouraged in CUDs 10 and 12, and discouraged in CUDs 11 and 13. The absence of viable alternative development options should be determined and an evaluation indicating that a demonstrated community need for residential use would not be met if development were prohibited in these CUDs should be conducted prior to approvals.

Where the community determines that residential uses must be allowed Noise Level Reductions of at least 30 (CUDs 10 and 12) and 25 (CUDs 11 and 13) should be incorporated into building codes and/or individual approvals. Additional consideration should be given to modify the NLR levels based on peak noise levels. Such criteria will not eliminate outdoor environment noise problems and, as a result, site planning and design should include measures to minimize this impact, particularly where the noise is from ground level sources.

Table B.1 Land Use Compatibility Guidelines (continued)

3 - Because these uses vary considerably by locality and within a general category, particular care should be taken to evaluate and modify guidelines to fit local conditions. Among factors to be considered: labor intensity, structural coverage explosive inflammable characteristics, size of establishment, people density, peak period (including shopper/ visitors) concentrations.

4 - An NLR of 35 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas or where the normal noise level is low.

5 - An NLR of 30 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas or where the normal noise level is low.

6 - An NLR of 25 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas or where the normal noise level is low.

7 - No structures in Clear Zone, no passenger terminals, and no major ground transmission lines in Clear Zones or APZ I.

8 - Low intensity office uses only (limited scale of concentration of such uses). Meeting places, auditoriums, etc not recommended.

9 - Excludes hospitals.

10 - Excludes chapels.

11 - Facilities must be low intensity.

12 - Clubhouse not recommended.

13 - Concentrated rings with large classes not recommended.

14 - An NLR of 30 must be incorporated into buildings for this use.

15 - An NLR of 25 must be incorporated into buildings for this use.

Table B.1 Land Use Compatibility Guidelines (continued)

LAND USE COMPATIBILITY GUIDELINES
[Extract from Department of Defense Instruction 4165.57 (November 8, 1977, Enclosure 4)]

16 - No structures in Clear Zone.

17 - Residential structures not permitted.

18 - Residential buildings require an NLR of 30.

19 - Residential buildings require an NLR of 25.

Table B.1 Land Use Compatibility Guidelines (continued)

areas where the highest accident potential and noise levels exist, and to recommend noise level reduction measures in high noise areas.

Technical data on air base operations has been provided in the form of AICUZ recommendations so that each community may take the steps necessary to provide land use management compatible with air base operations. Use of AICUZ data by each community will be a continuation of the long and prosperous relationship between USAF bases and their surrounding civilian neighbors.

B.2 AIR FORCE POLICY

It is Air Force policy to work toward achieving compatibility between air installations and neighboring civil communities by means of compatible land use planning and a control process conducted by the local community. The system for identifying and assessing land use compatibility is derived from the AICUZ concept. This concept embodies a process of projecting, mapping, and defining aircraft noise and accident potential areas within the air base environs. Land use compatibility guidelines are applied to these areas and serve as the basis for Air Force recommendations to the communities for use in their land use planning and control process.

Air Force commanders at the major command and base level establish and maintain active programs to achieve the maximum feasible land use compatibility between air installations and neighboring communities. The program requires that all appropriate governmental bodies and citizens are kept informed of Air Force views whenever AICUZ or other planning matters affecting the installation are under consideration. This includes positive and continuing programs designed to

1. provide information, criteria and guidelines to state, regional, and local planning bodies, civic associations, and similar groups;
2. inform such groups of the requirements of flying activity, noise exposure, aircraft accident potential, and AICUZ plans;
3. describe the noise reduction measures which are being used;
4. ensure that all reasonable, economical, and practical measures are taken to reduce or control Air Force noise producing activities; these measures include such considerations as proper location of engine test facilities, providing sound suppressors where necessary, and adjustment of flight patterns and/or techniques to minimize the noise impact on populated areas. This must be done without jeopardizing safety or operational effectiveness.

The AICUZ consists of land areas upon which certain land uses may obstruct the airspace or otherwise be hazardous to aircraft operations, and land uses which are exposed to the health, safety, or welfare hazards of aircraft operations. The AICUZ includes

1. APZs based on past Air Force aircraft accidents;
2. NZs produced by the computerized Ldn methodology; and
3. the area designated by FAA and the Air Force for purposes of height limitations in the approach and departure zones of the base.

Each of these is described in the following sections.

Although research with reference to aircraft accident potential noise and land use compatibility is still in progress by a number of agencies and groups, it is possible to establish guidelines which can be incorporated into the land use planning process (Table B.1). These compatibility guidelines must not be considered as definitive or inflexible standards. They are the framework within which land use compatibility questions can be addressed and resolved. In each case, full consideration must be given to local conditions, such as previous community experience with aircraft accidents and noise; local building construction and development practices; existing noise environment due to other urban or transportation noise sources; time period of aircraft operations and land use activities; specific site analysis; and noise buffers, including topography. These basic guidelines cannot resolve all land use compatibility questions but offer a framework within which to work. Guidelines for accident potential and noise are also described below.

B.3 ACCIDENT POTENTIAL ZONES

B.3.1 Approach

Of the three planning determinants cited above, accident potential is perhaps the most critical, but in the past it has been the least defined. Hazards of ground uses are not well covered by FAA and Air Force criteria.

Accident potential as discussed here considers where most accidents have historically occurred at many Air Force bases. The results of this approach do not produce accident probability statistics. The question of probability involves too many variables for an accurate prediction model to be developed. Therefore, the analysis of the Air Force accident history focuses on determining where, within the airfield environs, an accident is likely to take place and how large an impact area will likely result from any single accident.

Prior concern for accident potential focused on approach-departure zones, but this method did not completely describe the accident problem. A technique that more accurately depicts and analyzes the actual critical accident hazard areas has been developed for Air Force use.

B.3.2 Guidelines

Land use guidelines for the two APZs are based on a hazard index system which compares the relationship of accident occurrence for five areas:

1. on, or adjacent to, the runway;
2. within the CZ;
3. in APZ I;
4. in APZ II; and
5. in all other areas within ten nautical mile radius of the runway.

Accident potential "on or adjacent to the runway" or within the CZ is so high that few uses are acceptable, whereas the risk outside APZ I and APZ II, but within the ten nautical mile radius area, is not significant enough to warrant special attention.

Land use guidelines for APZs I and II have been developed. The main objective has been to restrict all people-intensive uses because there is greater risk in these areas. The basic criterion for APZ I and APZ II land use guidelines is the prevention of uses which

1. have high residential density characteristics;
2. have high labor intensity;
3. involve explosive, fire, toxic, corrosive or other hazardous characteristics;
4. promote population concentration;
5. involve utilities and services where disruption would have an adverse impact (telephone, gas, etc.);
6. concentrate people who are unable to respond to emergency situations, such as, children, elderly, handicapped, etc.;
7. promote extended duration of population concentration, and;
8. pose hazards to aircraft operations.

APZ I has compatibility with a variety of industrial, manufacturing, transportation, communication/utilities, wholesale trade, open space, recreation, and agricultural uses. However, uses that concentrate people in small areas are not acceptable. Structures should be located on the perimeters of this zone wherever possible.

APZ II possesses lower accident potential, but risk is still present. Acceptable uses include those of APZ and personal and business services of low intensity or scale of operation. High density functions such as multistory buildings, places of assembly (theaters, churches, schools, restaurants, etc.), and high density office uses are not considered appropriate.

High population densities should be limited to the maximum extent possible. For most uses, buildings should be limited to one story and the lot coverage should not exceed 20%.

B.4 NOISE ZONES

B.4.1 Approach

In a study of airport and aircraft noise, two different types of noise measures are needed—one to measure individual noise events such as the noise of an individual aircraft flyover, and another to describe the noise environment resulting from a complex of noise events, such as the total noise effect of aircraft operations at an air base.

The method used to produce the noise contours contained in this study consists of the Ldn system to depict the noise environment. Depicting the noise environment involves assessing the amount of exposure to aircraft noise and predicting the community response to the various levels of exposure. This method of assessing the noise impact of aircraft operations on the area surrounding airfields is replacing the Noise Exposure Forecast (NEF)

which was used on an interim basis by the Air Force to replace the Composite Noise Rating (CNR) system which was published by the Air Force in 1964. Continuing efforts to improve the CNR procedure resulted in the development of NEF. Efforts to provide a national uniform standard for noise assessment resulted in the decision by the Environmental Protection Agency that Ldn will be the standard. The Ldn values used for planning purposes are 65, 70, and 80. Land use guidelines are based on the compatibility of various land uses with these noise exposure levels. For broad planning purposes, NEF 30, Ldn 65, and CNR 100 may be considered equivalent, as may NEF 40, Ldn 74, and CNR 115. However, because of technical differences in the three systems, direct comparison or conversion from one system to another can be misleading and is not recommended.

B.4.2 Guidelines

Most studies on residential aircraft noise compatibility recommend no residential uses in noise zones above Ldn 75 (or its equivalent in other no descriptor systems). Usually no restrictions are recommended below Ldn 65. Between Ldn 65–75, there is currently no consensus. These areas may not qualify for federal mortgage insurance in residential categories according to 24 CFR Pt. 51 (adopted July 12, 1979). In many cases, the approval of the U.S. Department of Housing and Urban Development (HUD) requires noise attenuation measures, the Regional Administrator's concurrence, and an Environmental Impact Statement. Past Air Force experience, and the lack of definitive criteria, does not justify an Air Force recommendation to categorically prohibit residential uses in these areas, although these uses may be undesirable. However, wherever possible, residential use should be located below Ldn 65.

Most industrial/manufacturing uses are compatible in the airfield environs. Exceptions are uses such as research or scientific activities that require lower noise levels. Noise attenuation measures are recommended for portions of buildings devoted to office use, receiving the public, or where normal background noise level is low.

The transportation, communications, and utilities categories have a high noise level compatibility because they generally are not people intensive. When land is used for these purposes, the use is generally very short in duration. Where buildings are required for these uses, additional evaluation is warranted.

The uses of commercial/retail trade and personal and business services categories are compatible without restriction up to Ldn 70; however, they are generally incompatible above Ldn 80. Between Ldn 70–80, attenuation should be included in the design and construction of buildings.

The nature of most uses in the public and quasi-public services category requires a quieter environment; attempts should be made to locate these uses below Ldn 65, or provide adequate attenuation.

Areas where noise levels exceed Ldn 75 are not generally recommended for recreational uses. Buildings associated with golf courses and similar uses should be sound attenuated.

With the exception of forestry activities and livestock farming, uses in the resource production, extraction and open space categories are compatible generally without restriction.

B.5 HEIGHT OBSTRUCTIONS AND OTHER CONSIDERATIONS

Although height and obstruction criteria in the vicinity of airports have been established for most airfields, it is appropriate to mention these criteria in this appendix. When such criteria are not included in local community land use planning, the possibility exists that the following uses could be permitted which would endanger safe aircraft operations:

1. uses that release into the air any substance that would impair visibility or otherwise interfere with the operations of aircraft (e.g., steam, dust, and smoke);
2. uses which produce light emissions, either direct or indirect (reflective), which would interfere with pilot vision;
3. uses which produce electrical emissions which would interfere with aircraft communication systems or navigational equipment; and
4. uses which would attract birds or waterfowl such as operation of sanitary landfills or maintenance of feeding stations.

B.6 GENERAL AIR FORCE RESPONSIBILITIES

While Air Force responsibilities toward the community are numerous and diverse, those concerning aircraft noise and accident potential pose unique problems. To be realistic, neither can be completely eliminated as long as aircraft are flying. Self-imposed control of aircraft operations can minimize the effects of noise and accident potential, particularly in conjunction with a cooperative planning effort by the surrounding community. This joint effort can effectively reduce the problems resulting from land uses that are inherently incompatible with aircraft operations. In general, the Air Force perceives its AICUZ responsibilities as falling within the areas of flying safety, noise abatement, and participation in the land use planning process.

B.6.1 Flying Safety

Throughout the world, the Air Force conducts an extremely comprehensive flying safety program. Every aspect of flying and aircraft maintenance is governed by safety considerations to avoid the loss of life and property. Every precaution is taken to ensure the airworthiness of each aircraft, the flying proficiency of the aircrews, and safe airborne operations.

Well-maintained aircraft and well-trained aircrews do much to assure that aircraft accidents are avoided. However, despite the best training of aircrews and maintenance of aircraft, history makes it clear that accidents do occur. It is imperative that flights be routed over sparsely populated areas as much as possible to reduce the exposure of lives and property to a potential accident. As civilian flight operations increase, and airspace becomes more limited, the current flight tracks for aircraft arriving and departing USAF bases become less flexible. It has become increasingly difficult, and impossible in some cases, to

change aircraft routing or altitudes to entirely avoid community growth. Thus, the need for controlled community planning becomes readily apparent.

B.6.2 Noise Abatement

Noise is generated from aircraft both in the air and on the ground. Operations are evaluated continuously to maintain noise levels at a minimum, both on and off base, in areas such as those developed for housing and education.

Practice takeoffs/landings and instrument approaches are conducted at times when individuals are normally awake (e.g., these activities are not scheduled between 10:00 p.m. and 6:00 a.m.). During this time only mission essential aircraft arrivals and departures are conducted.

Whenever possible, traffic patterns are located away from the population centers both on and off base. Base maintenance runup activities are not performed after 10:00 p.m. nor before 6:00 a.m. except for high-priority mission requirements.

B.6.3 Participation in the Planning Process

The Air Force will continue to evaluate operations at its bases in an effort to minimize the environmental effects upon the surrounding area. In keeping with this policy and with the intent of Federal legislation concerning the environment, the base will assess the impact of any proposed actions where there may be environmental consequences. As an extension of this process, the base will continue to assist in local planning processes that support environmental protection efforts.

The AICUZ program is intended to be an ongoing process. In recognition of this fact, the Base Civil Engineer is prepared to participate in the continuing discussion of zoning and other land use matters as they may affect, or may be affected by, base operations.

B.7 COMMUNITY RESPONSIBILITIES

The implementation of the AICUZ study should be a joint effort between the Air Force and adjacent communities. The Air Force role is to minimize the impact of its operations on local communities as explained previously. The role of communities is to insure that development within the AICUZ environs is compatible with sound planning principles and practices.

Cities and counties affected by a given base's AICUZ should review their zoning ordinances, height controls, subdivision regulations, building codes, and general plans for compatibility with AICUZ guidelines. Capitol Improvement Programs should also be reviewed and modified, if necessary, to promote compatible land use patterns.

Special attention should be given to areas identified as incompatible or conditionally compatible. When economically or otherwise feasible, incompatible areas should be rezoned to compatible uses or restricted from future incompatible development. AICUZ noise level reduction guidelines should be applied to all conditionally compatible areas to ensure compatibility of development and aircraft operations.

The final determination of land use in the environs of a given base is the responsibility of local government. Land use decisions should be made after giving careful consideration to the health and welfare of the public, flying safety, the contribution of the flying mission to national defense, and the overall economic and social interrelationship of USAF bases and their local communities.

APPENDIX C

NOISEMAP PROGRAM DOCUMENTATION

APPENDIX C - NOISEMAP PROGRAM DOCUMENTATION

The NOISEMAP computer program is a comprehensive set of computer routines for calculating noise exposure contours for airport operations. The program was developed under sponsorship of the U.S. Air Force. The program permits calculation of the noise environment in terms of day/night sound level (Ldn), noise exposure forecast or community noise equivalent levels. With simple modification of the input data, NOISEMAP also can develop noise level contours, typically in terms of effective perceived noise level or sound exposure level, for individual aircraft operations.

Ldn contours produced by NOISEMAP are relied upon by the Air Force as the primary descriptor of air base noise exposure. It forms a primary technical tool for the USAF Air Installation Compatible Use Zone program. NOISEMAP is also used by the U.S. Navy, U.S. Army, U.S. Environmental Protection Agency, and several state agencies and consultants to develop noise environment contours for civil and military airports.*

The program and underlying technical concepts are very well documented in the technical reports. The basic modeling concepts, guidelines for acquiring noise performance data, application guide, and the basic computer program are described in the following five reports:

Bishop, D. E., *Community Noise Exposure Resulting from Aircraft Operations: Application Guide for Predictive Procedure*, Air Force Report AMRL-TR-73-105, November 1974 [AD A004818].

Galloway, W. J., *Community Noise Exposure Resulting from Aircraft Operations: Technical Review*, Air Force Report AMRL-TR-73-106, November 1974 [AD A004822].

Bishop, D. E., Galloway, W. J., *Community Noise Exposure Resulting from Aircraft Operations: Acquisition and Analysis of Aircraft Noise and Performance Data*, Air Force Report AMRL-TR-73-107, August 1975 [AD 017741].

Reddingius, N. H., *Community Noise Exposure Resulting From Aircraft Operations: Computer Program Operator's Manual*, Air Force Report AMRL-TR-73-108, July 1974 [AD 785360].

Horonjeff, R. D., Kandukuri, R. R., and Reddingius, N. H., *Community Noise Exposure Resulting from Aircraft Operations: Computer Program Description*, Air Force Report AMRL-TR-73-109, November 1974 [AD A004821].

The original computer program operator's manual has been updated to reflect program changes and is available as an Air Force report:

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*NOISEMAP is approved by the Federal Aviation Administration (FAA) for use in FAA-funded airport studies.

Beckmann, J. M., Seidman, H., *Community Noise Exposure Resulting from Aircraft Operations: NOISEMAP 3.4 Computer Program Cperator's Manual*, Air Force Report AMRL-TR-78-109, December 1978 [AD A068518/OGA].

Basic noise information for military aircraft is documented in the following six volume report, prepared by the U.S. Air Force Aerospace Medical Research Laboratory:

Speakman, J. D., Powell, R. G., and Cole, J. N., *Community Noise Exposure Resulting From Aircraft Operations: Acoustic Data on Military Aircraft*, Air Force Report AMRL-TR-73-110, November 1977.

Vol. 1 - Acoustic Data on Military Aircraft [AD A053699].
Vol. 2 - Air Force Bomber/Cargo Aircraft [AD A053700].
Vol. 3 - Air Force Attack/Fighter Aircraft [AD A053701].
Vol. 4 - Air Force Trainer/Fighter Aircraft [AD A053702].
Vol. 5 - Air Force Propeller Aircraft [AD A055079].
Vol. 6 - Navy Aircraft [AD A056217].

A military aircraft noise data digital tape file for use with NOISEMAP is available upon request from:

6570th Aerospace Medical Research Laboratory
AMRL/BBE
Air Force Systems Command
Wright-Patterson AFB, Ohio 45433

Computer programs for computing noise vs distance curves from noise data at single ground locations have been developed by the University of Dayton and are described in the following report:

Mohlman, H. T., *Computer Programs for Producing Single-Event Aircraft Noise Data for Specific Engine Power and Meteorological Conditions for Use with USAF Community Noise Model (NOISEMAP)*, Air Force Report AFAMRL-TR-83-020, April 1983.

Basic noise and performance characteristics for major civil aircraft were initially collected and described in several reports prepared under EPA sponsorship:

Galloway, W. J., Mills, J. F., Hays, A. P., *Data Base for Predicting Noise from Civil Aircraft: Flight Profile Prediction*, BBN Report 2746R, March 1976.

Bishop, D. E., Mills, J. F., Beckmann, J. M., *Effective Perceived Noise Level Versus Distance Curves for Civil Aircraft*, BBN Report 2747R, February 1976.

Bishop, D. E., Mills, J. F., Beckmann, J. M., *Sound Exposure Level Versus Distance Curves for Civil Aircraft*, BBN Report 2759R, February 1976.

More recently, the civil aircraft noise and performance data have been reviewed and updated for the FAA. These data are incorporated in the current versions of the FAA's Integrated Noise Model airport noise computer program.

Bishop, D. E., Beckmann, J. M., *Civil Aircraft Noise Data for Computation of Aircraft Noise Contours*, BBN Report 4440 (draft), November 1980.

Potter, R. C., Mills, J. F., *Aircraft Flight Profiles for Use in Aircraft Noise Prediction Models*, BBN Report 4594 (draft), January 1981.

Following the original development of NOISEMAP, a series of research and sensitivity* studies concerned with various aspects of NOISEMAP assumptions and modeling algorithms has been undertaken. These studies are documented in the following Air Force reports:

Bishop, D. E., Dunderdale, T. C., Horonjeff, R. D., Mills, J. F., *Sensitivity Studies of Community-Aircraft Noise Exposure (NOISEMAP) Predictive Procedure*, Air Force Report AMRL-TR-75-115, March 1976 [AD A026535].

- Tone Corrections,
- Runup Weightings,
- Temperature and Pressure Altitude, and
- Excess Ground Attenuation and Airframe Shielding Algorithms.

Bishop, D. E., Dunderdale, T. C., Horonjeff, R. D., Mills, J. F., *Further Sensitivity Studies of Community-Aircraft Noise Exposure (NOISEMAP) Prediction Procedures*, Air Force Report AMRL-TR-116, April 1977 [AD A041781].

- Tone Corrections,
- Excess Ground Attenuation and Fuselage Shielding Models, and
- Climatic Variations.

Fidell, S., *Test Plan for Aircraft Runup Noise Penalty Evaluation*, Air Force Report AMRL-TR-75-110, March 1976 [AD A026209].

Walker, D. Q., *Aircraft Sideline Noise: A Technical Review and Analysis of Contemporary Data*, Air Force Report AMRL-TR-76-115, April 1977 [AD A042076].

Walker, D. Q., *An Analysis of Aircraft Flyover Noise*, Air Force Report AMRL-TR-78-8, April 1978 [AD A058522].

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*Sensitivity refers to the variability of noise contour size and shape resulting from changes in modeling algorithms or input data.

Extended capabilities of NOISEMAP to include noise from helicopters and from special aircraft operations are described in the following reports:

Galloway, W. J., *Helicopter Noise Level Functions for Use in Community Noise Analyses*, Air Force Report AMRL-TR-78-87, December 1978.

Bishop, D. E., *Procedures and Data for Predicting Day-Night Levels for Supersonic Flight and Air-to-Ground Gunnery*, BBN Report 3715, prepared for the Air Force Civil Engineering Center, (draft) August 1978.

The NOISEMAP program has been modified to permit convenient determination of demographic information within noise contour boundaries, as described in the following reports.

Seidman, H., Bavely, C., *Computer-Aided Collection of Demographic Data within Day-Night Level Contours: Two Test Cases*, Air Force Report AMRL-TR-78-39, August 1978.

Seidman, H., *Incorporation of Environmental Impact Indices into NOISEMAP*, Air Force Report AMRL-TR-81-31, February 1981.

Initial NOISEMAP field validation studies and the development of detailed techniques for field measurement of air base noise for comparison with NOISEMAP predictions have been undertaken. They are documented in the following reports:

Seidman, H., Horonjeff, R. D., Bishop, D. E., *Validation of Aircraft Noise Exposure Prediction Procedure*, Air Force Report AMRL-TR-76-111, April 1977 [AD A041674].

Rentz, P. E., Seidman, H., *Development of NOISECHECK Technology for Measuring Aircraft Noise Exposure*, Air Force Report AMRL-TR-78-125, May 1980.

Bishop, D. E., Harris, A. H., Mahoney, J., Rentz, P. E., *NOISECHECK Procedures for Measuring Noise Exposure from Aircraft Operations*, Air Force Report AMRL-TR-80-45, November 1980.

Lee, R. A., *Field Studies of the Air Force Procedures (NOISECHECK) for Measuring Community Noise Exposure from Aircraft Operations*, Air Force Report AMRL-TR-82-12, March 1982.

Additional NOISEMAP research studies are underway. Special effort has been made to extend the usability of the program for specific Air Force needs through the development of a special preprocessor program to handle military aircraft noise and performance data. Modeling concepts and algorithms (for instance, those concerned with propagation over ground and the transition between air-to-ground and ground-to-ground propagation) are undergoing continuing study. Modification of NOISEMAP to allow

convenient calculation of day-night levels at specified points, rather than computation at an array of grid positions, is being undertaken. The results of these studies will be described in future Air Force-sponsored reports.

APPENDIX D

ECOLOGY

Table D-1

Special-status plant and wildlife species that may occur in the vicinity of Mather AFB

	Common and scientific name	Status[1] Federal[2]/State[3]/CNPS[3]	Distribution[4]
Insects	Sacramento Valley tiger beetle (Cicindela hirticollis abrupta)	2R/-/NA	S
	Valley elderberry longhorn beetle (Desmocerus californicus dimorphus)	FT/-/NA	S*
Amphibians	California tiger salamander (Ambystoma tigrinum californiense)	C2/CSC/NA	S
Reptiles	Giant garter snake (Thamnophis couchi gigas)	C2/CT/NA	S
Birds	Burrowing owl (Speotyto cunicularia)	-/CSC/NA	K
	Swainson's hawk (Buteo swainsonii)	-/CT/NA	S*
	Tricolored blackbird (Agelaius tricolor)	-/CSC/NA	S*
Plants	Aharts rush (Juncus leiospermus var. aharti)	C1/-/1b	S
	Boggs Lake hedge-hyssop (Gratiola heterosepala)	C2/CE/1b	S*
	California hibiscus (Hibiscus californicus)	C2/-/1b	S
	Green's legenere (Legenere limosa)	C2/-/1b	S*

Table D-1. (continued)

Common and Scientific Name	Status[1] Federal[2]/State[3]/CNPS[3]	Distribution[4]
Green's tuctoria (Tuctoria greenei)	C1/CR/1b	S
Hairy orcutt grass (Orcuttia pilosa)	C1/CE/1b	S
Hoover's spurge (Chamaesyce hooveri)	C1/-/1b	S
Red Bluff rush (Juncus leiospermus var. leiospermus)	C2/-/1b	S
Sacramento orcutt grass (Orcuttia viscida)	C1/CE/1b	S*
Sanfords sagittaria (Sagittaria sanfordii)	C2/-/list3	S
San Joaquin Valley orcutt grass (Orcuttia viscida)	C1/CE/1b	S*
Slender orcutt grass (Orcuttia tenuis)	C1/CE/1b	S*

[1]Status definitions:

FT - Federal threatened
C1 - Category 1: Taxa for which the U.S. Fish and Wildlife Service (FWS) has sufficient biological information to support a proposal to list as endangered or threatened.
C2 - Category 2: Taxa for which existing information indicated may warrant listing, but for which substantial biological information to support a proposed rule is lacking.
2R - Recommended for Category 2 status.
CE - Listed as endangered in California.
CR - Listed as rare in California.
CT - Listed as threatened in California.
CSC - California Department of Fish and Game species of special concern
1b - Plants recognized as rare, threatened, or endangered in California and elsewhere by the California Native Plant Society (CNPS).
list 3 - Plants about which more information is needed by the CNPS.
NA - Not applicable

Table D-1. (continued)

[2]Informal consultation with the U.S. Fish and Wildlife Service. Letter from G. C. Kobetich, U.S. FWS, to L. L. Sigal, Oak Ridge National Laboratory (ORNL), April 18, 1989.

[3]D. E. Warenycia, California Department of Fish and Game (CDFG), Nongame Heritage Program, personal communication to L. L. Sigal, ORNL, March 7, 1989 and May 23, 1989.

R. L. Bittman, CDFG, Natural Diversity Data Base, (NDDB), personal communication to L. L. Sigal, ORNL, May 24, 1989.

[4]Distribution definitions:

K - Species known to be present on Mather AFB. *Source*: D. A. Crowl, *Fish and Wildlife Management Plan for Mather Air Force Base, California*, Headquarters 323D Air Base Group, Mather Air Force Base, California, December 1985.

S - Species may occur at Mather AFB based on species habitat requirements and distributions and the presence of suitable habitat within the Base (NDDB, CDFG).

S* - Species strongly suspected of occurring at Mather AFB (NDDB).

APPENDIX E

CURRENT ENVIRONMENTAL PERMITS FOR MATHER AFB

APPENDIX E. CURRENT ENVIRONMENTAL PERMITS FOR MATHER AFB

E.1 AIR EMISSIONS

Mather Air Force Base (AFB) has a number of permitted air pollution sources, shown in Table E.1. Permits are granted by the Sacramento County Air Pollution Control District.

E.2 WASTEWATER DISCHARGES

The Clean Water Act (CWA) of 1972 and CWA Amendments of 1987 are the basic federal legislations that regulate the discharge of contaminated wastewaters to any navigable body of surface water of the United States. Under the CWA, both actual and proposed wastewater discharges from any point source must be permitted under the National Pollutant Discharge Elimination System (NPDES). A point source is defined as any conveyance which receives or may receive contaminated wastewaters. Controls and the allowable mass or concentration limits for various contaminants are found in the Code of Federal Regulations (CFR) (40 CFR Pts. 403 et. seq.). In addition, regulations found in 40 CFR Pt. 122 establish conditions for NPDES permits and also provide for regulation of storm-water discharges from areas of industrial activity.

The CWA also regulates discharges of industrial wastewaters to local Publicly Owned Treatment Works (POTW) under regulations found in 40 CFR Pt. 403. These regulations require local POTWs to establish pretreatment requirements for industrial wastewater discharges. The local POTW must establish requirements at least as stringent as the federally promulgated pretreatment standards. If the local POTW has received approval from the EPA for its pretreatment program, the requirements established by the POTW have primacy except where the POTW incorporates the federal requirements by reference.

Principal sources of wastewater discharges at Mather AFB are metal cleaning rinse water, effluents from surface preparation and painting operations and aircraft washracks, vehicle and equipment washdown wastewaters, laboratory (photography, dental) effluents, and sanitary sewage from the main base, base housing and other areas.

Wastewater generated at Mather AFB is discharged to the Sacramento County regional sewer. The base has a contract with Sacramento County under which the county will accept 2 M gal of sewage per day. The contract specifies an average flow of 0.80 M gal/day, a biochemical oxygen loading of 1000 lb/day (annual average), and a suspended solids load of 1000 lb/day (annual average). Flows in excess of the 2 M gal are stored on base and discharged during periods of low flow. A pump station on base pumps excess flow into one of four holding ponds with a total capacity of 83 acre-ft. Wastewater generated by Mather AFB is governed by the California Regional Water Quality Control Board (CRWQCB) Order No. 83-093 and the Sacramento Regional Sanitation District Sewer Use Permit #21. In 1988, the annual average of the daily average sewage flows from Mather AFB was 0.940 M gal; about 90% of the total represents sanitary sources, and the remainder is from industrial sources. The Mather AFB flow is less than 1% of current flows treated by the Sacramento County Regional Wastewater Treatment Plant. No National Pollutant Discharge Elimination System (NPDES) permits govern Mather AFB at this time. The Sacramento Regional Sanitation District requires semiannual

Table E.1. Permitted Air Pollution Sources, Mather Air Force Base, February 13, 1989

TOTAL NO. = 84

Permit No./ Type POC	Using Agency/Bldg. No./ Telephone Exten.	Description/Comments
5189, Baghouse Mr Dittrich	323 CAMS/MASFFP, 4150 ext 42770	Wheelabator, Mdl #45 Hopper needs emptying
5269, Baghouse Mr Dittrich	323 CAMS/MASFFP, 4150 ext 42770	Pangborn, Mdl #40825 Hopper needs emptying
5270, Baghouse Mr Dittrich	323 CAMS/MASFFP, 4150 ext 42770	W W Sly, Mdl ELS Hopper needs emptying
5183, Blaster Mr Dittrich	323 CAMS/MASFFP, 4150 ext 42770	Walk-in vented to baghouse 5270
5186, Blaster Mr Dittrich	323 CAMS/MASFFP, 4150 ext 42770	AF manufact. vented to baghouse 5269
5187, Blaster Mr Dittrich	323 CAMS/MASFFP, 4150 ext 42770	W W Sly vented to baghouse 5189
7754, Blaster Mr Dittrich	323 CAMS/MASFFP, 4150 ext 42770	Vacublast vented to baghouse 5269
8857, Blaster Mr Dittrich	323 CAMS/MASFFP, 4150 ext 42770	Pangborn vented to own baghouse
5159, Boiler Mr Huadley	323 ABG/DEMM-H, 650 ext 42598	Steam, 10,000 KBTU/Hr, DF-2
5160, Boiler Mr Headley	323 ABG/DEMM-H, 650 ext 42598	Steam, 10,000 KBTU/Hr, DF-2
7370, Boiler Mr Headley	323 ABG/DEMM-H, 10400 ext 42598	Hot water, 257.6 KBTU/Hr, DF-2
7419, Boiler Mr Headley	323 ABG/DEMM-H, 7010 ext 42598	Hot water, 481.7 KBTU/Hr, DF-2
7426, Boiler Mr Headley	323 ABG/DEMM-H, 8150 ext 42598	Hot water, 480 KBTU/Hr, DF-2
7427, Boiler Mr Headley	323 ABG/DEMM-H, 8150 ext 42598	Hot water, 840 KBTU/Hr, DF-2
7429, Boiler Mr Headley	323 ABG/DEMM-H, 18015 ext 42598	Hot water, 387.8 KBTU/Hr, DF-2
7430, Boiler Mr Headley	323 ABG/DEMM-H, 18018 ext 42598	Hot water, 987 KBTU/Hr, DF-2

Table E.1. (Cont.)

7431, Boiler Mr Headley	323 ABG/DEMM-H, 18020 ext 42598	Hot water, 135 KBTU/Hr, DF-2
7752, Boiler Mr Headley	323 ABG/DEMM-H, 7033 ext 42598	Hot water, 382 KBTU/Hr, DF-2
5173, Degreaser Mr Dittrich	323 CAMS/MASFFP, 4150 ext 42770	2, 50 gal PD-680 tanks
7670, Degreaser Sgt White	320 FMS/MAFMD, 7020 est 4183	HOH cooled solvent vapor degreaser
7974, Degreaser Mr Dittrich	323 CAMS/MASFFP, 4150 ext 42770	AF manufact., cold solvent Citrikleen
8198, Degreaser Mr Dittrich	323 CAMS/MASFFP, 4150 ext 42770	Citrikleen, vented to baghouse 5189
8601, Degreaser Mr Dittrich	323 CAMS/MASFFP, 4150 ext 42770	Delta industries vapor degreaser 1,1,1-trichloroethane
8773, Degreaser Mr Harrison	323 FMS, 4260 ext 42765	Changed from PD-680 to Citrikleen
8235, Paint Stripper Mr Dittrich	323 CAMS/MASFFP, 4150 ext 42770	Pangborn, El Dorado hot solution Vented to baghouse 5189
8236, Paint Stripper Mr Dittrich	323 CAMS/MASFFP, 4150 ext 42770	Pangborn, El Dorado hot solution Vented to baghouse 5189
5074, Fuel Dispenser Mr Greco	323 ABG/DEMM-F, 3272 ext 42229	Vapor recovery for 5072 and 5073
7103, Fuel Dispenser Mr Greco	323 ABG/DEMM-F, 3272 ext 42229	Bottom filling gas loading rack
7759, Fuel Dispenser Mr Greco	323 ABG/DEMM-F, 10360 ext 42229	
7863, Fuel Dispenser Mr Greco	323 ABG/DEMM-F, 3171 ext 42229	Gas storage and dispensing
7438, Furnace Mr Headley	323 ABG/DEMM-H, 8158 ext 42598	DF-2, removed Notify county and delete from list
7439, Furnace Mr Headley	323 ABG/DEMM-H, 10060 ext 42598	Switched to propane from DF-2 Notify county and delete from list
7441, Furnace Mr Headley	323 ABG/DEMM-H, 18051 ext 42598	DF-2
7750, Furnace Mr Headley	323 ABG/DEMM-H, 7010 ext 42598	DF-2

Table E.1. (Cont.)

7372, Generator Mr Hargraves	323 ABG/DEME-P, 650 ext 42027	Waukesha, Mdl-L5790DSU, 5178 CID Tested 2nd week of month
7373, Generator Mr Hargraves	323 ABG/DEME-P, 8157 ext 42027	Cummins Mdl TVA-1710G, 1710 CID Tested 3rd week of month
7374, Generator Mr Hargraves	323 ABG/DEME-P, 18011 ext 42027	Cummins Mdl TVA-1710G, 1710 CID Tested 3rd week of month
7855, Incinerator Mr Greco	323 ABG/DEMM-F, 4023 ext 42229	For JP-4 tanker truck loading
7856, Incinerator Mr Greco	323 ABG/DEMM-F, 7080/7090 ext 42229	For JP-4 transfer at hydrants
5177, Spray booth Mr Crivellone	323 FTW/MAN, 2950 ext 44870	Wet waterfall paint booth
5180, Spray booth Sgt Hill	323 CAMS/MAFFC, 4150 ext 4598	Dry filter paint booth (was a wet water-fall paint booth)
5181, Spray booth Sgt Hill	323 CAMS/MAFFC, 4150 ext 4598	Conversion to dry filter in-progress Was a wet waterfall paint booth
8192, Spray booth Sgt Franklin	323 TRNSPS/LGTM, 7052 ext 42975	Wet waterfall paint booth
5072, Fuel tank syst Mr Greco	323 ABG/DEMM-F, 3272 ext 42229	UST (25k gal) Has vapor recovery syst. 5074
5073, Fuel tank syst Mr Greco	323 ABG/DEMM-F, 3272 ext 42229	UST (25k gal) Has vapor recovery syst. 5074
6419, Fuel tank syst Mr Greco	323 ABG/DEMM-F, 4020 ext 42229	Above ground bulk JP-4 storage 420,000 gal
6420, Fuel tank syst Mr Greco	323 ABG/DEMM-F, 4023 ext 42229	JP-4 loading rack
6421, Fuel tank syst Mr Greco	323 ABG/DEMM-F, 4005 ext 42229	Above ground bulk JP-4 storage 840,000 gal
6422, Fuel tank syst Mr Greco	323 ABG/DEMM-F, 7080 ext 42229	50,000 gal UST at hydrant
6423, Fuel tank syst Mr Greco	323 ABG/DEMM-F, 7080 ext 42229	50,000 gal UST at hydrant
6424, Fuel tank syst Mr Greco	323 ABG/DEMM-F, 7080 ext 42229	50,000 gal UST at hydrant
6425, Fuel tank syst Mr Greco	323 ABG/DEMM-F, 7080 ext 42229	50,000 gal UST at hydrant

Table E.1. (Cont.)

6426, Fuel tank syst Mr Greco	323 ABG/DEMM-F, 7080 ext 42229	50,000 gal UST at hydrant
6427, Fuel tank syst Mr Greco	323 ABG/DEMM-F, 7080 ext 42229	50,000 gal UST at hydrant
6428, Fuel tank syst Mr Greco	323 ABG/DEMM-F, 7080 ext 42229	50,000 gal UST at hydrant
6429, Fuel tank syst Mr Greco	323 ABG/DEMM-F, 7080 ext 42229	50,000 gal UST at hydrant
6430, Fuel tank syst Mr Greco	323 ABG/DEMM-F, 7090 ext 42229	50,000 gal UST at hydrant
6431, Fuel tank syst Mr Greco	323 ABG/DEMM-F, 7090 ext 42229	50,000 gal UST at hydrant
6432, Fuel tank syst Mr Greco	323 ABG/DEMM-F, 7090 ext 42229	50,000 gal UST at hydrant
6433, Fuel tank syst Mr Greco	323 ABG/DEMM-F, 7090 ext 42229	50,000 gal UST at hydrant
6434, Fuel tank syst Mr Greco	323 ABG/DEMM-F, 7090 ext 42229	50,000 gal UST at hydrant
6435, Fuel tank syst Mr Greco	323 ABG/DEMM-F, 7090 ext 42229	50,000 gal UST at hydrant
6436, Fuel tank syst Mr Greco	323 ABG/DEMM-F, 7090 ext 42229	50,000 gal UST at hydrant
6437, Fuel tank syst Mr Greco	323 ABG/DEMM-F, 7090 ext 42229	50,000 gal UST at hydrant
8098, Fuel tank syst Mr Seday	323 FTW/EM, 3391 ext 43324	Above ground tank, contam. JP-4
8508, JP-4 tank. truck Sgt Nickersen	323 TRNSPS ext 44686	Veh. ID # 82L00558
8509, JP-4 tank. truck Sgt Nickersen	323 TRNSPS ext 44686	Veh. ID # 72L00982
8510, JP-4 tank. truck Sgt Nickersen	323 TRNSPS ext 44686	Veh. ID # 72L00985
8511, JP-4 tank. truck Sgt Nickersen	323 TRNSPS ext 44686	Veh. ID # 72L00987
8512, JP-4 tank. truck Sgt Nickersen	323 TRNSPS ext 44686	Veh. ID # 72L00989

Table E.1. (Cont.)

8513, JP-4 tank. truck Sgt Nickersen	323 TRNSPS ext 44686	Veh. ID # 72L00990
8514, JP-4 tank. truck Sgt Nickersen	323 TRNSPS ext 44686	Veh. ID # 72L00992
8515, JP-4 tank. truck Sgt Nickersen	323 TRNSPS ext 44686	Veh. ID # 72L00993
8516, JP-4 tank. truck Sgt Nickersen	323 TRNSPS ext 44686	Veh. ID # 72L00996
8517, JP-4 tank. truck Sgt Nickersen	323 TRNSPS ext 44686	Veh. ID # 72L01003
8518, JP-4 tank. truck Sgt Nickersen	323 TRNSPS ext 44686	Veh. ID # 72L01087
8519, JP-4 tank. truck Sgt Nickersen	323 TRNSPS ext 44686	Veh. ID # 72L01090
8520, JP-4 tank. truck Sgt Nickersen	323 TRNSPS ext 44686	Veh. ID # 72L00681
8521, JP-4 tank. truck Sgt Nickersen	323 TRNSPS ext 44686	Veh. ID # 83L00814
8522, JP-4 tank. truck Sgt Nickersen	323 TRNSPS ext 44686	Veh. ID # 83L00803
8523, JP-4 tank. truck Sgt Nickersen	323 TRNSPS ext 44686	Veh. ID # CJ6280-ANG
8524, JP-4 tank. truck Sgt Nickersen	323 TRNSPS ext 44686	Veh. ID # CJ6281-ANG
7371, Jet engine T-cell Sgt Wilkersen	323 FMS/MAFB, 4130 ext 44214	J-69 test cell
8159, Acrft wash process Sgt West	320 FMS/MAFFC, 7035 ext 42867	PD-680 part of wash

sampling reports from the plating and cleaning effluents. The district conducts its own monitoring at the county sewage lift station for biochemical oxygen demand (BOD), chemical oxygen demand (COD), suspended solids, cyanide, and four heavy metals, and at the plating and cleaning stop discharge for cyanide and seven heavy metals.

Stormwater run-off at Mather AFB is discharged through drainage ditches into Morrison Creek at approximately the 7100 area. The perimeter ditches have oil/water separators located at strategic points to catch and hold contaminants. No compliance monitoring is required for stormwater run-off.

APPENDIX F

AGENCY CONSULTATION

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Endangered Species Office
2800 Cottage Way, Room E-1823
Sacramento, California 95825-1846

In Reply Refer To:
1-1-89-SP-495

April 18, 1989

Lorene L. Sigal, Ph.D.
Environmental Sciences Division
Oak Ridge National Laboratory
P.O. Box 2008
Oak Ridge, Tennessee 37831

Subject: Species List for the Proposed Mather Air Force Base Closure and Re-use, Sacramento County, California

Dear Dr. Sigal

The attached list replies to your letter of March 7, 1989, requesting information on listed and proposed endangered and threatened species that may occur within the subject project area. Some pertinent information concerning the distribution, life history, habitat requirements, and published references for the listed species is also attached. This information may be helpful in preparing a biological assessment for this project, if one is required.

Information and maps concerning candidate species in California are available from the California Natural Diversity Data Base, a program of the California Department of Fish and Game. Address your request to: Ms. Elaine Hamby, California Department of Fish and Game, Natural Diversity Data Base, 1416 Ninth Street, Sacramento, California 95814 [(916) 324-0562)]. You should also request additional information from the Chief, California Department of Fish and Game, Non-Game Heritage Program (916) 324-8348.

We appreciate your concern for endangered species. If you have further questions, please call Peggie Kohl of our Sacramento Endangered Species Office at (916) 978-4866.

Sincerely,

for Gail C. Kobetich
Field Supervisor

Attachments

ATTACHMENT A

LISTED ENDANGERED AND THREATENED SPECIES AND
CANDIDATE SPECIES THAT MAY OCCUR IN THE AREA OF THE PROPOSED
MATHER AIR FORCE BASE CLOSURE AND RE-USE
SACRAMENTO COUNTY, CALIFORNIA
(1-1-89-SP-495)

Listed Species

Invertebrates

valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* (T)

Candidate Species

Amphibians

California tiger salamander, *Ambystoma tigrinum californiense* (2)

Reptiles

giant garter snake, *Thamnophis couchi gigas* (2)

Invertebrates

Sacramento Valley tiger beetle, *Cicindela hirticollis abrupta* (2R)

Plants

Boggs Lake hedge-hyssop, *Gratiola heterosepala* (2)
Sacramento orcutt grass, *Orcuttia viscida* (1)
valley sagittaria, *Sagittaria sanfordii* (2)

(E)--Endangered (T)--Threatened (CH)--Critical Habitat
(1)--Category 1: Taxa for which the Fish and Wildlife Service has sufficient biological information to support a proposal to list as endangered or threatened.
(2)--Category 2: Taxa for which existing information indicated may warrant listing, but for which substantial biological information to support a proposed rule is lacking.
(2R)-Recommended for Category 2 status.

STATE OF CALIFORNIA - THE RESOURCES AGENCY GEORGE DEUKMEJIAN, *Governor*

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
POST OFFICE BOX 942896
SACRAMENTO, CALIFORNIA 94296-0001
(916) 445-8006

USAF890420A
May 16, 1989

J. Tim Ensminger, Project Leader
Energy Division, Bldg. 4500N, MS-6200
Oak Ridge National Laboratory
P. O. Box 2008
Oak Ridge, TN 37831

Re: Mather Air Force Base

Dear Mr. Ensminger:

Thank you for your letter regarding the closure of Mather Air Force Base in Sacramento County. Unfortunately, we are unable to provide the research assistance you requested, but you should have no difficulty obtaining the information from published documents. NEPA requirements are not the only issue, however.

Closure of Mather and other bases are federal undertakings subject to review under Section 106 of the National Historic Preservation Act and its implementing regulations 36 CFR Part 800. The appropriate federal agency is responsible for compliance with Section 106, and our office reviews the agency's findings. For example, we expect the Air Force to initiate consultation with our office for the closure of Mather.

At this time, we are awaiting information on a possible national approach to base closures. In place of individual consultation for each military base, the Department of Defense and the Advisory Council on Historic Preservation may develop a nationwide agreement to take historic properties into account during base closures. Our role will depend on that agreement. In the meantime, we suggest that you consult the Air Force for guidance on the procedures to be followed under the National Historic Preservation Act.

We wish you luck in your efforts. If you have any questions, please call staff historian Dorene Clement at (916) 322-9600.

Sincerely,

Kathryn Gualtieri
State Historic Preservation Officer

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT CORPS OF ENGINEERS
650 CAPITOL MALL
SACRAMENTO CALIFORNIA 95814-4794

June 6, 1989

REPLY TO
ATTENTION OF
Regulatory Section

Lorene L. Sigal, Ph.D.
Environmental Science Division
Oak Ridge National Laboratory
Post Office Box 2008
Oak Ridge, Tennessee 37831

Dear Ms. Sigal:

This is in response to your letter dated June 1, 1989 regarding the EIS for the closure of Mather Air Force Base.

Section 404 of the Clean Water Act requires Department of the Army approval prior to the discharge of any dredged or fill material into waters of the United States. Your letter states that there will be no construction or discharge into water or wetlands in connection with the closure action. Therefore, for the closing action only, a Section 404 permit will not be required.

If you have any further questions, please contact Phyllis Petras of this office at (916) 551-2272.

Sincerely,

Tom Skordal
Chief, Regulatory Unit 1

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
POST OFFICE BOX 942896
SACRAMENTO, CALIFORNIA 94296-0001
(916) 445-8006

USAF890420A
January 31, 1990

Jose L. Saenz, Lt. Col.
Chief, Environmental Planning Division
Department of the Air Force
Headquarters Air Training Command
Randolph Air Force Base, TX 78150-5001

Re: Closure of Mather AFB

Dear Lt. Col. Saenz:

Thank you for providing a copy of the archeological survey of Mather Air Force Base, as requested. We can now agree with your finding that no archeological resources will be involved in the closure of Mather AFB.

You indicated that the oldest building on the base was constructed in 1942. Although the buildings have not been surveyed, their age has led you to conclude that there are no historic properties at Mather. Because some buildings date from the World War II period, we must ask one further question: Are any of these structures subject to the 1986 Programmatic Agreement among the Department of Defense, Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers for the identification and evaluation of World War II temporary buildings?

Please let us know the status of any temporary World War II buildings which may be subject to the Programmatic Agreement. If such buildings are identified but unevaluated, we would be willing to help with the evaluation, given sufficient information.

Thank you for your cooperation. If you have any questions, please call staff historian Dorene Clement at (916) 322-9600.

Sincerely,

for Kathryn Gualtieri
State Historic Preservation Officer

cc: Claudia Nissley, Advisory Council on Historic Preservation

APPENDIX G

INSTALLATION RESTORATION PROGRAM ACTIVITIES AT MATHER AFB

APPENDIX G. INSTALLATION RESTORATION PROGRAM ACTIVITIES AT MATHER AFB

G.1 PROGRAM DESCRIPTION

Air Training Command is responsible for implementing the Department of Defense Installation Restoration Program (IRP) at Mather AFB. The IRP is the tool for implementing and funding compliance with the federal legislation entitled Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLA directs remedial action to respond to environmental problems resulting from past hazardous waste management practices. It should be noted that such practices at Mather AFB were generally in compliance with legislation existing at the time hazardous waste disposal occurred. Problems did not become evident until much later. The IRP deals with the identification, evaluation, and remediation of advanced environmental problems. Environmental problems stemming from current hazardous waste management are handled under separate programs and are discussed in Section 3.7.

G.2 BACKGROUND

Since 1918, generation of hazardous substances at Mather AFB has resulted primarily from industrial operations, fire protection training, and fuels management. Major industrial operations have included vehicle maintenance, plating and cleaning, aircraft maintenance and corrosion control, pneumatic and hydraulic equipment repair, aircraft ground equipment inspection and repair, and special weapons maintenance. These processes have generated varying quantities of waste oils, fuels, solvents, and cleaners.

The Air Force has identified 34 disposal or spill sites at Mather AFB. These sites are shown on the map on page 3–19. Disposal of solid waste, mainly municipal-type refuse, occurred in seven landfills (sites LF-01 through LF-07). These landfills were used for varying periods of time from pre-1942 through 1974, and probably received industrial waste oils and solvents. Three chemical disposal areas (sites WP-01 through WP-03) were used for disposal of bulk chemical wastes, primarily solvents, paints, oils, and fuel sludges, during the 1950s and 1960s. Fuel and other combustible chemical wastes were incinerated during fire training exercises conducted in four fire training areas (sites FT-01 through FT-04) from the early 1940s through the early 1980s. Other suspected waste disposal sites include three drainage ditches (sites DD-01 through DD-03), an electron tube burial site (site LL-01), a septic tank (site WT-01), two asphalt rubble disposal areas (sites OT-01 and OT-02), and a portion of the sanitary sewer system in the industrial area of the base (site OT-03).

In addition, major fuel spills and leaks have occurred in various locations on base, including 12 sites (Sites SS-01 through SS-11 and LU-04) identified under the IRP at Mather AFB. Site SS-01 resulted from a leak in a gasoline tank during 1982; the amount of gasoline lost was estimated to be 700 gal. Most of the additional sites are fuel spills and leaks discovered during concurrent investigations to identify and remove leaking or abandoned underground fuel storage tanks. The tanks were not known to leak before their removal; therefore, dates and amounts of fuel lost are unknown.

Various hazardous wastes including trichloroethylene (TCE), transformer oil, paints, and used motor oils were disposed and have contributed to identifiable groundwater

contamination in an area of Mather Air Force Base known as the Aircraft Control and Warning (AC&W) site (site WP-02). This area is located northeast of the main base housing area.

G.3 GROUNDWATER CONTAMINATION BACKGROUND

Mather AFB is situated in the southeastern portion of the Sacramento River Valley, in the northern half of a region described geologically as the Great Central Valley Physiographic Province. The beneficial uses of the groundwater in this area include (a) private domestic supply, (b) municipal and industrial supply, and (c) agricultural supply. The groundwater basin in the vicinity of Mather AFB consists of an aquifer with numerous water bearing zones including unconfined water producing intervals. An intermittent perched zone exists discontinuously in some areas. Regional groundwater flow is generally to the southwest.

Mather AFB receives its on-base water supply from a system of production wells of varying depths. Approximately 150 residents of areas immediately west and south of Mather AFB receive their water supply from the groundwater basin via private water supply wells, drawing water from the shallower confines (less than 250 ft below land surface) of the groundwater aquifer. The remaining residents of the communities surrounding Mather AFB receive their water from the groundwater basin via municipal supply wells drawing water primarily from the lower extremes (depths greater than 250 ft below land surface) of the groundwater aquifer.

Beginning in 1981, the California Regional Water Quality Control Board, Central Valley Region, has intermittently sampled wellwater from 16 private shallow wells immediately west of Mather AFB. As of mid-1988, ten of these wells have shown traces of TCE or carbon tetrachloride. As a result, the Air Force assumed the responsibility of arranging potable water supplies for the population whose wells have shown TCE or carbon tetrachloride contamination.

G.4 NATIONAL PRIORITY LIST

The AC&W Site at Mather AFB was placed on the U.S. Environmental Protection Agency's (EPA's) National Priority List (NPL) of Superfund sites on July 22, 1987, *Fed. Regist.* **52**, 26620. The listing was updated on July 14, 1989, *Fed. Regist.* **54**, 29820, proposing inclusion of the entire base on the NPL due to hazardous substance contamination, including contamination of a potable groundwater aquifer system.

G.5 IRP PHASES

Before the EPA brought its program on-line, the Air Force developed the IRP as a four-phase program: Phase I—Records Search; Phase II—Confirmation and Quantification (Remedial Investigation); Phase III—Technology Base Development; and Phase IV—Corrective Action. The EPA put its program together using three major phases and different terminology: Preliminary Assessment/Site Investigation (PA/SI), Remedial

Investigation Feasibility Study (RI/FS), and Remedial Design/Remedial Action (RD/RA). The Air Force has now changed its program to conform with EPA terminology. At Mather AFB, the impact of this change means that all ongoing and future studies will carry the RI/FS title. Corrective action design and corrective action will be called RD/RA. The "Phase" terminology will not be used in ongoing or future efforts.

G.6 HISTORY OF COMPLETED STUDIES

G.6.1 Mather IRP Phase I—Installation Records Search (CH$_2$M Hill, February–June 1982).

A base survey, records search, and interviews were conducted in order to evaluate facility waste disposal sites and practices. The principal findings were that

- twenty-three past disposal or spill sites were identified and prioritized for future investigation;
- records were identified that strongly suggested the presence of low levels of TCE in several base wells;
- Regional Water Quality Control Board, Central Valley Region records indicated that TCE contamination had been detected in several off base, private, drinking water wells since 1979;
- previous uncontrolled disposal of waste solvents at the AC&W site pose a significant potential for contamination of base housing area wells;
- the 7100 Area site was a principal disposal site for all types of waste and is a potential source of contamination migrating off base; and
- the location and history of the West Ditch site indicated that it is a potential source of contamination found in off base wells west of Mather AFB.

The Phase I study made the following recommendations for Phase II investigations to verify the presence and quantity of contamination at several sites:

- Begin a groundwater monitoring program at the highest priority sites based on the California action levels for contaminants of concern.
- Install three monitoring wells at the West Ditch.
- Install four monitoring wells around the 7100 Area.
- At the AC&W Area, investigate the condition of the AC&W well, perform a search for the disposal pipe, and install four groundwater monitoring wells.
- Install background monitoring wells in the Northeast and East Perimeter areas.

G.6.2 Mather AFB IRP Phase II, Stage 1—Confirmation and Quantification Studies (Roy F. Weston 1984).

Confirmation and quantification studies of the highest rated sites from Phase I (the AC&W, West Ditch, 7100 Area, Northeast Perimeter, and background or upgradient areas) were conducted as follows:

- installation of 11 groundwater monitor wells: three at the AC&W and 7100 Areas, two along the West ditch and in the Northeast Perimeter areas, and one background well northeast of the Main Base area;
- several rounds of monitor well sampling and water level measurements;
- sediment sampling along the West Ditch;
- sampling of base production wells; and
- simple drawdown pump tests of some monitor wells.

The principal findings were

- AC&W Site—Trichloroethylene (TCE) was detected above state action levels in all monitoring wells and in the AC&W production well. Low levels of other volatile organic compounds were detected in some wells.
- 7100 Area—TCE was detected in all wells and was above state action levels in two wells. Additionally, high levels of dissolved solids were found in groundwater near this site.
- West Ditch—TCE and other volatile organics were found below state action levels in groundwater. Analysis of sediments found only low levels of 1,4-dichlorobenzene.
- Concentrations of 1,1,1-trichloroethane and toluene below state action levels were found in wells.

Roy F. Weston made the following recommendations for future investigations:

- Initiate long-term monitoring of all on-base wells.
- Perform a hydrogeologic evaluation of Mather AFB.
- Conduct soil gas monitoring and soil sampling in the AC&W area.
- Install additional wells at each of the three principal sites: AC&W, West Ditch, and 7100 area.
- Perform surface geophysical monitoring in the AC&W and 7100 Areas.
- Establish a cap over the landfill in the 7100 Area.

G.6.3 IRP Phase II, Stage 2—Additional Confirmation and Quantification (Aerovironment 1987).

Confirmation and quantification studies of 15 sites identified in Phase 1 which were not investigated during Phase II, Stage 1 (Runway Overrun Landfill; 8150 Area Landfill; Northeast Perimeter Area Landfills 1, 2, and 3; Firing Range Landfill; Fire Training Areas 1, 3, and 4; Drainage Ditches 1 and 2; Weapons Storage Area septic system; Old Burial Site; Fuel Tank Sludge Burial Site; and MOGAS spill site) were conducted. Activities included the installation of 29 shallow groundwater monitor wells, soil sampling at two sites, and surface geophysical studies at eight sites. The principal findings were

- Runway Overrun Landfill—Perchloroethylene (PCE) above state action levels, and low levels of TCE, 1,2-dichloropropane, and dichloroethene (DCE);
- Northeast Perimeter Landfill 1—PCE over state action levels in three wells;

- Northeast Perimeter Landfill 2—PCE and DCE over state action levels in three wells;
- Northeast Perimeter Landfill 3—PCE and DCE below state action levels;
- Fire Training Area 1—PCE over action level; TCE and DCE below state action levels;
- Fire Training Area 3—TCE below state action level;
- Drainage Ditch 1—TCE, PCE, and DCE below state action levels;
- Drainage Ditch 2—TCE over state action level; and
- Old Burial Site—TCE more than ten times the state action level.

Aerovironment made the following recommendations for additional work: installation of 13 additional monitor wells, soil borings and surface geophysics at selected sites; source characterization; performing site risk assessments; and aquifer pump/evaluation testing. Aerovironment recommended no further actions for the following sites: 8150 Area Landfill, Firing Range Landfill, Fire Training Area 4, Weapons Area Septic System, Fuel Tank Sludge Burial Site, and MOGAS spill site.

G.6.4 IRP Phase II, Stage 3—Final Confirmation and Quantification Investigation (Aerovironment 1988).

The purpose of the study was to perform work recommended by the Phase II, Stage 1 report. An additional 36 groundwater monitor wells were drilled at the following sites: Northeast Perimeter Landfill 2, 7100 Area, AC&W Area, Drainage Ditch 2, Jet Engine Test Cell (not previously identified as a site), and the West Ditch. Surface geophysical tests and soil gas surveys were performed at several sites. The principal findings were

- 7100 Area—This area was confirmed as a source of TCE and PCE contamination in the groundwater which has migrated off base.
- AC&W Site—TCE contamination was confirmed above state action levels more than 2000 ft downgradient from the site in shallow wells. Benzene and xylene contamination at low levels was found in deep wells near the site.
- West Ditch—TCE and PCE, above state action levels, were confirmed in several shallow wells and one deep well. The source of contamination in this area was not located.
- Monitor wells installed in background areas were found to be free of contamination.

Final recommendations from Aerovironment included drilling additional shallow wells in the 7100, West Ditch, and AC&W areas; establishment of a semi-annual monitor well sampling program; additional sampling of some wells to confirm suspected contaminants from nonrepeated sampling rounds; and, an inventory of all private wells within a 1-mile radius of the base.

G.6.5 Hydrogeologic Investigation and Evaluation [U.S. Geological Survey (USGS) 1988 and International Technology Corporation (ITC) 1988)].

This investigation compiled data from all existing wells on Mather AFB and within a 2-mile radius outside the base. The USGS reviewed the entire body of published geologic information from the Central Valley Region of California. Additional tasks included surveying the elevation of all base monitor wells. This study resulted in the following:

- a basewide potentiometric surface map,
- a series of ten geologic cross sections covering the entire base,
- a refined understanding of the area geology and aquifer system, and
- accurate land surface elevations and survey points for producing various hydrogeologic maps.

G.6.6 Well Redevelopment and Sampling Program (ITC, August–November 1988).

Because it had been over two years since any of Mather AFB's 75 monitor wells had been sampled, and because water levels had dropped considerably, it was felt that the wells needed redevelopment before sampling. The redevelopment also verified the construction details of each well and identified any damaged wells. The well redevelopment identified 11 damaged wells which will be further evaluated to determine if they should be repaired or abandoned.

The remaining 64 nondamaged wells were sampled after redevelopment and analyzed for the same parameters. This represented the first and only time that all of Mather AFB's wells were sampled at once. Contamination (primarily TCE and/or PCE) was detected over state action levels in the following areas: AC&W, West Ditch, 7100 Area, and the Northeast Perimeter Area landfills. These results are very similar to those in the three Phase II reports.

G.7 INTERAGENCY AGREEMENT

On July 21, 1989, the EPA, Region 9, the State of California, and the Air Force entered into an Interagency Agreement (Federal Facility Agreement under CERCLA Section 120) covering the activities to take place under the IRP at Mather AFB. The purpose of the agreement is to provide for the involvement of the three parties in the initiation, development, selection, and enforcement of remedial actions to be undertaken, including the review of all applicable data as they become available; to develop studies, reports, and action plans; and to identify and integrate state and federal laws into the remedial action process.

G.8 ONGOING AND FUTURE WORK

Work plans are currently being developed for the remainder of RI/FS work to take place at Mather AFB. Results of all investigations and studies will be reviewed and decisions will be made on what sites require remedial action and exactly what form that

remedial action will take. All work plans and all remedial action plans will be submitted to the state of California and the EPA for approval before commencement of any future work. Once again, the closure of Mather AFB would have no major effect on the IRP. The program would continue with the joint involvement of the state, the EPA, and the Air Force in accordance with the tri-party Interagency Agreement.

G.9 REFERENCES

Aerovironment, Inc. 1987. *Installation Restoration Program Phase II—Confirmation/Quantification, Stage 2, Report for Mather Air Force Base, Sacramento, California, Final (September 1985 to June 1987)*, Vols. 1 and 2, Aerovironment, Inc., Monrovia, Calif., June.

Aerovironment, Inc. 1988. *Installation Restoration Program Phase II—Confirmation/Quantification, Stage 3, Final Report for Mather Air Force Base, Sacramento, California, Final Report (July 1986 to February 1988)*, Aerovironment, Inc., Monrovia, Calif., January.

CH_2M Hill, Inc. 1982. *Installation Restoration Program Records Search for Mather Air Force Base, California*, Gainesville, Fla., June.

ITC (International Technology Corporation) 1988. *U.S. Air Force Installation Restoration Program for Phase IV-A Activities for Mather Air Force Base, California, Revision No. 1*, IT Corporation, Knoxville, Tenn., July 29.

USGS (U.S. Geological Survey) 1988. *Elevation of Bench Marks, Observation Wells, and Production Wells at Mather Air Force Base, Sacramento County, California, 1988*, USGS Open File Report 88-716, prepared in cooperation with the U.S. Department of Energy and U.S. Air Force, Air Training Command.

Roy F. Weston, Inc. 1986. *Installation Restoration Program Phase II—Confirmation/Quantification Stage 1, Mather Air Force Base, Sacramento, California, Final Report (September 1983 to June 1986)*, Roy F. Weston, Inc., West Chester, Pa., June.

APPENDIX H

ASSUMPTIONS FOR CLOSURE IMPLEMENTATION

APPENDIX H. ASSUMPTIONS FOR CLOSURE IMPLEMENTATION

This appendix details the assumptions and data used to construct the assumed scenario for how Mather Air Force Base (AFB) will be closed. The closure scenario was developed for impact assessment purposes only, and may not reflect the nature, extent, and timing of actual closure plans once they are developed.

Potential environmental impacts of implementing closure are related to the quantities and types of materials to be transported and also to the mode of transportation. Thus, for impact assessment purposes, it is necessary to estimate the quantity of material to be shipped, and to identify the mode(s) of shipment and probable shipment routes.

Although air, rail, and truck shipments will be considered when developing detailed closure implementation plans, truck shipment will likely be selected as the preferred option given the short distances involved. For the purposes of this Environmental Impact Statement (EIS), it is assumed that all shipments will be done by truck. The assumed truck shipments will also provide an upper bound of potential impacts in that they are the smallest unit shipment (in terms of haul capacity) and would result in the highest level of shipment activity.

The number, frequency, and timing of the truck trips would affect the potential environmental effects associated with this action. To arrive at an estimate of the number of trucks needed, it is necessary to define the quantity of material to be shipped, which is in turn dependent upon the number of people to be moved. The 323rd Flying Training Wing (FTW) is assumed to include approximately 3700 personnel (about 3200 military personnel and about 500 civilian employees) who will be moved from Mather AFB to Beale AFB.* In addition to moving the 323rd FTW from Mather AFB to Beale AFB, some supplies and equipment will be sent by truck from Mather AFB to McClellan AFB for disposal through the Defense Reutilization and Marketing Office (DRMO). For the purposes of this EIS, it is assumed that equipment and supplies representative of 200 personnel would be moved to McClellan AFB for disposal through the DRMO. Weights of equipment and personal belongings are in turn related to the number of people involved in the moves.

It is assumed that each workstation contains a minimum of 1500 lb of equipment (R. Cox, Holiday Van Lines, Knoxville, Tenn., personal communication with J. T. Ensminger, Oak Ridge National Laboratory, Oak Ridge, Tennessee, June 19, 1989) and that each employee represents a workstation. Since many Mather AFB personnel work in an industrial environment with equipment that is much heavier than the weight of average office equipment, the pounds of equipment per workstation figure has been doubled to 3000 lb. Thus it is estimated that 11,100,000 lb of equipment and materials would be moved to Beale AFB, and 600,000 lb would be moved to McClellan AFB.

In addition to equipment, personal belongings would also be moved. The quantity of personal belongings in turn depends on the number of employees plus dependents. For purposes of this study, it is conservatively assumed that each military member of the

*Current plans call for the 323rd FTW population at Beale AFB to be about 1600 (about 600 military personnel, 200 civilian employees, and 800 students). However, to fully account for potential environmental impacts from moving the 323rd FTW, it was assumed that all 3700 military and civilian personnel would move from Mather AFB to Beale AFB.

323rd FTW (3200) and each of their dependents (approximately 2100) possesses a room, making a total of 5300 rooms. Additionally, there are 1271 on-base housing units and 2255 off-base housing units occupied (a total of 3526). The 323rd FTW accounts for approximately 56% of the military population of the base; therefore, it is assumed to occupy the same percentage of the housing units, or approximately 1980. Each of these units normally contains a living room and kitchen, or 3960 additional rooms, bringing the total number of rooms to 9260. Based on residential moving experience (Holiday Van Lines, Knoxville, Tenn., personal communication with J. T. Ensminger, Oak Ridge National Laboratory, Oak Ridge, Tennessee, June 19, 1989), residential materials typically weigh about 1000 lb/room. Thus, an estimated 9,260,000 lb of personal belongings would be shipped to Beale AFB.

The combination of working materials and equipment weight (11,100,000 lb), with the weight of personal belongings (9,260,000 lb), brings the total weight of materials to be moved to Beale AFB to an estimated 20,360,000 lb. Use of a tractor trailer weight per load of 18,000 lb (R. Cox, Holiday Van Lines, Knoxville, Tenn., personal communication with J. T. Ensminger, Oak Ridge National Laboratory, Oak Ridge, Tenn., June 19, 1989) and the total weight estimated to be moved allows the estimation of a conservative number of approximately 1,130 truckloads of possessions, equipment, and materials of the 323rd FTW to be moved to Beale AFB.

It is also assumed that each of the 1980 housing units represents an individual military family that will travel to Beale AFB by personal vehicle, or 1980 trips. Furthermore, it is assumed that the remaining unaccompanied military personnel (1220) will be transported to Beale AFB via buses and trucks that will carry an average load of 20 individuals per vehicle on 61 trips.

Each of the 318 vehicles of the 323rd FTW will be driven individually to Beale AFB. These include 241 light-duty vehicles [sedans, vans (up to 15 passenger capacity), jeeps, and 1/4–1/2 ton trucks], 17 buses (with 16-, 29-, and 45-passenger capacities), 49 heavy-duty trucks, and 11 tractor-trailer rigs (5–10 tons).

Shipment of the estimated 600,000 lb of equipment to be excessed through the DRMO at McClellan AFB is assumed to comprise about 33 truckloads. No other equipment transport to McClellan AFB is assumed to occur.

APPENDIX I

COMMENTS ON DRAFT ENVIRONMENTAL IMPACT STATEMENT BY ORGANIZATION OR INDIVIDUAL AND RESPONSES

APPENDIX I - COMMENTS ON DRAFT ENVIRONMENTAL IMPACT STATEMENT BY ORGANIZATION OR INDIVIDUAL AND RESPONSES

The Draft Environmental Impact Statement (DEIS) addressing closure of Mather AFB was filed with the U.S. Environmental Protection Agency (EPA) and distributed to the public on November 17, 1989. The Notice of Availability (NOA) of the DEIS was published in the *Federal Register* on November 24, 1989 (54 FR 48679). The public hearing was held on December 18, 1989, and the comment period on the DEIS closed on January 8, 1990.

I.1 COMMENTS ON THE DEIS

This section presents all comments received on the DEIS. Comments are presented in the following order: transcript of hearing, comment sheets completed and submitted at the hearing, and written comments in chronological order. Each comment is assigned a number, as indicated in the left margin. Comment numbers are in turn used in the responses given in Section I.2.

TRANSCRIPT
ENVIRONMENTAL IMPACT STATEMENT HEARING ON THE CLOSURE OF MATHER AIR FORCE BASE, CALIFORNIA

The hearing came to order at 1903 hours, 18 December 1989.

CAPTAIN LOVAS: Good evening ladies and gentlemen. I would like to get started this evening, and I would personally like to thank Mr. Tom Nugent and the Folsom Cordova School District who generously provided this facility for us to meet in this evening.

Here with us this evening from Headquarters Air Training Command at Randolph Air Force Base to chair our meeting is Colonel Roger Gossick.

COL. GOSSICK: Good evening. I'd like to welcome you to this public hearing on the Mather Air Force Base Draft Environmental Impact Statement. This hearing is being conducted so that you, the public, of course, may have the opportunity to comment on this document at the stage it's at right now.

I'm Colonel Rog Gossick from Air Training Command Headquarters, and I'll be the hearing officer for the meeting tonight.

This meeting is a follow-on to the scoping meeting we held here in this very location on the 1st of March of this year to obtain your views and concerns on both the closure of the base as well as its subsequent reuse.

The distribution of this draft has been made as per the expressions of interest at that meeting.

I also have here at the table Lt. Col. Joe Saenz, who is the Chief of our Environmental Planning Division at the headquarters. And in the audience we have a variety of other representatives from the Air Staff in Washington, Oak Ridge National Laboratory, Headquarters ATC, and other Mather personnel.

These individuals are here because they'll be involved in answering your concerns about this Draft Environmental Impact Statement. Again, the concerns you express tonight on our comment sheets and subsequently before the closing of this comment period will all be taken into consideration in the development of the final Environmental Impact Statement.

The meeting tonight will consist of a brief review of the commission process and the environmental impact analysis process. After that, we'll move to the most important part, that part where you, the public, can provide your comments on this draft.

First, however, I'd like to make several administrative points. If you wish to speak tonight, please fill out one of the comment sheets which were provided as you came in either one of

the entrances. If you need a comment sheet at this time, please hold your hand up and we'll get one to you.

Once you've completed it and if you wish to speak tonight, hold it up and we'll collect it so that we can call your name when we get to the public comment period.

When you speak, please use the microphone so everyone can hear you. There's no set duration for this meeting, and it's our objective to see that everyone has the opportunity to make their comments.

To assist the audience in understanding of comments, you might, if possible, reference the page and paragraph in the draft statement when making your comments.

As you can see, everything being said here tonight is being taken down word for word by our court reporter and will become part of the record of this meeting.

I'd like to ask you that if your name is one of those subject to misspelling, you might help us out by spelling it, so if we have questions, we can get back to you.

If you brought a prepared statement, you may read it out loud, turn it in without reading it, or do both. In any case, your comments will become a part of the record. If you turn in written comments, please write your name and address on them.

Also on the comment sheets, there's an address at our headquarters at Randolph where you can send those comments at a later date.

We'll be accepting these comments until the 8th of January of next year, which is the end of the comment period. If you wish to receive a copy of the Final Environmental Impact Statement after it has been published, please complete the request on that sheet, again that's available as you came into the room.

I anticipate taking breaks about every 50 minutes or so if that's necessary, both for our benefit and, if need be, for the court reporter.

Again, our primary purpose here tonight is to listen to you. As I mentioned earlier, we'll discuss briefly the process and then during the rest of the evening find out what your concerns are with this draft as it currently stands.

Now, let's begin with a discussion of the Secretary of Defense Commission on Base Realignments and Closures and their recommendations.

The Defense Secretary's Commission on Base Realignment and Closure was chartered on the 3rd of May 1988 by the Secretary of Defense to recommend military installations within the United States, its Commonwealth territories, and possessions for realignment and closure.

Subsequently, the Base Closure and Realignment Act, Public Law 100-526 of the 24th of October of '88, endorsed the Secretary's commission and required the Secretary of Defense to implement its recommendations unless either he rejected them in their entirety or the Congress passed and the President signed a joint resolution disapproving the commission's recommendations.

On the 29th of December of 1988, the commission recommended the realignment and closure of 145 installations. Of this number, 86 are to be fully closed, five are to be closed in part, and 54 will experience a change, either increase or decrease, as units and activities are relocated.

One of those installations to be fully closed is Mather Air Force Base.

On the 8th of January 1989, the Secretary of Defense approved those recommendations and announced that the Department of Defense would implement them. But Congress did not pass a joint resolution disapproving the recommendations within the time allotted by the Act.

Therefore, the Act now requires the Secretary of Defense, as a matter of law, to implement these closures and realignments. Implementation must be initiated by 30 September 1991 and must be completed no later than that 30th of September 1995.

The Base Closure and Realignment Act requires conforming to the provision of the National Environmental Policy Act of '69 as implemented by the President's Council on Environmental Quality Regulations.

The Environmental Impact Statement also follows Air Force Regulation 19-2, which implements both National Environmental Policy Act and Council on Environmental Quality Regulations within the Air Force system.

The legislation, however, modified the National Environmental Policy Act to the extent that the environmental analysis need not consider

1. the need for closing or realigning a military installation selected for closure or realignment by the commission; or

2. the need for transferring functions to another military installation which has been selected as a receiving installation; or

3. alternative military installations to those selected.

These modifications were made because the commission's recommendations covered these particular issues.

After the conclusion of the comment period on this Draft Environmental Impact Statement, the Air Force will study all of the relevant issues that have been raised.

We will then modify or amend the Draft Environmental Impact Statement to address all relevant comments and information, and we'll publish it as a Final Environmental Impact Statement.

There will be a 30-day period between the time the Final Environmental Impact Statement is published in the *Federal Register* and the record of decision becomes final.

Announcements will be made in news releases and in the *Federal Register.*

The Air Force will not solicit comments on the Final Environmental Impact Statement.

Currently the key schedule for the environmental analysis project's key events is as follows: the public comment period, again, is the 24th of November of this year until the 8th of January, as indicated earlier.

The Final EIS is scheduled to be published in the *Federal Register* on the 30th of March of '90, next year, with the earliest record of decision currently expected to be 30 April of '90.

A second Environmental Impact Statement will be prepared to cover the final disposition of the base property, including potential reuse.

This process also involves laws and community issues quite different from the comparatively straightforward steps involved in closure. Again, this second EIS will have a town meeting to receive comments while it is in its draft form.

In a moment, we'll move into the main portion of the meeting, which is the public comment period. I would like to remind you that everything will be--everyone will be heard, and since everything that is being said tonight is being taken down, please make sure that we have your name for the record in the event we need to clarify any points that you may raise.

We'll now begin the comment period. Do we have any of the forms in the audience that need to be passed in? We have a couple already at the table here.

(NEGATIVE REPLY)

Let me start off with Mr. Demar Hooper.

DEMAR HOOPER: Thank you. My name is Demar Hooper. I'm an attorney with Holliman, Hackard and Taylor. I'm here this evening representing SAMUS Company and Chartwell Investments and Grine and Bartus and Winn, who are landholders in the area surrounding Mather Air Force Base.

(1) My client's interest that the best available data, regarding existing Mather Air Force Base aircraft noise levels, be reflected in the Environmental Impact Statement; and I would refer you to pages 3-3 and 3-4 of the Draft EIS, in particular.

We recognize that there are many decisions to be made regarding the use of the land on the base and outside of the base after closure does take place, and obviously some of those decisions are beyond the control of the Air Force.

However, it is not our desire to prejudge any of those decisions, but it is definitely in our client's interest that the existing noise levels from aircraft be reflected as accurately as possible because of the great impact that those noise level contours have on surrounding land uses.

Therefore, I have requested tonight in the writing that I submitted and I now reiterate my (2) request that the input data base that was used to develop the noise map Ldn contours be sent to me or otherwise made available to me in order to allow verification of the accuracy of those contours.

With me tonight is Mr. John Parnell of Parnell, Pearson, and Wuesthoff, and Mr. Parnell enjoys a national reputation for his work with aircraft or airport noise contours and particularly those contours and analyses he's conducted regarding military air installations. And Mr. Parnell has been retained by my clients in order to review the Draft EIS, and he's identified certain specific deficiencies of which I'd like him to come forward now and address for the record.

COL. GOSSICK: Fine, thank you.

JOHN PARNELL: My name is John Parnell with the firm of Parnell, Pearson, and Wuesthoff, and our west coast office is in Culver City, California.

We were asked to look at the technical details of the noise section of the EIS. And in particular to determine the basis for the noise contours that were presented.

We found that it was difficult to do this because there were no supporting data included in the EIS, either in the descriptive section in the chapter or an appendix to the EIS.

There were some references to two important variables that go into computing the noise contours in pages 3-3 and 3-4, and both of these appear at this point to be incorrect. One (3) of them was the definition of the C-135 aircraft operating at Mather as the A-model aircraft, and our understanding is that the transition was made some years ago to the E model of the aircraft.

Now, we attempted to track this down through the Air Force technical personnel and were advised that they had, in fact, used a C-135B model in the noise modeling, and it took some tracking to determine what engine was actually installed on this aircraft. So that I think we'll actually need to see the input data file in order to verify what engine type was used.

The second problem had to do with the number of flight operations that were assumed in computing the noise contours. We're told on page 3-3, I believe, that the air traffic control (4) tower at Mather AFB counted 82,210 operations for the year 1988, so, we assume that was approximately the correct level of operations somewhat slightly over 80,000.

We're told on the next page that the assumption in computing the noise contours was 466 operations per day based on a 260-day flying operations at the base. This works out to be something over 121,000 operations per year. So, there are approximately 150 flight operations per day that appear not to have been counted by the tower. So we would need to see some explanation of where these came from in order to pin down exactly what the accuracy of the contours are.

With respect to any changes in flight tracks or altitude profiles or anything of that sort, since the 1982 noise contour development, the only way to determine that is from this item called an "input data file," which takes all of the flight assumptions that were involved in (5) developing the noise contours and translates them into quantitative data so that the numbers are there and they're unequivocal and straightforward for anyone to assume.

So, if we could receive that input data file, it would be possible to put all these questions to rest. Thank you.

COL. GOSSICK: Thank you for your comments.

COL. SAENZ: Let me just say that I don't think it'll be a problem to comply with your request, sir, and we appreciate the details that you provided in this. The fact that there is a discrepancy in the inputs to the noise map, model, then that'll be corrected in the Final EIS.

COL. GOSSICK: Elizabeth Cristoff.

MRS. CRISTOFF: Do you know what a vernal pool is?

COL. GOSSICK: Yes, I do. I believe I do. I'm not an expert on them, but I am aware of them.

MRS. CRISTOFF: Okay, then you know in California, they are quite rare. They're found only in California, they are protected. I taught at Kitty Hawk School, which is on Mather Air Force Base, for 24 years. We have a nature area in back of Kitty Hawk that's about 10 acres in area.

Between the nature area and the flight line, there's land that has vernal pools in it. It has approximately 20 to 30 vernal pools. These are undisturbed. They contain rare California native plants that wouldn't be found anywhere else except in the vernal pool area.

Nobody goes back there except me, because I like the flowers back there. But these areas—somebody built a road right through the middle of them, which they never should have done without at least checking. I suspect they built it in the late summer or in fall when they didn't realize what they were doing and what they were going through the middle of.

(6)

But the pools that are remaining really should be protected in some way.

COL. SAENZ: We're sensitive to the state laws protecting vernal pools. I'm distressed, quite frankly, at the thought of what has happened. We appreciate your input ma'am, and we'll check it out.

COL. GOSSICK: Thank you. Do we have any other forms that people have filled out at this point that might like to make comment tonight?

(NEGATIVE RESPONSE)

Short of those forms, is there anyone else in the audience attending that would like to make comment on the Draft Environmental Impact Statement?

(NEGATIVE RESPONSE)

Well, once again, this is not the only evening or time for your comments. Again, that period continues through the 8th of January. So, any inputs you might want to make, questions, that you might help us out with by sending those in, and we'll take those into consideration in reviewing and eventually then preparing the Final Environmental Impact Statement.

Well, once again, if we have nobody else that wants to make comments at this point, we may have set a record for the duration of a town meeting.

But, again, the process does continue to the 8th of January, so if there should be things that come up, please send them to us at the address that is on the comment sheet. You might take some with you in the event that you do think of something at a later date that you might like to input to us.

So, ladies and gentlemen, I suspect that we've taken the comments that you've prepared to give us tonight, and I'd like to thank you all for coming out this evening.

Thank you.

The hearing terminated at 1917 hours, 18 December 1989.

COMMENT SHEET

MATHER AFB CA

DRAFT ENVIRONMENTAL IMPACT STATEMENT

18 DECEMBER 1989

NAME: Rob Wainwright

ORGANIZATION/AGENCY: Teichert Aggregates

Please check type of organization:

Federal ____ State ____ Local ____ Individual ✓

Mailing Address: P.O. Box 15002, Sacramento, CA 95851

Telephone: (916) 484-3317

Check here if you wish to speak today: ____

Subject: _____

Check here if you would like a copy of the Environmental Impact Statement. ✓

You may also use this sheet to submit a written comment in the space provided below. You may turn your comment in at the close of the meeting or send it to the address at the bottom of this sheet. Written comments may also be submitted in a letter or other format.

(7) I would like a copy of the Environmental Impact Statement and any subsequent documents.

MAIL TO: LT CRAIG JAMES
HQ ATC/DEEV
RANDOLPH AFB TX 78150-5001

COMMENT SHEET

MATHER AFB CA

DRAFT ENVIRONMENTAL IMPACT STATEMENT

18 DECEMBER 1989

NAME: GARY ELSTON

ORGANIZATION/AGENCY: U.S. ENVIRONMENTAL

Please check type of organization:

Federal ____ State ____ Local ____ Individual X

Mailing Address: 3037 LATHAM LN, EL DORADO HILLS CA 95630

Telephone: (916) 351-0300

Check here if you wish to speak today: ____

Subject: —

(8) Check here if you would like a copy of the Environmental Impact Statement. X

You may also use this sheet to submit a written comment in the space provided below. You may turn your comment in at the close of the meeting or send it to the address at the bottom of this sheet. Written comments may also be submitted in a letter or other format.

MAIL TO: LT CRAIG JAMES
HQ ATC/DEEV
RANDOLPH AFB TX 78150-5001

I-11

COMMENT SHEET

MATHER AFB CA

DRAFT ENVIRONMENTAL IMPACT STATEMENT

18 DECEMBER 1989

NAME: Elizabeth Christoff

ORGANIZATION/AGENCY: _____

Please check type of organization:

Federal ____ State ____ Local ____ Individual ✓

Mailing Address: 10541 Bronwood Way, Rancho Cordova,

Telephone: (916) 638-5186

Check here if you wish to speak today: ✓

Subject: The Vernal pools in back of Kitty Hawk School

Check here if you would like a copy of the Environmental Impact Statement. ✓

You may also use this sheet to submit a written comment in the space provided below. You may turn your comment in at the close of the meeting or send it to the address at the bottom of this sheet. Written comments may also be submitted in a letter or other format.

(9) I have taught at Kitty Hawk school, on base, for the past 24 years. During that time I have come to know the area around the school very well. Between the nature area that lies in back of K. H. and the flight line are some 20 to 30 vernal pools. Some one has already put a ~~dirt~~ raised dirt road through the middle of them. I am hoping the rest can be saved.

MAIL TO: LT CRAIG JAMES
HQ ATC/DEEV
RANDOLPH AFB TX 78150-5001

COMMENT SHEET

MATHER AFB CA

DRAFT ENVIRONMENTAL IMPACT STATEMENT

18 DECEMBER 1989

NAME: ROBERT H. COUGHRAN

ORGANIZATION/AGENCY: _____

Please check type of organization:

Federal ____ State ____ Local ____ Individual ✓

Mailing Address: 2375 CORDOVA LN RANCHO CORDOVA 95670

Telephone: (916) 635-4517

Check here if you wish to speak today: ____

Subject: _____

(10) Check here if you would like a copy of the Environmental Impact Statement. ✓

You may also use this sheet to submit a written comment in the space provided below. You may turn your comment in at the close of the meeting or send it to the address at the bottom of this sheet. Written comments may also be submitted in a letter or other format.

MAIL TO: LT CRAIG JAMES
HQ ATC/DEEV
RANDOLPH AFB TX 78150-5001

COMMENT SHEET

MATHER AFB CA

DRAFT ENVIRONMENTAL IMPACT STATEMENT

18 DECEMBER 1989

NAME: STEVE GIBSON, Reporter

ORGANIZATION/AGENCY: THE SACRAMENTO Bee

Please check type of organization:

Federal ____ State ____ Local Daily Newspaper Individual ____

Mailing Address: P.O. Box 15779, SACRAMENTO 95852

Telephone: (916) 321-1085

Check here if you wish to speak today: ____

Subject: _____

(11) Check here if you would like a copy of the Environmental Impact Statement. ✓

You may also use this sheet to submit a written comment in the space provided below. You may turn your comment in at the close of the meeting or send it to the address at the bottom of this sheet. Written comments may also be submitted in a letter or other format.

MAIL TO: LT CRAIG JAMES
HQ ATC/DEEV
RANDOLPH AFB TX 78150-5001

COMMENT SHEET

MATHER AFB CA

DRAFT ENVIRONMENTAL IMPACT STATEMENT

18 DECEMBER 1989

NAME: B. Demar Hooper

ORGANIZATION/AGENCY: Holliman, Hackard & Taylor

Please check type of organization:

Federal ____ State ____ Local ____ Individual ✓

Mailing Address: ~~1545~~ 1435 River Park Dr. #300 Sacramento, CA 95815

Telephone: (916) 929-5545

Check here if you wish to speak today: ✓

Subject: Noise

Check here if you would like a copy of the Environmental Impact Statement. ✓

You may also use this sheet to submit a written comment in the space provided below. You may turn your comment in at the close of the meeting or send it to the address at the bottom of this sheet. Written comments may also be submitted in a letter or other format.

I request that ~~[illegible]~~ a copy of the Input Data File used to develop the NOISEMAP L_{dn} contours be mailed to me or otherwise made available so that the accuracy of the data included in the EIS may be verified (12)

MAIL TO: LT CRAIG JAMES
HQ ATC/DEEV
RANDOLPH AFB TX 78150-5001

COMMENT SHEET

MATHER AFB CA

DRAFT ENVIRONMENTAL IMPACT STATEMENT

18 DECEMBER 1989

NAME: ROLAND E. SABOURIN

ORGANIZATION/AGENCY: MATHER MENS GOLF CLUB

Please check type of organization:

Federal ____ State ____ Local -7- Individual ____

Mailing Address: 7717 PALMYRA DR. FAIR OAKS, CA 95628

Telephone: (916) 966-8990

Check here if you wish to speak today: ____

Subject: _____

(13) Check here if you would like a copy of the Environmental Impact Statement. X

You may also use this sheet to submit a written comment in the space provided below. You may turn your comment in at the close of the meeting or send it to the address at the bottom of this sheet. Written comments may also be submitted in a letter or other format.

MAIL TO: LT CRAIG JAMES
HQ ATC/DEEV
RANDOLPH AFB TX 78150-5001

STATE OF CALIFORNIA – THE RESOURCES AGENCY GEORGE DEUKMEJIAN, Governor

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
POST OFFICE BOX 942896
SACRAMENTO, CALIFORNIA 94296-0001
(916) 445-8006

USAF890420A
December 7, 1989

Catherine Hitchins
Department of the Air Force
HQ ATC/DEEV
Building 661, Room 117
Randolph Air Force Base, TX 78150-5001

Re: Closure of Mather AFB

Dear Ms. Hitchins:

Thank you for the opportunity to review the Draft Environmental Impact Statement for the closure of Mather Air Force Base. We will need further information before we can accept the DEIS's conclusions regarding cultural resources.

Under Section 106 of the National Historic Preservation Act and its implementing regulations 36 CFR Part 800, the federal agency is responsible for identifying and evaluating all historic properties, both standing structures and archeological sites, in (14) an undertaking's area of potential effect. The DEIS cited an archeological survey's findings as evidence that the base contains no historic properties. Did the survey evaluate buildings as well as archeological resources? If so, what were the results? We would also like the opportunity to review the survey's documentation before accepting its findings.

We must object to the misinterpretation of our letter of May 16, 1989 (Appendix F). The DEIS took our reluctance to do research for the consultant as an indication that no further information (15) on historic properties was available. In fact, we merely pointed out that this work is the federal agency's responsibility under Section 106 of the National Historic Preservation Act. When this documentation is complete, we will be glad to resume our review.

Thank you for your cooperation. If you have any questions, please call staff historian Dorene Clement at (916) 322-9600.

Sincerely,

Kathryn Gualtieri
State Historic Preservation Officer

cc: Claudia Nissley, Advisory Council on Historic Preservation

HOLLIMAN, HACKARD & TAYLOR
A PROFESSIONAL CORPORATION
ATTORNEYS
1435 RIVER PARK DRIVE, SUITE 300
SACRAMENTO, CALIFORNIA 95815
TELEPHONE: (916) 929-5545
TELEFAX: (916) 929-0283

WILLIAM G. HOLLIMAN, JR.
MICHAEL A. HACKARD
JOHN M. TAYLOR
GEORGE E. PHILLIPS
B. DEMAR HOOPER
JOEL M. KOROTKIN
CRAIG M. SANDBERG
LEIGH HOWELL MARX
MARCUS J. LO DUCA
JOHN T. KETELSEN

COPY

December 11, 1989

9999.675

RE:

Mr. Gary Vest
Deputy Assistant Secretary of the Air Force
Environment, Safety and Occupational Health
SAF/RQ
Washington, D.C. 20330

Re: Comments on the Draft Environmental Impact Statement for the Closure of Mather Air Force Base

Dear Mr. Vest:

These comments on the Draft Environmental Impact Statement for the Closure of Mather Air Force Base are submitted on behalf of several interested landowners surrounding Mather Air Force Base.

We believe that the Environmental Impact Statement for the Closure of Mather Air Force Base (November 1989) is woefully inadequate. After careful review of the Draft, we regret to inform you that at least two errors have resulted in a substantial overstatement of noise exposure conditions.

I. Use of the C-135A in the Noise Simulation Model.

(16) The Draft appears to use the C-135A in the noise simulation model. It is our understanding that the transition from the C-135A to the C-135E model occurred around 1985. We have asked Mather Air Force Base to provide us with a copy of the EIS prepared for that transition.

II. Inaccurate Count of Annual Flight Operations.

(17) The EIS noise computations assumed 466 average daily flight operations and 260 flying days in the year. This assumes 121, 160 annual operations. The EIS cites a Mather AFB Air Traffic Control Tower count of 82, 210 operations in 1988. Therefore, there is a forty-seven percent overstatement in annual operations.

We intend to provide more detailed comments at the public hearing in Rancho Cordova, California, on December 18, 1989.

We appreciate the opportunity to comment on the Draft EIS. If you have any questions, please feel free to call John Parnell of Parnell, Pearson & Wuesthoff (213) 670-9696.

Very truly yours,

B. Demar Hooper

BDH:dal
cc: Mr. Grant Reynolds, Dept. of the Air Force
Mr. Doug Heady
014/1818/L1

Centers for Disease Control
Atlanta GA 30333
January 3, 1990

Ms. Catherine Hitchins
HQ ATC/DEEV
Bldg 661, Room 117
Randolph AFB, Texas 78150-5001

Dear Ms. Hitchins:

We have completed our review of the Draft Environmental Impact Statement (DEIS) for the Closure of Mather Air Force Base, California. We are responding on behalf of the U.S. Public Health Service.

Our review of the information provided did not reveal significant adverse public health impacts due to the closure of this Base. Withdrawal of personnel, equipment, and supplies from Mather AFB "would not involve any construction, demolition, or dismantlement activities, nor is it expected to produce any liquid effluents". However, current operations affect land use near the base extensively. Although control of off-base development would remain the responsibility of the local communities, we agree with (18) the recommendation that any post-closure changes in zoning and land use be made after specific reuse options have been decided. We note that a second EIS will be prepared to cover the final disposition of the base property (including reuse).

Although most of the Installation Restoration Program (IRP) sites are located away from base housing and the main base area where the heaviest activity of moving is expected, it is stated that an approved work plan for the cleanup of past hazardous waste disposal sites is not yet available. Although IRP activities will be monitored by the State of California and the U.S. Environmental Protection Agency under an (19) Interagency Agreement signed July 1989, appropriate safeguards should be taken to ensure the protection from potential exposures during closure activities.

Thank you for the opportunity to review and comment on this DEIS. Please insure that we are included on your mailing list to receive a copy of the final document, and future DEIS's which may indicate potential public health impact and are developed under the National Environmental Policy Act (NEPA).

Sincerely yours,

Kenneth W. Holt

Kenneth W. Holt, M.S.E.H.
Environmental Health Scientist
Center for Environmental Health
and Injury Control

COUNTY OF SACRAMENTO

ENVIRONMENTAL MANAGEMENT DEPARTMENT

NORMAN D. COVELL, DIRECTOR

ENVIRONMENTAL HEALTH DIVISION
Kenneth C. Stuart, Chief

January 3, 1990

Ms. Cathrine Hitchins
HQ ATC/DEEV
Bldg 661, Room 117
Randolph AFB, TX 78150-5001

Subject: **DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE CLOSURE OF MATHER AIR FORCE BASE.**

Dear Ms. Hitchins:

The Sacramento County Environmental Management Department has reviewed the subject document and offers the following comments;

Hazardous Materials Division

(20) The document does not address the time frames of future studies and actions required as part of the EPA superfund clean-up activities or leaking underground tank locations (pages G-2 through G-6).

Air Quality Management Division

Analysis of air quality impacts from implementation of the Mather AFB closure are likely to generate a temporary increase in vehicle emissions generated by activities to relocate supplies, equipment and personnel to Beale AFB, and to a lesser extent, to McClellan AFB. The draft EIS analysis anticipates this increase is less than 0.01% of the current estimated mobile source emissions in Sacramento County. Long term air quality impacts resulting from the closure are estimated to reduce project related emissions by 85-92%.

(21) The Sacramento Metropolitan Air Quality Management District agrees with the draft EIS air quality analysis that closure operations will temporarily increase air pollutants resulting from the use of transport vehicles. The District further acknowledges that the long term reduction in emissions by the overall operations reduction will offset the emissions generated by the relocation activity.

(22) The District recommends that relocation activities consider actions to reduce air quality impacts. For example, to minimize trips, transport vehicles should carry safe capacity loads. Transport activities should be minimized during periods when ozone thresholds are exceeded.

(23) Section 3.7.4 (Asbestos) states that an asbestos survey of each building has been accomplished. It should be noted that at least 20 days prior to the demolition or renovation of any stationary building, structure, facility, or portion thereof, the owner or operator shall submit an Asbestos Demolition/Renovation Plan to the Air Pollution Control Officer. This requirement will apply to all proposals, even when no asbestos is known to be present, in order to ensure that appropriate safety precautions are taken during the demolition of the structure. (Section 40001 of the California Health and Safety Code).

The Department would like to be informed of future activities and use plans associated with the Mather AFB property. If you have any questions, please contact me at (916) 386-6125.

Sincerely,

Debbie Lazarus

Debbie Lazarus
Senior Env. Health Specialist

DL:cb
01/03/90

cc: Alciedes Frietas, Environmental Coordinator

C-847

STATE OF CALIFORNIA--HEALTH AND WELFARE AGENCY GEORGE DEUKMEJIAN, Governor

DEPARTMENT OF HEALTH SERVICES
TOXIC SUBSTANCES CONTROL PROGRAM
REGION 1
10151 CROYDON WAY
SACRAMENTO, CA 95827-2106
(916) 855-7700

January 4, 1990

Craig James, Lt., USN
HQ ATC/DEEV
Bldg 661, Room 117
Randolph AFB, TX 78150-5001

Dear Lt. James:

MATHER AIR FORCE BASE CLOSURE ENVIROMENTAL IMPACT STATEMENT, SACRAMENTO, CALIFORNIA

The Department of Health Services (Department) has reviewed the "Draft Environmental Impact Statement for the Closure of Mather Air Force Base" (Draft EIS). Due to the limited scope of the activities evaluated in the Draft EIS, i.e. the actual (24) relocation of the 323rd Flying Training Wing, the Department has no formal comments on the document. Informal comments were previously provided to you during a 2 January 1990 telephone conversation. It should be noted that the Department will also be reviewing the Reuse EIS when available.

If you should have any questions or comments regarding this matter, please contact me at (916) 855-7873.

Sincerely,

Tracie L. Billington
Waste Management Engineer

cc: See next page.

cc: Lt. Col Richard Blank
Chief, Environmental Management
323rd Flying Training Wing
Mather Air Force Base, CA 95655-5000

Lt. Col. Jose Saenz
Environmental and Contract Planning
Headquarters Air Training Command
Randolph Air Force Base, TX 78150-5001

John Chestnutt
US Environmental Protection Agency
Region IX
215 Fremont Street (H-7-3)
San Francisco, CA 94105

Mike Mosbacher
California Water Quality Control Board
Central Valley Region
3443 Routier Road
Sacramento, CA 95827-3098

State of California
GOVERNOR'S OFFICE
OFFICE OF PLANNING AND RESEARCH
1400 TENTH STREET
SACRAMENTO 95814

GEORGE DEUKMEJIAN
GOVERNOR

(916) 323-7480

DATE: January 5, 1990

TO: U. S. Department of the Air Force
HQ ATC/DEEV
ATTN: Ms. Catherine Hitchins
Building 661, Room 117
Randolph AFB, TX 78150-5001

FROM: Office of Planning and Research
State Clearinghouse

RE: Draft Environmental Impact Statement for the Closure of Mather Air Force Base, Sacramento County (SCH 89022402)

As the designated California Single Point of Contact, pursuant to Executive Order 12372, the Office of Planning and Research transmits attached comments (25) as the State Process Recommendation.

This recommendation is a consensus; no opposing comments have been received. Initiation of the "accommodate or explain" response by your agency is, therefore, in effect.

Sincerely,

Robert P. Martinez
Director

Attachment

cc: Applicant

NOTE: The attachments referred to in this letter are presented on the following pages (I-25 through I-27).

Resources Building
1416 Ninth Street
95814
(916) 445-5656
TDD (916) 324-0604

GEORGE DEUKMEJIAN
GOVERNOR OF
CALIFORNIA

THE RESOURCES AGENCY OF CALIFORNIA
SACRAMENTO, CALIFORNIA

California Conservation Corps
Department of Boating and Waterways
Department of Conservation
Department of Fish and Game
Department of Forestry
Department of Parks and Recreation
Department of Water Resources

Air Resources Board
California Coastal Commission
California Tahoe Conservancy
California Waste Management Board
Colorado River Board
Energy Resources Conservation And Development Commission
San Francisco Bay Conservation and Development Commission
State Coastal Conservancy
State Lands Division
State Reclamation Board
State Water Resources Control Board
Regional Water Quality Control Boards

U. S. Department of the Air Force
HQ ATC/DEEV
ATTN: Ms. Catherine Hitchins
Building 661, Room 117
Randolph AFB, TX 78150-5001

January 5, 1990

Dear Ms. Hitchins:

The State has reviewed the Draft Environmental Impact Statement for the Closure of Mather Air Force Base, Sacramento County, submitted through the Office of Planning and Research.

We coordinated review of this document with the California Highway Patrol, the Central Valley Regional Water Quality (26) Control, the Air Resources, and the Solid Waste Management Boards, and the Departments of Fish and Game, Health Services, Parks and Recreation, and Transportation.

The Solid Waste Management Board has submitted the attached comments for your consideration. The Office of Historic Preservation, Department of Parks and Recreation, commented directly on December 7, 1989.

Thank you for providing an opportunity to review this project.

Sincerely,

Nadell A Gayou

for Gordon F. Snow, Ph.D
Assistant Secretary for Resources

Attachment

cc: Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814
(SCH 89022402)

NOTE: The attachment referred to in this letter is presented on the following pages (I-26 and I-27).

State of California **Environmental Affairs Agency**

Memorandum

JAN - 5 1990

To : Dr. Gordon Snow
Assistant Secretary
Resources Agency
1416 9th Street, Rm. 1311
Sacramento, CA 95814

From : John D. Smith
John D. Smith, Manager
Local Planning Division
CALIFORNIA WASTE MANAGEMENT BOARD

Subject: Draft Environmental Impact Statement (DEIS) for the Mather Air Force Base (AFB) Closure

California Waste Management Board (Board) staff have reviewed the Draft Environmental Impact Statement for closure of Mather Air Force Base and offer the following comments:

p. 3-12 Surface Water - The DEIS states wastewater flows in excess of 2 M Gal/day are stored on the base and discharged during periods of low flow. The DEIS also states that approximately 10% of the average daily flow is from industrial sources, including heavy metal sources. The FEIS should address whether or not the (27) wastewater storage ponds have been a source of ground water pollution in the past, and whether they may pose a threat to ground water quality in the future. The FEIS should also assess the need for remedial action at the wastewater ponds. The concentrations of heavy metals in the storage ponds be identified in the FEIS. Board staff recommend that the storage ponds be added to the Remedial Investigation (RI) list.

p. 3-14 Asbestos - Please identify current amounts of asbestos waste generated as a result removal during construction activities. The FEIS should estimate the amount of asbestos waste which remains, and the number of (28) buildings requiring remedial action. The need for future asbestos removal projects should evaluated in regard to future uses of buildings and structures on the base. The final disposal site, as used by each hauler, for asbestos waste should be identified. The

need for continued removal and temporary on site storage, processing and hauling of asbestos waste should be evaluated, and its impact on potential future land uses should be assessed in the Mather AFB Reuse EIS.

p. 3-15 Other Wastes - The FEIS should address the closure of the landfill located on base property. The types of wastes disposed of at this site should be identified. It appears that this may be an unpermitted site. The (29) FEIS should determine whether this site needs a Solid Waste Facilities Permit from the Local Enforcement Agency. The FEIS should also determine if this site is subject to this Board's Landfill Closure/Post Closure Maintenance requirements.

In addition, the FEIS should identify the ultimate disposal site for infectious waste and include a (30) discussion of Air Force Regulation 160-42 governing the disposal of infectious waste.

Thank you for the opportunity to review this document. If you have any questions on the above comments, please call Michael R. Leaon, of the Board's Local Planning Division, at (916) 327-0457.

HOLLIMAN, HACKARD & TAYLOR
A PROFESSIONAL CORPORATION
ATTORNEYS
1426 RIVER PARK DRIVE, SUITE 300
SACRAMENTO, CALIFORNIA 95815
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WILLIAM G. HOLLIMAN, JR.
MICHAEL A. HACKARD
JOHN M. TAYLOR
GEORGE E. PHILLIPS
B. DEMAR HOOPER
JOEL N. HORSTKIN
CRAIG M. SANDBERG
LEIGH HOWELL MARX
MARCUS J. LO DUCA
JOHN T. KETELSEN

January 8, 1990

1325.007

RE:

Lt. James
Headquarters Air Training Command/DEEV
Randolph AFB, TX 78150-5001

Re: Comments on Environmental Impact Analysis (EIA) for Mather Air Force Base Closure

Dear Lt. James:

I had the opportunity to speak at the public hearing for the referenced EIA, at which time I requested an opportunity to review the data files for the Mather AFB noise simulation model in order to investigate whether the EIA noise analysis had been accurately prepared. In response to my request, the information has been sent, and the noise consulting firm of Parnell, Pearson & Wuesthoff is in the process of preparing a detailed comment. Because the comment deadline is January 8, 1990, I am providing the following general comments, with the understanding, per your telephone conversation this day with John Parnell, that the detailed comments may be provided not later than January 10, 1990, and still be considered in your response to comments.

We have identified components of the noise analysis in the EIA requiring further explanation in the final document, and have listed these problem areas in a generic format.

(31) - There are no flight operations data in the EIA supporting the noise exposure maps. Numbers of average daily operations by aircraft type, flight track and time of day should be documented. Sources of this data should be identified.

(32) - Aircraft models, corresponding engine types and noise data sources assumed in the noise analysis should be identified.

(33) - All transient C-135 aircraft using Mather AFB are assumed to be C135-A models. Available descriptions of the Air Force retrofit program for the C-135 suggest this is an unwarranted

assumption. A rationale for assuming 100 percent C135-A aircraft in the noise simulation model should be included in the EIA.

- There are no field verifications of aircraft (34) flight tracks reported in the EIA. Observations from nominal flight track locations should be documented.

- There are no reported field noise measurements (35) of SEL values used to verify assumptions used in the noise model.

- There is no analysis in the EIA justifying use of a 260-day period for defining Average Daily Flight Operations. Both the California Administrative Code (Title 21, Subchapter 6) defining Community Noise Equivalent Level (CNEL) analysis procedures and the subsequent Federal (36) Interagency Agreement (Federal Interagency Agreement on Urban Noise, June, 1980) adopting Day-Night Average Sound Level (LDN) as the noise metric for all federal agencies reference a quantitative definition based on a 365-day annual averaging period. Land use planning guidelines shown in the EIA were promulgated originally on a cumulative annual (365 day) average noise exposure.

If you should have any questions or wish to make comment on the above list, please do not hesitate to call me.

Very truly yours,

B. Demar Hooper

BDH:dal
cc: John Parnell
PARNELL, PEARSON & WUESTHOFF, AICP
014/1325/L1LDN

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, CA 94105

08 JAN 1990

Lt. Craig James
HQ ATC/DEEV
Randolph AFB, TX 78150-5001

Dear Lieutenant James:

The Environmental Protection Agency (EPA) has received the Draft Environmental Impact Statement (DEIS) for the project entitled **Closure of Mather Air Force Base, CA.** Our National Environmental Policy Act (NEPA) review is pursuant to the Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508) and Section 309 of the Clean Air Act.

The proposed closure is part of the recommendation package prepared by the Defense Secretary's Commission on Base Realignments and Closures. The action described in this DEIS consists of the transfer of the 323rd Flying Training Wing from Mather Air Force Base (Mather AFB) to Beale AFB (located about 60 miles to the north). The 940th Air Refueling Group will remain until a decision is made on the future reuse of Mather AFB. Other units will be deactivated as appropriate. No construction or demolition is planned. The relocation includes transfers of personnel, aircraft, and various other equipment and material. Impacts of the relocation on Beale AFB and of future disposal and reuse of Mather AFB will be analyzed in separate NEPA documents.

EPA concerns are impacts to hazardous waste cleanups, hazardous waste management, long-term protection of wetland and valuable natural resources and habitats at Mather AFB, and air quality. Based upon our review, we have classified this DEIS as category EC-1, Environmental Concerns - Adequate (see attached "Summary of the EPA Rating System"). To avoid conflicts between moving contractors and hazardous waste cleanup actions, we recommend close coordination between environmental staff and those responsible for relocation activities. Our detailed comments are enclosed. (37)

We commend the Air Force's commitment in the DEIS to hazardous waste cleanups and preservation and maintenance of base natural resources. The Air Force should consider the transfer of sensitive or especially valuable habitat and natural resources to resource agencies (e.g. Fish and Wildlife Service, National Park Service) in order to provide for their management and protection. If this cannot be accomplished, EPA recommends that preservation (38)

of existing wetland and riparian resources and other valuable habitat be stipulated as a condition of transfer to the private sector, if legally feasible. Other preservation options are easements, dedication of special areas, and sales agreements which include protection and preservation. We encourage the Air Force to include alternatives in the reuse EIS which will continue to maximize and preserve natural resources.

We support the Air Force's recommendation that any post-closure changes in zoning and land use be made after specific reuse options have been decided through the NEPA and reuse selection process (p. vii). EPA believes it is very important to include Federal and State environmental and resource agencies in the base reuse planning process. As stated in the DEIS (p. 2-2), the duration and timing of hazardous waste cleanup operations may affect the timing of the reuse and the areas available for reuse. Given the complex hazardous waste cleanups it is important that the local communities clearly understand potential environmental (39) constraints on base reuse options caused by hazardous waste sites and cleanup actions.

We appreciate the opportunity to comment on the proposed project and request that four copies of the Final Environmental Impact Statement (FEIS) be sent to this office at the same time it is filed with our Washington, D.C. office. We also request notification of any meetings(s) to be held regarding this project. If you have any questions, please contact Ms. Laura Fujii (415) 744-1051, (FTS 484-1051).

Sincerely,

Deanna M. Wieman

Deanna Wieman, Director
Office of External Affairs

Enclosures: 3 pages

EPA ID# 90-065
cc: AFRCE, San Francisco, Phil Lammi
Mather AFB, Base Commander
USFWS, Sacramento, Wayne White
USNPS, San Francisco
CDFG, Region 2, Don Lollock
EPA/OFA, Sandy Williams
DOHS, Gordon Stephens
SACOG, Pete Hill
Sacramento County, Susan Ziegler
Mather Conversion Commission, John Cacchiollo
Office of Econ. Adjustment, Col. John Gay
Sacramento County APCD

HAZARDOUS WASTE COMMENTS

Hazardous Waste Cleanup

1. EPA is concerned with the impact of the proposed action on the pace and quality of cleanup programs. The FEIS should address in detail impacts to the following.

-- Base environmental staffing. Hazardous waste cleanups are often very complex, labor intensive, lengthy and costly. It is very important to have a full staff of highly qualified experienced personnel **on-site** in order to ensure timely and effective cleanup. We encourage the Air Force to commit to continuing on-site base environmental staffing as long as necessary to accomplish required cleanup actions. (40)

-- Funding for investigation and cleanup needs. EPA is concerned that base closure may reduce the installation's ability to effectively lobby for cleanup funds at the Washington, D.C. level. It is clear that many installations will be vying for an ever-diminishing pot of cleanup funds. The loss of "mission-related" activities, a change in the mission, and loss or reassignment of ranking officers may affect the base's ability to obtain funds. The FEIS should address this issue and describe avenues available to base environmental staff to obtain the necessary funding for continuing long-term cleanup activities. (41)

-- Cleanup schedules. Closure should not affect the cleanup schedule established in the Interagency Agreement (IAG). The FEIS should discuss in detail how the Air Force plans to accommodate concurrent cleanup and closure actions and avoid traffic and administrative delays and conflicts. Access for Air Force environmental staff and/or their hazardous waste contractors conducting cleanup and investigation activities must be assured. (42)

2. The proposed action may change the groundwater flow patterns as a result of reduced groundwater withdrawal. Changes in groundwater rates could adversely affect the movement of the plume of contamination. The FEIS should identify the measures that will be taken should the base closure and possible associated changes in groundwater withdrawal rates produce changes in the movement of the contaminated plume. (43)

3. The FEIS should address the potential for increased risk of exposure to hazardous substances caused by the the proposed closure action and associated potential for reduced security at (44)

hazardous waste/substances sites. Measures to be taken to mitigate for this potential increased risk should be discussed in the FEIS.

Hazardous Waste Management

(45) 1. As with hazardous waste cleanup, EPA is concerned with the impact of the proposed action on the effectiveness and quality of hazardous waste management programs. The FEIS should discuss impacts to base environmental staffing, funding, and compliance schedules. Withdrawal actions should not impact the proper management of hazardous waste or the timely compliance to past and current violations.

(46) 2. The FEIS should address in more detail the closure plans and impacts to the hazardous waste treatment, storage or disposal (TSD) facility, wastewater holding ponds, aircraft wash racks, oil/water separators, hazardous waste storage areas, and active underground storage tanks. Although detailed closure plans may be unavailable (p. 2-1), the FEIS should discuss the proposed preferred alternative closure methods, schedules, and transfer/modification of the permits and approvals for the above facilities.

(47) 3. The FEIS should explain more clearly what is involved in an interim status exemption under RCRA for the TSD facility (p.3-13).

WETLANDS COMMENTS

(48) 1. Although the current withdrawal action does not appear to directly affect wetlands or waters of the United States, EPA continues to be concerned with the cumulative impacts to these wetlands from relocation (e.g. Beale AFB realignment) and reuse activities. These resources should receive protection following closure to ensure their continued existence and functioning.

(49) 2. The FEIS should clarify what "maintenance" activities will take place in vernal pool areas. The vernal pools should be allowed to remain in their natural state, without human intervention. These areas should be protected from degradation due to vehicle or other human activities. If necessary, fencing or other enclosure devices should be constructed.

3. EPA encourages the Air Force to conduct a systematic survey of Mather AFB for special-status plants and wildlife; and (50) threatened, endangered, and candidate species (p.3-21). Information on the presence or absence of these species will be necessary as part of the reuse EIS as well.

AIR QUALITY COMMENTS

1. The FEIS should describe what will be done with the current (51) air pollution permits and credits (Appendix E) upon transfer or closure of their emission sources. Indicate which permits will be terminated, transferred or remain in place.

2. We encourage the Air Force to commit to measures such as (52) car/van pooling, and flexible work hours to mitigate for potential withdrawal-related transportation and air quality impacts.

GENERAL COMMENTS

1. EPA supports the mitigation measures described in Section (53) 4.14 (p.4-11). We encourage the Air Force to clearly commit to these measures in the FEIS.

2. The FEIS should discuss existing facilities utilized by the (54) surrounding military retirement community and potential impacts to these facilities from the proposed action.

3. A certain threshold of activity and development is necessary in an area to support adequate public transportation systems. (55) The FEIS should address potential impacts to the local public transportation system due to the proposed closure action.

SUMMARY OF RATING DEFINITIONS AND FOLLOW-UP ACTION*

Environmental Impact of the Action

LO—Lack of Objections
The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC—Environmental Concerns
The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

EO—Environmental Objections
The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU—Environmentally Unsatisfactory
The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

Adequacy of the Impact Statement

Category 1—Adequate
EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2—Insufficient Information
The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3—Inadequate
EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From: EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment

I.2 RESPONSES TO COMMENTS ON THE DEIS

This section presents responses to each of the numbered comments identified in Section I.1. For each comment number, a summary of the comment is given (in bold face), followed by a response. Subheadings are used to identify the source of the comment.

B. Demar Hooper

1. **The best available data should be used in describing noise impacts from existing operations at Mather AFB.**

   In support of this EIS, an In Progress Review team of U.S. Air Force representatives visited Mather AFB in October 1989 to collect data needed to describe noise impacts from current operations, and to verify the accuracy of such data.

2. **The input data base used to develop the noise contours should be made available.**

   The operations summary used to develop the noise contours was provided to Mr. Hooper in December 1989.

John Parnell

3. **The definition of the C-135 aircraft used in the noise impact analysis was incorrectly given as C-135A in the DEIS, and should have been C-135E.**

   The DEIS did not specify the KC-135 model used in the noise analysis; however, it did incorrectly state that the KC-135 aircraft based at Mather AFB were model A, instead of model E.

   In the noise analysis, the KC-135 aircraft types were assumed to be model B, whose engine noise level is the same as the KC-135E, which is the one actually in use. Thus, the DEIS noise analyses are based on the correct aircraft model. The text has been changed to reflect this comment (see Sections 3.1.3 and 3.2, pp. 3-3 and 3-4, respectively).

4. **Page 3-3 of the DEIS states that the annual aircraft operations at Mather AFB are 82,210. Page 3-4 states that the noise analyses are based on 466 operations per day; based on a 260 day/yr flying operations, this computes to about 121,000 operations per year.**

   The daily operations presented on the DEIS (p. 3-4) and used as input to the noise impact assessment were inadvertently overestimated. The corrected daily operations are as follows: T-37 aircraft, 183 operations/day (reduced from 244); and T-43 aircraft, 49 operations/day (reduced from 64). The total daily operations, including the B52s, KC-135Es, and transient aircraft are now 390 operations/day. The text in

Section 3.2 has been changed accordingly (p. 3-4). The noise analyses were repeated with these new operations data, and the resulting noise footprints were found to be virtually unchanged from those appearing in the DEIS.

It should also be noted that tower observations (p. 3-3) should not be compared with the operations data used to assess noise impacts because of differences in the definition of an operation; for example, a formation of four aircraft landing would be considered as one operation by the tower, but four operations for the purpose of assessing noise impacts. Operations estimates for noise impact assessment are thus not expected to agree with observed operations noted by the control tower.

5. **The input file used in the DEIS noise impact analysis should be made available.**

See response to No. 2.

Elizabeth Cristoff

6. **There are approximately 20-30 vernal pools located on Mather AFB in the area between the nature area and the flight line. They contain rare California native plants that wouldn't be found anywhere else except in the vernal pool area. Some of these were disturbed by base activities, probably during the dry season. The pools that are remaining should be protected in some way.**

The area(s) of the base where vernal pools may be found would be protected from development after closure and before the property is transferred from the U.S. Air Force. Potential impacts of development on vernal pool areas will be addressed in the Reuse EIS. The text has been changed to reflect this comment [see Section 2.4 (p. 2-5), Section 4.10 (p. 4-9), and Section 4.14 (p. 4-11)].

Rob Wainwright

7. **Provide copy of the Final EIS.**

Your name has been added to the mailing list for the Final EIS.

Gary Elston

8. **Provide copy of the Final EIS.**

Your name has been added to the mailing list for the Final EIS.

Elizabeth Cristoff

9. **A raised road has been built through the middle of an area with 20-30 vernal pools. The remaining pools should be protected. Provide copy of the Final EIS.**

We have looked into this comment and find that an underground cable had been laid through the general area referred to by Ms. Cristoff (see also response to No. 6). We have since been made aware of the importance of vernal pools and have taken measures to ensure that they will not be disturbed during closure or during the time that the base is maintained by the caretaker service. Your name has been added to the mailing list for the Final EIS.

Robert H. Coughran

10. **Provide copy of the Final EIS.**

Your name has been added to the mailing list for the Final EIS.

Steve Gibson

11. **Provide copy of the Final EIS.**

Your name has been added to the mailing list for the Final EIS.

B. Demar Hooper

12. **The input file used in the DEIS noise impact analysis (NOISEMAP Ldn contours) should be made available. Provide copy of the Final EIS.**

See response to No. 2. Your name has been added to the mailing list for the Final EIS.

Roland E. Sabourin

13. **Provide copy of the Final EIS.**

Your name has been added to the mailing list for the Final EIS.

Kathryn Gualtieri, Office of Historic Preservation

14. **The U.S. Air Force is responsible for identifying and evaluating all historic properties. The archeological survey cited in the DEIS found that the base contains no historic properties, but did the survey consider buildings as well as archeological**

resources? We want to review the archeological survey's documentation before accepting its findings.

Thank you for your review of this document. A copy of the survey cited in the EIS was provided to the Office of Historic Preservation (OHP) for review on January 10, 1990. On January 31, 1990, the OHP responded and agreed that no archeological resources will be involved in the closure of Mather AFB (letter is reproduced in Appendix F, p. F-5). The scope of the archeological survey cited in the DEIS was limited to cultural resources on lands within the Mather AFB boundaries, and thus it did not address the potential historical significance of buildings located on Mather AFB. The age of a building or structure and whether or not it is covered by the 1986 Programmatic Agreement for the identification and evaluation of World War II temporary buildings are important criteria for determining its potential historical significance. While preparing the EIS, the real property records for the base were examined. These records, which list all Mather AFB structures, equipment, etc., indicate that the oldest building on base is 47 years old, thus indicating little potential for buildings or structures at Mather AFB to be of potential historical significance (i.e., greater than 50 years old). As of the date of this Final EIS, no structures at Mather AFB subject to the above-referenced 1986 Programmatic Agreement have been identified. However, we are conducting continuing discussions with the OHP to ensure that appropriate structures are identified and evaluated.

15. **Under Section 106 of the National Historic Preservation Act, it is the responsibility of the U.S. Air Force to discover and identify historic properties. Provide copy of the Final EIS.**

The text has been changed to identify the responsibility of the U.S. Air Force to discover and identify historic properties (Section 3.12, p. 3-24). Also, see response to No. 14. The Office of Historic Preservation has been added to the mailing list for the Final EIS.

B. Demar Hooper

16. **The definition of the C-135 aircraft used in the noise impact analysis was incorrectly given as C-135A in the DEIS, but the transition from the C-135A to the C-135E model occurred around 1985. Also, provide a copy of the EIS prepared for this transition.**

Regarding the use of C-135A, see response to No. 3. The transition of C-135 aircraft at Mather AFB from Model A to Model E began September 1984 and was completed in September 1986. No environmental impact statement was prepared for this activity. Your name has been added to the mailing list for the Final EIS.

17. **Page 3-3 of the DEIS states that the annual aircraft operations at Mather AFB is 82,210. Page 3-4 states that the noise analyses are based on 466 operations per day; based on 260 days/year flying operations, this computes to about 121,000 operations per year.**

See response to No. 4.

Kenneth W. Holt, Department of Health and Human Services

18. **Although control of off-base development would remain the responsibility of the local communities, we agree with the recommendation that any post-closure changes in zoning and land use be made after specific reuse options have been decided.**

Comment noted. Thank you for your review of this document.

19. **An approved work plan for the cleanup of past hazardous waste proposal sites is not yet available. Although most of the Installation Restoration (IRP) sites are located away from base housing and the main base area, appropriate safeguards should be taken to ensure protection from potential exposures. Provide a copy of the Final EIS and future DEISs indicating potential public health impact.**

Closure activities will be coordinated with ongoing IRP activities to minimize mutual interferences and to protect worker health during closure activities. The Air Force will work very closely with the state and EPA to ensure that these safety measures will be implemented. Principal aspects of the work plan will be made available to the public in accordance with the IRP community relations activities. The Department of Health and Human Services has been added to the mailing list for the Final EIS (and future related documents).

Debbie Lazarus, County of Sacramento

20. **The DEIS (pages G-2 through G-6) does not specify the time needed for future studies and actions required as part of the EPA Superfund cleanup activities or by leaking underground tank locations.**

Time frames of future studies related to the EPA Superfund cleanup are specified in the Federal Facility Agreement under CERCLA Section 120. In accordance with Section 12018 of the California Government Code and Health and Safety Code 25159.7, the California Department of Health Services is the single state agency for coordination of Superfund activities. Superfund cleanup is carried out under the Air Force's Installation Restoration Program (IRP), which is a separate program from base closure. The IRP will continue, as long as necessary, during and after the closure of Mather AFB. All cleanup and monitoring activities will be done in accordance with the agreements reached among the Air Force, the state of California, and the U.S. Environmental Protection Agency (Region IX).

21. **The Sacramento Metropolitan Air Quality Management District agrees with the DEIS air quality analysis, and they acknowledge that the long-term reduction in emissions resulting from closure will offset the emissions generated by the relocation activity.**

Comment noted. Thank you for your review of this document.

22. **The District recommends actions to reduce air quality impact during relocation (e.g., to minimize trips, transport vehicles should carry safe capacity loads; transport activities should be minimized when ozone thresholds are exceeded).**

Actions to reduce air quality impacts will be considered during the closure process, including minimizing trips through full utilization of transport vehicle capacities. Excessive transportation activities will be minimized during periods of high ozone levels. The text has been changed to reflect this comment (see Section 4.14, p. 4-12).

23. **The District expects the U.S. Air Force to submit an Asbestos Demolition/ Renovation Plan to the Air Pollution Control Officer 20 days prior to the demolition or renovation of any stationary building, structure, facility, or portion thereof. This requirement will apply to all proposals, even when no asbestos is known to be present. Provide copy of the Final EIS.**

No demolition or renovation activities are planned as part of the closure; however, should such activities be necessary for closure, the plan would be submitted in accordance with regulations [see Section 4.7 (p. 4-7)]. Ultimate disposition of buildings that contain asbestos will be decided in the second, or Reuse EIS. Appendix J contains the U.S. Air Force policy for management of asbestos at bases that are closing. The Sacramento Metropolitan Air Quality Management District has been added to the mailing list for the Final EIS.

Tracie L. Billington, State of California, Health and Welfare Agency

24. **The California Department of Health Services has no formal comment on the DEIS because of the limited scope of activities evaluated. Informal comments were provided in a January 2, 1990, telephone conversation. The Department requests a copy of the second EIS which will consider the final disposition of base property.**

Thank you for your review of this document. Informal verbal comments dealt with providing estimates of hazardous waste generation associated with closure. Carrying out the closure process is expected to result in generation of minimal quantities of hazardous waste. All hazardous wastes present on base near the completion of the closure process would be removed at least 30 days before the base is officially closed. Also, there is little potential for existing hazardous materials to become waste because the bulk of the materials will be transferred for use at other installations. All hazardous materials will be transferred in accordance with applicable state and

federal regulations. After closure, continued operation of the 940th AREFG would generate hazardous waste at a rate of about 7500 lb/year, which is about 7.5% of current levels (100,000 lb/year). The text has been changed to reflect this comment [see Section 2.3, Table 2.2 (p. 2-6), Section 3.7.2 (p. 3-14), and Section 4.7 (p. 4-7)].

Robert P. Martinez, State of California, Office of Planning and Research

25. **No comments opposing the DEIS have been received; attached are some suggested changes for clarification (attachments refer to Nos. 27–30).**

Thank you for your review of this document. Clarifications and changes have been made as indicated in responses to Comment Nos. 27–30.

Gordon F. Snow, The Resources Agency of California

26. **The Resources Agency of California coordinated review of the DEIS with the California Highway Patrol; the Air Resources and Solid Waste Management Boards; and the Departments of Fish and Game, Health Services, Parks and Recreation, and Transportation. Only the Solid Waste Management Board attached comments. The Office of Historic Preservation commented directly.**

Comment noted. Refer to Comment Nos. 27–30 for comments from the Solid Waste Management Board and Comment Nos. 14 and 15 for comments from the Office of Historic Preservation. Thank you for your review of this document.

John D. Smith, State of California, Environmental Affairs Agency (Solid Waste Management Board)

27. **The California Solid Waste Management Board recommends that the Final EIS (FEIS) should (1) address whether or not the wastewater storage ponds have been a source of groundwater pollution in the past, and whether they may pose a threat to the groundwater in the future and (2) assess the need for remedial action at the wastewater ponds. The Board recommends that the storage ponds be added to the Remedial Investigation (RI) list.**

Thank you for your review of this document. The wastewater ponds themselves are currently not on the list of sites that comprise the Installation Restoration Program (IRP) activities at Mather AFB (see Fig. 3.4). While the wastewater ponds are a probable source of a groundwater mound, groundwater monitoring wells in the vicinity (installed under the IRP) have not detected any chemical effects from the ponds. A groundwater mound is an elevated area in the groundwater table caused by percolation from a higher source such as a lake or a pond. Thus, there is little indication that the ponds are a source of groundwater pollution, and there is little potential for them to become a source of groundwater pollution after closure. The addition of sources to the RI list is beyond the scope of this EIS and is part of the IRP which is an ongoing program independent of base closure.

28. **The Board recommends that the FEIS should (1) estimate the amount of asbestos waste that remains to be removed and the number of buildings requiring remedial action; (2) evaluate the need for future asbestos removal projects in regard to future uses of buildings and structures; and (3) identify the final disposal site of each hauler. The Reuse EIS regarding the final disposition of base property should evaluate the need for continued removal and temporary on-site storage; processing and hauling of asbestos waste; and the potential impact of any activities regarding asbestos on future land uses.**

Appendix J presents the U.S. Air Force policy for managing asbestos at bases that are closing. Any asbestos on base that is removed prior to closure will be disposed of in accordance with applicable laws and regulations, as is now done. Closure itself will not generate any asbestos for disposal. The relationship of asbestos to future uses of Mather AFB buildings and structures will be addressed in the Reuse EIS. Asbestos generated at Mather AFB is taken to the Chemical Waste Management disposal site at Kettleman City, California, for disposal. Comments on issues to address in the Reuse EIS are noted.

29. **The Board recommends that the FEIS should address the closure of the landfill located on base property and identify the types of wastes disposed of at this site. If the site is unpermitted then the FEIS should determine whether the site needs a Solid Waste Facilities Permit from the appropriate Local Enforcement Agency. The FEIS should determine if this site is subject to the Board's Landfill Closure/Post Closure Maintenance requirements.**

Demolition wastes currently generated at Mather AFB by contractors are taken to a state-licensed county landfill, and demolition wastes currently generated by Mather AFB personnel are deposited in a county-inspected site on base. The Sacramento County Authority inspects the site quarterly and limits waste disposal to only qualified demolition wastes. The very limited and specific use of the site does not require licensing from the state. Landfills used in the past at Mather AFB will be closed out under the Air Force's Installation Restoration Program (IRP) as appropriate based on the results of ongoing investigation and remediation activities. Wastes present in previously used landfills at Mather AFB while not directly analyzed have been tested for by extensive soil gas test and groundwater wells. The sample analysis data could be used to identify general types of waste in the landfill(s), as necessary. The text has been changed to address this comment (see Section 3.7.6, p. 3-15 and Section 3.8, p. 3-16).

30. **The Board recommends that the FEIS identify the ultimate disposal site for infectious waste and include a discussion of U.S. Air Force Regulation 160-42 governing the disposal of infectious waste.**

The ultimate disposal site for infectious waste generated at Mather AFB is an incinerator located in Rancho Cordova, California. Although U.S. Air Force Regulation 160-42 is mentioned in the DEIS in relation to the disposal of infectious

waste at Mather AFB, the principal regulations governing disposal of said waste are those found in Title 22, Article 13 of the California Code of Regulations (Requirements for Producers of Infectious Waste). The text has been modified to reflect these changes (see Section 3.7.2, p. 3-14).

B. Demar Hooper

31. **Numbers of average daily operations by aircraft type, flight track, and time of day should be documented in the Final EIS. These flight operations data should be provided to support the noise exposure maps. The sources of the data should be identified.**

Section 3.2 of the EIS summarizes the key background information needed for general public comprehension of potential noise impacts. Descriptions of daily flight operations by principal aircraft type, which are presented in the EIS, are a key component of this body of information. The technical details needed to independently verify (with the NOISEMAP computer model) the noise impacts estimated in the EIS are summarized in the NOISEMAP operations summary, which the U.S. Air Force will provide if requested (a copy of the operations summary was provided to Mr. Hooper in December 1989). These data were assembled by a U.S. Air Force In Progress Review Team, consisting of representatives from the Air Force Engineering Services Center, Mather AFB, and the U.S. Air Force Regional Civil Engineer, in October 1989.

32. **Aircraft models, corresponding engine types, and noise data sources assumed in the noise analysis should be identified.**

See response to comment No. 31.

33. **A rationale for assuming that all transient C135 aircraft are Model A for the noise simulation model should be included because available descriptions of the U.S. Air Force retrofit program for the C-135 suggest that this is an unwarranted assumption.**

All transient KC-135 aircraft were assumed to be Model A because the transient nature of the aircraft does not allow specification of a particular model type. To provide an upper bound of potential noise impacts, the noisiest KC-135 aircraft, Model A, was assumed. The transient KC-135 aircraft make a very small (less than 2%) contribution to the daily operations on which the noise footprint is based. Consequently, assuming 100% Model A or 100% Model E makes only negligible changes to the overall noise footprint.

34. **Field verifications of aircraft flight tracks should be reported. Observations from nominal flight track locations should be documented.**

Although not mentioned specifically in the EIS, there was field verification of the flight tracks used in the noise impact analysis. In October 1989, an In Progress

Review Team, consisting of representatives from the U.S. Air Force Engineering Services Center, Mather AFB, and the Air Force Regional Civil Engineer-Western Region, collected and field-verified the information used to estimate noise impacts. As part of this effort, flight tracks were confirmed by reviewing them with aircraft pilots on appropriate maps. The text has been changed to reflect this comment (Section 3.2, p. 3-4).

35. **Field noise measurements of SEL values should be used to verify assumptions used in the noise model.**

The Armstrong Aerospace Medical Research Laboratory (Dayton, Ohio) conducts actual noise measurements for each aircraft in the Air Force's inventory, regardless of its location, as part of the verification of the NOISEMAP computer program.

36. **Land use planning guidelines shown in the DEIS were promulgated originally on a cumulative annual 365-day average noise exposure. There is no analysis in the DEIS that justifies use of a 260-day period for defining Average Daily Flight Operations. Both the California Administrative Code and subsequent Interagency Agreement reference a quantitative definition based on a 365-day annual averaging period.**

Operations data are based on the concept of the average "busy day," as defined under the Air Installation Compatible Use Zone (AICUZ) program. Operations over a one year period are examined to determine if there are significant variations in aircraft activity from month to month. If there are, then the average of the operations for the three months of the year with the highest activity is used as a representation of typical monthly operations. After the average monthly operations are determined, then the number of flying days within that period is computed (if the average weekly flying activity totals more than twice the average weekend activity, then each week is considered as having five flying days). The number of total operations for an average month is divided by the number of flying days within that period to arrive at the total operations for the average "busy day." The "busy day" total operations are in turn divided into two periods, daytime (0701–2200) and nighttime (2201–0700). The text has been changed to reflect this comment (Section 3.2, p. 3-5).

In light of the above definition, the EIS assumes that aircraft based at Mather AFB operate 260 days/year, which reflects operations of 5 days/week. Noise impacts from transient aircraft were estimated assuming 360 days/year operations. The text has been changed to reflect this comment (Section 3.2, p. 3-4).

Deanna Wieman, U.S. Environmental Protection Agency, Region IX

37. **Based on its review of the document, EPA has classified the DEIS as category EC-1, Environmental Concerns—Adequate. EPA recommends close coordination between environmental staff and parties responsible for relocation activities.**

Thank you for your review of this document. Hazardous waste cleanup activities and closure activities will be closely coordinated to minimize the potential for interactions hindering either activity. All cleanup and relocation activities will be accomplished in accordance with pertinent regulations and coordinated to minimize the possibility of any health hazards.

38. **The U.S. Air Force should consider the transfer of sensitive or especially valuable habitat and natural resources to resource agencies (e.g., Fish and Wildlife Service, National Park Service) to provide for their management and protection. If this cannot be done, EPA recommends that the Reuse EIS regarding final disposition of base property include alternative preservation options to protect existing valuable resources.**

At this time, there are no provisions within the Base Closure Law to transfer these types of areas to the resource agencies. The agencies, may, however, request title to these properties through their legislative means. The Air Force is willing to commit that these areas will be protected during closure and through the caretaker processes. These resources will also be considered during the second EIS when evaluating reuse plans.

39. **EPA supports the U.S. Air Force recommendation that any post-closure changes in zoning and land use be made after specific reuse options have been considered in the NEPA and reuse selection process. Federal and state environmental and resource agencies should be included in the base reuse planning process. It is important that the local community understand potential environmental constraints on base reuse options caused by hazardous waste sites and cleanup actions. Provide four copies of the Final EIS.**

As part of the public involvement process associated with the ongoing Installation Restoration Program (IRP), local communities will be informed of locations of cleanup actions at Mather AFB. Potential constraints of these actions on reuse will be addressed in the Reuse EIS. The Environmental Protection Agency (Region IX) has been added to the mailing list for the Final EIS; four copies of the Final EIS will be sent to EPA, Region IX.

40. **The FEIS should address in detail the necessity for having a full staff of highly qualified experienced personnel on-site to accomplish hazardous waste cleanup.**

In accordance with the terms of the Federal Facility Agreement under CERCLA Section 120, the U.S. Air Force is committed to cleanup of hazardous waste sites at

Mather AFB, which will include providing adequate staff and other resources necessary to conduct the cleanup work. The Installation Restoration Program, under which this cleanup is being conducted, is independent of the closure of Mather AFB and will continue after the base closes.

41. **The FEIS should address the issue of continuing to obtain funding for long-term cleanup activities. EPA is concerned that base closure may reduce the installation's ability to effectively lobby in Washington for cleanup funds.**

For the cleanup of Mather AFB, the Federal Facility Agreement (see response to No. 40 and Appendix G of the EIS) commits the U.S. Air Force to conducting the cleanup activities, and funds will be pursued in accordance with this commitment. Furthermore, the Installation Restoration Program is independent of closure and should not be adversely affected by a reduction in mission-related activity. Funding for cleanup activities is available on a "worst case first" basis. This is done to ensure that the most serious threats to the public receive the necessary attention. Mather AFB will receive the same consideration for funding as an active installation, based on a "worst case first" analysis. The Air Force will clean up buildings, grounds, and any contaminated sites that constitute a health hazard in compliance with federal and state regulations. We fully expect that funding will be provided. This may be from a variety of accounts.

42. **The FEIS should discuss in detail how the U.S. Air Force plans to accommodate the schedules for the concurrent cleanup and closure activity established in both the Interagency Agreement and the DEIS. Closure should not affect the cleanup schedule established in the Interagency Agreement.**

Closure and cleanup actions are independent activities and will be closely coordinated to minimize interferences. As discussed in the DEIS, the locations of waste cleanup sites and the general locations of closure activities present little potential for significant interferences. The Air Force does not expect that the established cleanup schedule will be affected by closure.

43. **The FEIS should identify the measures that will be taken if the base closure and possible associated changes in groundwater withdrawal rates produce changes in the movement of the contaminated plume.**

The plume of groundwater contamination will be managed through the Installation Restoration Program (IRP). Ongoing monitoring will detect any changes in water levels, flow regimes, and contaminant levels, and appropriate corrective actions will be taken as needed. The text has been changed to reflect this comment (see Section 4.8, p. 4-8 and Section 4.13, p. 4-11).

44. **The FEIS should address the potential for increased risk of exposure to hazardous substances caused by the proposed closure action and the associated potential for**

reduced security at hazardous waste sites. The FEIS should discuss measures for mitigation of this potential increased risk.

The closure action is not expected to result in a significant increase in risk of exposure to hazardous substances. The ongoing Installation Restoration Program will continue, and as required by state and federal law, will conduct cleanup actions in manners that minimize adverse impacts to the health of workers and the public. After the withdrawal of personnel and equipment is complete, a caretaker will maintain the buildings and grounds and will maintain base security until the property is transferred. Some portions of the base may be restricted within the base in the long term to keep nonessential personnel from exposure to either mechanical hazards (operating cleanup equipment) or environmental hazards. The text has been changed to reflect this comment (see Section 4.8, p. 4-8).

45. **The FEIS should discuss impacts to base environmental staffing, funding, and compliance schedules. Withdrawal actions should not affect the proper management of hazardous waste or the timely compliance to past and current violations.**

As discussed in the EIS, only the 940th AREFG will remain active at Mather AFB after closure. Hazardous wastes generated by this unit will be disposed of by contractor in full compliance with applicable state and federal regulations. Withdrawal actions are not expected to impact the proper management of hazardous wastes or the timely compliance to past and current violations. Also, please see the response to Comment No. 41.

46. **Although detailed closure plans may have been unavailable for the DEIS, the FEIS should discuss in detail the proposed preferred alternative closure methods, schedules, and transfer/modification of the permits and approvals for the hazardous waste treatment, storage, or disposal (TSD) facility; wastewater holding ponds; aircraft wash racks; oil/water separators; hazardous waste storage areas; and active underground storage tanks.**

In general, permits for facilities to be used by the 940th AREFG after base closure will be transferred from Air Training Command to Air Force Reserve, and permits for facilities that are not anticipated to be used after base closure will be terminated.

47. **The FEIS should explain more clearly what is involved in an interim status exemption under the Resource Conservation and Recovery Act (RCRA) for the treatment, storage, or disposal facility (p. 3-13).**

The term "interim status" under the Resource Conservation and Recovery Act (RCRA) refers to the period during which the owner/operator of an existing treatment, storage, or disposal facility is treated as having been issued a RCRA permit even though the final determination of such a permit has not been made. Interim status is granted after the state (or the U.S. Environmental Protection Agency if RCRA authority has not yet been delegated) reviews and approves Part A

of the RCRA permit application. Part B of the application, which is more detailed than Part A, consists of narrative descriptions of activities and plans for safeguarding human health and the environment. Interim status continues until the permit is issued, based on information in Part B of the permit application. The Operations Plan for the Mather AFB RCRA Part B Permit Application was submitted to the state of California Department of Health Services in October 1989; a copy was also provided directly to EPA, Region IX.

48. **Although the current withdrawal action does not appear to directly affect wetlands or waters, EPA wants these resources to receive protection following closure to ensure their continued existence and functioning.**

Comment noted. The withdrawal action at Mather AFB offers little potential for directly affecting wetlands. Following closure, restricted access to the base will be maintained by a caretaker service, thus affording protection to natural resource areas on base.

49. **The FEIS should clarify what "maintenance" activities will take place in the vernal pool areas. These areas should remain in their natural state and be protected from degradation by fencing or other enclosure devices if necessary.**

Maintenance activities in the vernal pool areas are intended to mean that these areas will continue to be protected from development and other disturbances while the U.S. Air Force owns the property. The caretaker force will be made aware of the location and ephemeral nature of the vernal pools.

50. **EPA encourages the U.S. Air Force to conduct a systematic survey for special-status plants and wildlife and threatened, endangered, or candidate species (p. 3-21). Information on the presence or absence of these species should be included in the Reuse EIS regarding final disposition of the base property.**

Information on the presence or absence of special-status plants and wildlife and of threatened, endangered, and candidate species will be considered in the Reuse EIS.

51. **The FEIS should indicate which current air pollution permits and credits (Appendix E) will be terminated, transferred, or remain in place upon transfer or closure of their emission sources.**

It is premature at present to speculate on the future disposition of specific air permits currently in effect at Mather AFB. In general, permits associated with continued operations of the 940th AREFG will be maintained, and the remainder will be terminated. The U.S. Air Force is discussing (with the Sacramento Metropolitan Air Quality Management District) the possible transfer of emission credits from terminated permits to other Air Force bases located near Mather AFB (e.g., McClellan AFB). The 940th AREFG would require the continued use of

Bldg. 4150; the 7000 area; the petroleum, oil, and lubricant system; and the hydrant refueling system. In addition, some boiler operation may be necessary to provide steam heat and hot water. The text has been changed to reflect this comment (see Section 1.4, p. 1-6).

52. **EPA encourages the U.S. Air Force to commit to measures such as car/van pooling and flexible work hours to mitigate for potential air quality impacts related to withdrawal.**

Consideration will be given to implementing such measures during the closure process.

53. **EPA supports the mitigation measures described in the DEIS, Section 4.14 (p. 4-11) and encourages the U.S. Air Force to clearly commit to these measures in the FEIS.**

Section 4.14 of the EIS identifies mitigation measures under review by the Air Force. The Record of Decision will specify which measures will be enacted; your comments, however, have been noted.

54. **The FEIS should discuss the impact of the proposed closure on existing facilities used by the surrounding military retirement community.**

Use of existing facilities by the retirement community is a potential socioeconomic impact associated with closure. An EIS is required to discuss socioeconomic effects only when such effects are interrelated with natural or physical effects (40 CFR Pt. 1508.14). During preparation of this EIS, the U.S. Air Force considered whether any indirect biophysical effects could be attributed to socioeconomic impacts. No such effects or interrelationships were found for Mather AFB. The Air Force will prepare an EIS on the reuse of Mather AFB, which will address the net potential socioeconomic impacts stemming from closure and reuse.

55. **A certain threshold of activity and development is necessary in an area to support adequate public transportation systems. The FEIS should address potential impacts to the local public transportation system due to the proposed closure action.**

The potential effects of closure on the continuation of existing public transportation systems is a socioeconomic issue. See response to comment No. 54.

APPENDIX J

AIR FORCE POLICY ON MANAGEMENT OF ASBESTOS AT CLOSING BASES

APPENDIX J - AIR FORCE POLICY ON MANAGEMENT OF ASBESTOS AT CLOSING BASES

INTRODUCTION

Asbestos in building facilities is managed because of potential adverse human health effects. Asbestos must be removed or controlled if it is in a location and condition that constitutes a health hazard or a potential health hazard, or it is otherwise required by law (e.g., schools). The hazard determination must be made by a health professional (in the case of the Air Force, a Bioenvironmental Engineer) trained to make such determinations. While removal is a remedy, in many cases management alternatives (such as encapsulation within the building) are acceptable and cost-effective methods of dealing with asbestos. The keys to dealing with asbestos are knowing its location and condition and having a management plan to prevent asbestos containing materials that continue to serve their intended purpose from becoming a health hazard. There is no alternative to management of such serviceable asbestos-containing materials, because society does not have the resources to remove and dispose of all asbestos in all buildings in the United States. Most asbestos is not now nor will it become a health hazard if it is properly managed.

There are no laws applicable to the five U.S. Air Force closure bases that specifically mandate the removal or management of asbestos in buildings, other than the law addressing asbestos in schools (P.L. 99–519). Statutory or regulatory requirements that result in removal or remediation of asbestos are based on human exposure or the potential for human exposure (e.g., National Emission Standards for Hazardous Air Pollutants (NESHAPS) specify no visible emissions; the Occupational Safety and Health Administration limits (OSHA) = [..number..] of airborne fibers per volume of air, etc.). There are no statutory or other mandatory standards, criteria, or procedures for deciding what to do with asbestos. Thus, health professional judgment based on exposure levels or potential exposure levels must be the primary determinant of what should be done with asbestos. Apart from this professional and scientific approach, closing bases present the additional problem of obtaining an economic return to the Government for its property. Asbestos found on base properties that are closing must also be analyzed to determine the most prudent course in terms of removal or remediation cost and the price that can be obtained as a result.

The following specific policies will apply to bases closed or realigned (so that there are excess facilities to be sold) under the Base Closure and Realignment Act, P.L. 100–526.

1. Asbestos will be removed if:

   (a) The protection of human health as determined by the Bioenvironmental Engineer requires removal (e.g., exposed friable asbestos within a building) in accordance with applicable health laws, regulations and standards.

   (b) A building is unsalable without removal, or removal prior to sale is cost-effective; that is, the removal cost is low enough compared to value that would be received for a "clean" building that removal is a good investment for the Government. Prior to the decision to remove asbestos solely for economic reasons, an economic analysis will be conducted to determine if

demolition, removal of some types of asbestos but not others, or asbestos removal and sale would be in the best interests of the Government.

(c) A building is, or is intended to be, used as a school, child care facility, or hospital.

2. When asbestos is present but none of the above applies, the asbestos will be managed using commonly accepted standards, criteria and procedures to assure sufficient protection of human health and the environment, in accordance with applicable and developing health standards.

3. A thorough survey for asbestos (including review of facility records, visual inspection, and, where appropriate as determined by the Bioenvironmental Engineer and the Base Civil Engineer, intrusive inspection) will be conducted by the Air Force prior to sale.

4. Appraisal instructions, advertisements for sale, and deeds will contain accurate descriptions of the types, quantities, locations, and condition of asbestos in any real property to be sold or otherwise transferred outside the Federal Government. Appraisals will indicate what discount the market would apply if the building were to be sold with the asbestos in place.

5. Encapsulated asbestos in a building structure, friable or not, is not regarded as hazardous waste by the Air Force, nor does encapsulation within the structure of a building constitute "storing" or "disposing of" hazardous waste. Asbestos incorporated into a building as part of the structure has not been "stored" or "disposed of."

6. Friable asbestos, or asbestos that will probably become friable, that has been stored or disposed of underground or elsewhere on the property to be sold will be properly disposed of, unless the location is a landfill or other disposal facility properly permitted for friable asbestos disposal.

7. The final Air Force determination regarding the disposition of asbestos will be dependent on the plan for disposal and any reuse of the building. Decisions will take into account the proposed community reuse plan and the economic analysis of alternatives (see para 4). The course of action to be followed with respect to asbestos at each closing installation will be analyzed in the Disposal and Reuse Environmental Impact Statement, and will be included in the record of decision (ROD). Any buildings or facilities where the proposed asbestos plan is controversial will be addressed in the ROD, either individually or as a class of closely related facilities.

8. Since other considerations must be taken into account at bases that are continuing to operate, this policy does not apply to them, nor is it necessarily a precedent for asbestos removal policy at such bases.