

R-164217

094723



Questionable Aspects Of The Military's Study Of Land Needs In Hawaii

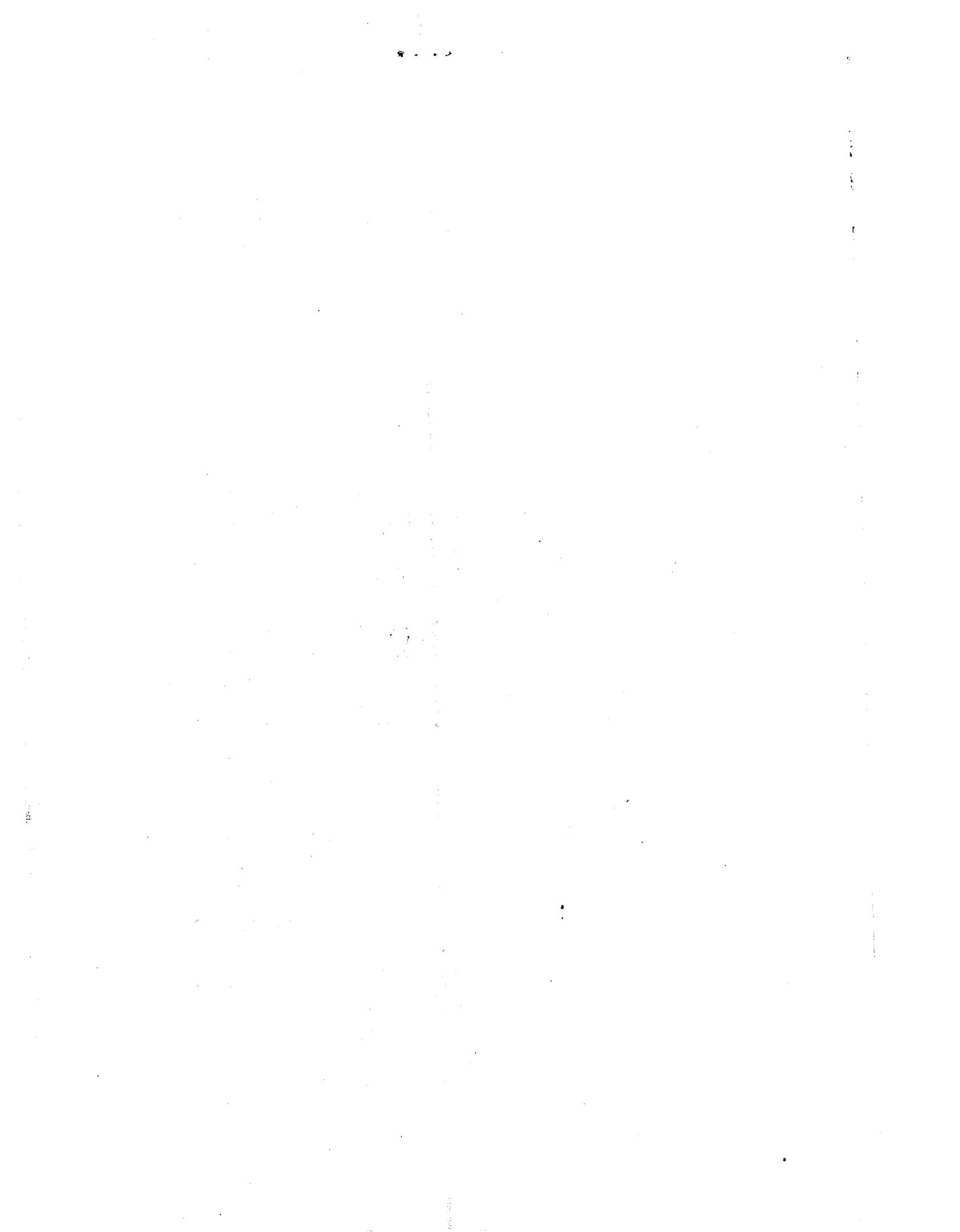
Department of Defense

***BY THE COMPTROLLER GENERAL
OF THE UNITED STATES***

LCD-74-320

~~708981~~
094723

FEB. 20, 1975





COMPTROLLER GENERAL OF THE UNITED STATES

WASHINGTON, D.C. 20548

B-164217

The Honorable
The Secretary of Defense

Dear Mr. Secretary:

This is our report on the military's study of land needs in Hawaii. The significant contents of the report are summarized in the digest.

In preparing this report, we gave full consideration to comments furnished us by the Assistant Secretary of Defense (Installations and Logistics). The report concludes that the Department's study does not accomplish its stated objective of determining the military's long-range land needs in Hawaii.

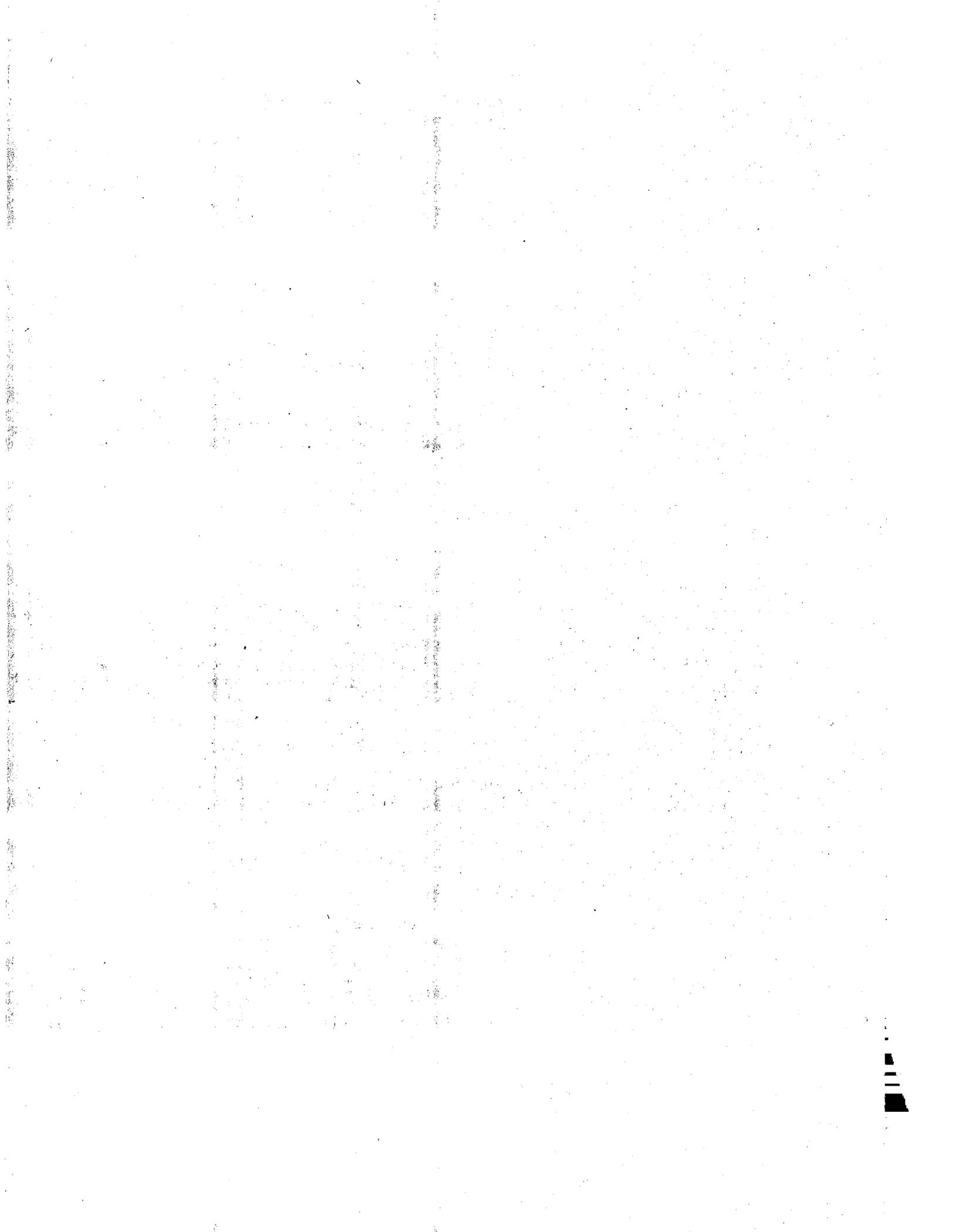
We want to invite your attention to the fact that this report contains recommendations to you which are set forth on page 10. As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions he has taken on our recommendations to the House and Senate Committees on Government Operations not later than 60 days after the date of the report and the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

Copies of this report are being sent to the Director, Office of Management and Budget; the Senate and House Committees on Government Operations, on Appropriations, and on Armed Services; the members of the congressional delegation from Hawaii; and the Secretaries of the Army, Navy, and Air Force.

Sincerely yours,

A handwritten signature in black ink that reads "James B. Stacks".

Comptroller General
of the United States

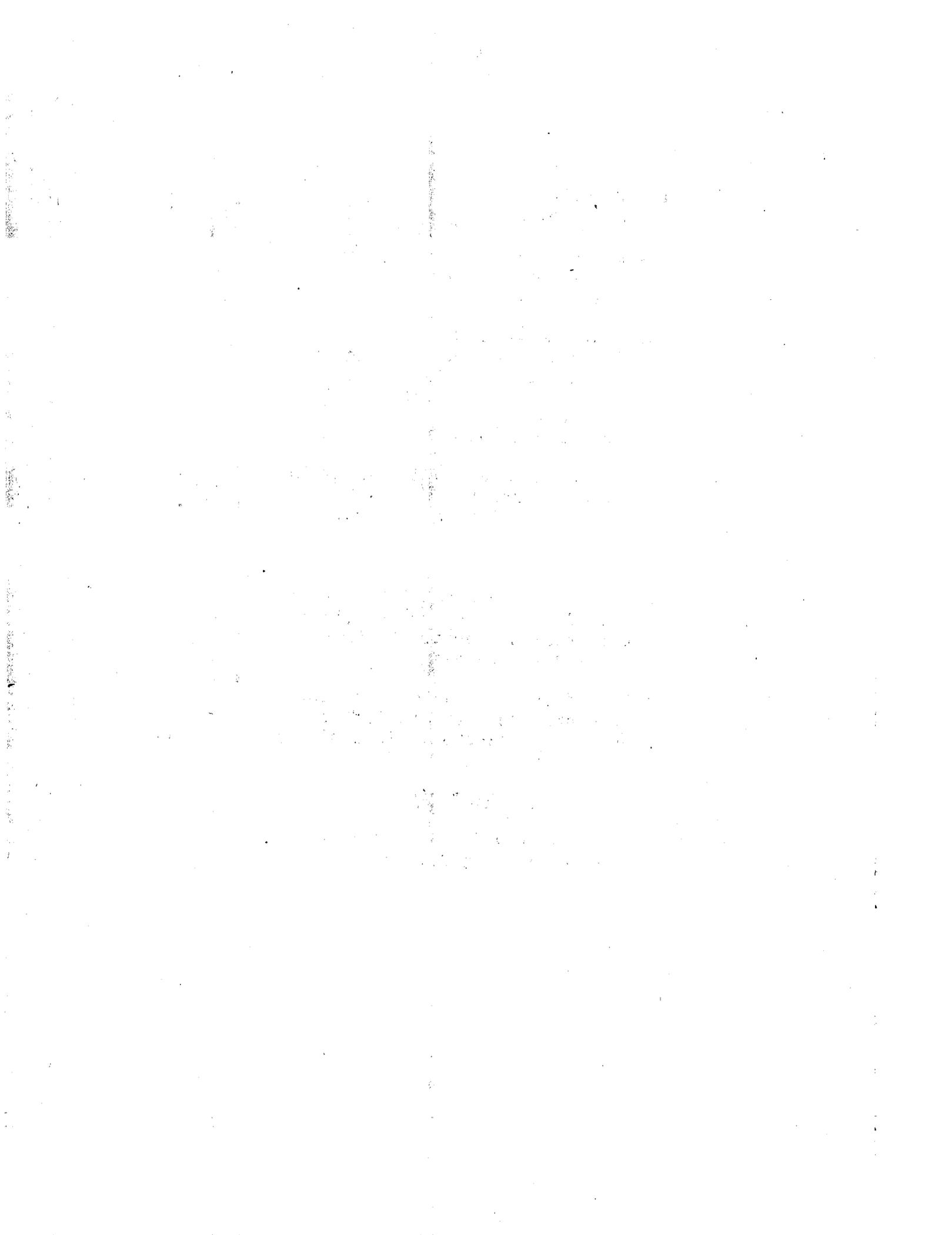


C o n t e n t s

		<u>Page</u>
DIGEST		i
CHAPTER		
1	INTRODUCTION	1
	Scope of review	1
2	DEVELOPMENT AND RESULTS OF STUDY	2
	Development of study	2
	Results of study	3
3	QUESTIONABLE ASPECTS OF STUDY	5
	DOD criteria and study group conversion factors	5
	Services's study activities	6
	Conclusions	9
	Recommendations	10
4	AGENCY COMMENTS AND OUR EVALUATION	11
	Study's intent	11
	GAO proposal to redo study	12
APPENDIX		
I	Comparison of land-use criteria pre- scribed by DOD and Project FRESH study team and criteria used by individual services	15
II	Letter of June 25, 1974, from the Assistant Secretary of Defense (Installations and Logistics)	36

ABBREVIATIONS

DOD	Department of Defense
GAO	General Accounting Office



COMPTROLLER GENERAL'S REPORT TO
THE SECRETARY OF DEFENSE

QUESTIONABLE ASPECTS OF
THE MILITARY'S STUDY OF
LAND NEEDS IN HAWAII
Department of Defense

D I G E S T

WHY THE REVIEW WAS MADE

In January 1973 a study of Department of Defense (DOD) landholdings in Hawaii was released to the public. The study concluded that DOD's landholdings in Hawaii--285,000 acres--could be reduced by 7,600 acres, or about 2.7 percent. (See p. 3.)

GAO examined this study because of:

- DOD's extensive landholdings-- about 7 percent in the State and about 25 percent on the Island of Oahu.
- Public concern about the large landholdings.
- Congressional interest in the shortage of land on Oahu.

FINDINGS AND CONCLUSIONS

Questionable procedures were used in making the study and it did not accomplish its objective of determining the military's long-range land needs in Hawaii. Some of the study's shortcomings included:

- Lack of specific DOD guidelines for converting force levels into land-area requirements.
- Lack of supporting data to demonstrate the reasonableness of the methods and land-use conversion

factors developed by the study group.

- Failure of the military services to apply the land-use conversion factors.
- Inconsistencies in applying methods to determine requirements for similar land. (See pp. 5 to 9.)

GAO believes the services' efforts were directed mainly toward determining the reasonableness of existing land use, rather than determining long-range land needs. (See p. 9.)

RECOMMENDATIONS

Because of the study's shortcomings, the Secretary of Defense should direct that the:

- Study's report no longer be represented to the public and the Congress as a valid study of DOD's long-range land needs in Hawaii.
- Results of the study not be used as the basis for joint civilian-military land-use planning. (See p. 10.)

AGENCY ACTIONS
AND UNRESOLVED ISSUES

The Assistant Secretary of Defense
(Installations and Logistics)

stated that the study met its objectives. Specifically, he noted that:

- The accuracy of the study was well within the expected accuracy range of a conceptual study.
- There were no scientific means for converting force levels into land-area requirements.
- The use of the study group's conversion factors had to be tempered by the individual services' judgments.
- Ninety percent of the study effort was devoted to examining existing facilities and attempting to determine if the land use was reasonable.
- Any future large-scale realignment of existing facilities

would be unlikely within existing budget constraints.

The Assistant Secretary's comments appear to support GAO's premise that the services tried to justify the reasonableness of existing land use, rather than determine long-range land needs. Chapter 3 discusses some of the calculations the services used to determine the reasonableness of their existing land use.

GAO's report to DOD had proposed that the study be redone on the basis of specific criteria for converting force levels into land area requirements. However, because of the Assistant Secretary's arguments against the feasibility and productivity of such an effort, GAO has eliminated these proposals from the report. (See ch. 4.)

CHAPTER 1

INTRODUCTION

The Department of Defense (DOD) is one of the largest land users in Hawaii. At the time of our fieldwork, it owned or leased about 285,000 acres, or about 7 percent of the land in the State. It also controlled about 25 percent of the land on the Island of Oahu--the economic and population center of the State.

In August 1971, DOD announced that a comprehensive review would be made of its total real property holdings in Hawaii. The study was designated Project FRESH--Facilities Requirements Evaluation, State of Hawaii--and was designed, among other things, to develop a 15-year regional master plan to support the long-range military presence in Hawaii. The study was initiated in October 1971 and released to the public in January 1973.

We reviewed Project FRESH because of (1) DOD's extensive landholdings, (2) public concern about the large landholdings, and (3) congressional interest in the acute shortages of available land on the Island of Oahu.

SCOPE OF REVIEW

Our review concentrated on the reasonableness and consistency of the procedures used in making the study and the validity of the land-use criteria. We made our review at various military commands and installations in Hawaii and at Headquarters Offices in Washington, D.C. We did not attempt to determine the amount of land the military actually needed in Hawaii.

CHAPTER 2

DEVELOPMENT AND RESULTS OF STUDY

As a major land user and employer in Hawaii, DOD has a large impact on the Hawaiian community. The scarcity of available land in the State to satisfy the increasing demands of the population has created the need for sound and coordinated land use practices and planning.

One of the major purposes of the study was to determine the landholdings required to support the long-range military presence in Hawaii. The study was also intended to assist the local community in developing long-range community plans.

DEVELOPMENT OF STUDY

The Navy was designated as DOD's agent for the study and was to be supported by all the military services in Hawaii.

The study group was organized on a team concept. A planning group responsible for central coordinating and planning analysis was to develop the master plan, determine land use, and recommend which properties should be released. Working under the planning group were four advocacy teams--one for each military service (Army, Navy and Marine Corps, and Air Force) plus one to present the interests of the civilian community. The groups were composed entirely of DOD personnel.

The study group consisted of master planners, general engineering personnel, and senior military officers from each of the services. Civilian and military specialists in various fields such as real estate, communications, and ordnance, were used as required.

Using mission statements and force level data provided by the services, the study group developed long-range (15-year) requirements in terms of land areas (acreage) for nine basic, all-inclusive, land-use categories: residential, community support, administrative, light industrial, heavy industry, ammunition storage, airfield operations, communications, and training (mostly mountainous and ocean areas). It evaluated existing real estate assets and present land

use for the purpose of fulfilling these long-range requirements.

For defining military land needs in Hawaii, it adopted conversion factors so that numbers of ships, planes, and men could be translated into minimum land areas required to house, support and train personnel; operate and maintain various systems and equipment; store materials and supplies; and provide environmental protection.

RESULTS OF STUDY

The study identified 284,965 acres of land with 110 military installations and facilities owned or leased by DOD. (The study excluded Fort DeRussy because it was under congressional review.) Of these holdings, the study identified 9,482 acres of excess land--8,046 acres releasable immediately and 1,436 acres releasable during the next 5 years.

The services' projected long-range need, on an individual basis, totaled about 515,000 acres. However, through consolidation and joint use of land areas and facilities, primarily for training, the net overall requirements totaled about 277,400 acres. After considering land to be disposed of as excess, DOD needs to acquire 1,918 acres (1,840 acres for ammunition storage and 78 acres for runway clearance zones) of additional land to meet the long-range need of 277,400 acres, as shown below.

Land-use category	Start of FRESH study	Planned disposals	Planned acquisitions	Reclassifications	Long-range needs
		(thousands of acres)			
Residential	3.6	0	0	.8	4.4
Community support	3.1	.3	0	.7	3.5
Administrative	.4	0	0	.2	.6
Light industrial	2.4	.1	0	-.2	2.1
Heavy industry	1.0	.1	0	0	.9
Ammunition storage	13.7	.5	1.8	-.3	14.7
Airfield operations	4.5	.3	.1	.2	4.5
Communications	5.0	.7	0	-.1	4.2
Training	243.6	4.0	0	-.1	239.5
Unused	<u>7.7</u>	<u>3.5</u>	<u>0</u>	<u>-1.2</u>	<u>3.0</u>
Total	<u>285.0</u>	<u>9.5</u>	<u>1.9</u>	<u>0</u>	<u>277.4</u>

Hawaii's Department of Land and Natural Resources and Department of Planning and Economic Development noted that possible uses for some of the lands declared excess "were found to be severely constrained by remote locations, poor access, steep terrain, irregular configurations, marginal use capability, or excessively high replacement costs."

About 7,600 acres of the total long-range requirements for ammunition storage identified in the FRESH study were at Lualualei Naval installation on the Island of Oahu. After the study, DOD announced closing Lualualei as a naval ammunition depot. Project FRESH officials expressed surprise at DOD's announcement and were unaware of the considerations involved in the decision to close Lualualei.

The study group recommended that there be some means of joint civilian-military planning for Hawaii's future and that the study form the basis for coordinating action between DOD and appropriate Federal, State, city and county planning organizations.

The study also served as the basis for developing DOD's long-range facility needs. On the basis of the study, DOD estimated that it will need to spend about \$1.4 billion over the next 15 years to satisfy its facility needs, including new and replacement construction and relocation costs.

CHAPTER 3

QUESTIONABLE ASPECTS OF THE STUDY

In our opinion, Project FRESH does not adequately meet its objective of determining the landholdings required to support the long-range military presence in Hawaii. Our analysis showed that the study's value is questionable because:

- DOD did not provide specific guidelines for converting force levels to land requirements.
- The study group was unable to provide support data to demonstrate the reasonableness of the methods and land-use conversion factors it developed.
- Individual services did not apply the land-use conversion factors developed by the study group.
- There were inconsistencies in applying methods to determine requirements for similar type land.

Appendix I describes the DOD criteria at the time the study was initiated, the conversion factors developed by the study group, and the conversion factors used by the individual services for determining land needs.

DOD CRITERIA AND STUDY GROUP CONVERSION FACTORS

DOD had no specific criteria for determining land needs for five of the nine land categories--light industrial, heavy industry, airfield operations, communications, and training. For the other categories, DOD's criteria was generally expressed in terms of facility area rather than in land area. For example, it established criteria for administrative space in buildings but did not establish criteria for associated parking, roads, or landscaping.

Due to the lack of specific DOD criteria, the study group had to develop conversion factors to translate force level data (ships, planes, and men) into minimum land areas. The study group was unable to provide documentation

supporting the reasonableness of some conversion factors, and in other instances, where the study group was able to reconstruct the development of the conversion factors, the supporting data was invalid.

For the residential land-use category, DOD and the study group's criteria at the time the study was initiated were about the same. However, 1 month before publishing the FRESH report, DOD issued new criteria that rendered all housing requirements obsolete and reduced housing acreage requirements. For example, the previous density for four-bedroom enlisted quarters of six units per acre was increased to nine units per acre. No consideration was given to the revised criteria in the FRESH report.

We did not attempt to evaluate the appropriateness of existing DOD criteria or the study group's conversion factors. As discussed below and as shown in appendix I, the services developed and used their own planning and conversions factors.

SERVICES' STUDY ACTIVITIES

Our review showed that the individual services generally did not follow either DOD or study group criteria. Each service developed and used its own planning and conversion factors for determining land needs, which usually resulted in larger land requirements than if the FRESH factors were used.

Service officials said the study group's planning factors were only intended to be used as guides. These factors were promulgated since DOD had no criteria for converting manpower requirements into acreage. The services' planning factors--or "base master plans," in the case of the Air Force--were based on their experience and knowledge of existing facilities. One official said the use of strict planning criteria to determine acreage requirements was feasible only when one is starting from scratch and not when existing facilities must be considered.

Services' planning factors for similar types of land-use categories varied considerably. In attempting to determine the reasonableness of some of these factors, we found instances of

no supporting data, invalid data, and inconsistent application within a service. For some factors, it was impossible to tell who was responsible for their development.

Variances among services

The study group's guides and the services' actual conversion factors differed widely. An example of this variance is the land-use category of community support, which includes morale, welfare, recreational, community and medical facilities required to support military personnel and their dependents.

The study group identified a composite factor of 1 acre per 100 individuals to provide space for community support needs, excluding golf courses, skeet ranges, or riding academies. This planning factor was reportedly based on a review of all types of community support facilities military installations provide for servicemen and their dependents. However, the original support documents detailing the development of this factor were not available for our review.

Regardless of the validity of the composite factor, the services used their own factors, which differed considerably, as shown below:

FRESH	1 acre per 100 individuals
Navy and Marine Corps	1 acre per 25 individuals
Air Force	1 acre per 19 individuals
Army	1 acre per 16 individuals

The services also used different methods for calculating land-use needs for such common sports as baseball, basketball, and volleyball. For volleyball courts, the Navy and Marine Corps used a factor about six times as large as that used by the Army.

Variances within a service

We also found variances within a service in determining needs for identical types of land. We reviewed Army methods to determine land requirements at Fort Shafter and Schofield Barracks. These two installations represent about 63 percent of the Army's proposed requirement for community support.

To compute the land needed for indoor facilities at Fort Shafter, the floor area was multiplied by a factor of three to provide for parking, landscaping, and other associated needs. The resultant total was then increased by 25 percent for roads, streams, and unusable land. The calculation for Schofield Barracks was the same except that no factor was applied for roads, streams, and unusable area.

No detailed support was available for the factors of three or 25 percent. Army officials said these factors were based on experience and consideration of the existing layout of facilities.

Although the proposed Army manning level in Hawaii is about 25,000, the needed floor area for indoor facilities was generally based on the maximum space allowed by DOD criteria predicated on authorized troop strength of 30,000. The resultant facilities were then allocated to the various Army installations in Hawaii.

DOD's construction manual authorizes 78,000 square feet (1.79 acres) for bowling alleys to support 30,000 troops. Multiplying this figure by the Army factor of three and increasing it by 25 percent comes to about 7 acres. The FRESH report provided 43 acres for bowling alleys at Schofield Barracks and Fort Shafter. Military officials could not explain the additional 41 acres as compared to DOD's criteria or the additional 36 acres compared to Army criteria.

Also, the Army's methods for identifying administrative-use requirements at its two major installations, were inconsistent. At Fort Shafter such requirements were estimated at 82 acres; about 58.3 acres were based on providing 500 square feet of interior space per person and the additional 23.7 acres were based on their master plan--13.5 acres for roads and unusable land, 8.2 acres for a 500-man armory for the reserves, and 2 acres for parking for a car service facility.

The requirement of 29 acres of administrative space for Schofield Barracks was based on multiplying an unexplained floor area by three. The basic floor area did not represent either existing or proposed space at the time of the study.

The only explanation offered was that the requirement was based on experience and the existing layout of facilities. The Navy and Marine Corps had similar inconsistencies.

The Air Force's land-use requirements were based on its "base master plan." With the exception of the community support category, there was no information readily available for comparing the plan's acreage requirements to DOD or study group criteria.

CONCLUSIONS

It appears that the study was directed primarily to determining the reasonableness of existing land use, rather than defining land requirements for the future.

In conducting the study, the services:

- Did not use existing DOD criteria.
- Did not use the guides developed by the study group.
- Used different planning and conversion factors for similar land categories.
- Applied different methods within an individual service to determine needs in similar land categories.

The extent of current military landholdings, particularly on the Island of Oahu, and limited amount of land warrants a definitive study of the military's long-range land needs in Hawaii. The Project FRESH study does not answer the question. Because of the questionable methods used in its development, the study:

- Does not accurately identify the military's long-range land needs.
- Should not be used as the basis for joint civilian-military land-use planning.
- Should not serve as the sole basis on which DOD expects to spend about \$1.4 billion over the next 15 years to satisfy its facility needs.

RECOMMENDATIONS

Because of the questionable aspects of DOD's study, we recommend that the Secretary of Defense direct that the:

- Project FRESH report no longer be represented to the public and the Congress as a valid study of DOD's long-range land needs in Hawaii.
- Results of the study not be used as the basis for joint civilian-military land-use planning.

CHAPTER 4

AGENCY COMMENTS AND

OUR EVALUATION

In commenting on matters discussed in this report (app. I), the Assistant Secretary of Defense (Installations and Logistics) stated that the study met its objectives. He specifically noted that:

- The accuracy of the study is well within the expected accuracy range of a conceptual study.
- There are no scientific means for converting force levels into land area requirements.
- The use of the study group's conversion factors had to be tempered by the judgments of the services.
- Ninety percent of the study effort was devoted to examining existing facilities and attempting to determine if the land use was reasonable.
- Any future large-scale realignment of existing facilities would be unlikely within existing budget constraints.

We believe the Assistant Secretary's comments support our conclusion that the services tried to determine the reasonableness of existing land use, rather than determine long-range land needs. As DOD stated, 90 percent of the study was devoted to examining existing facilities and attempting to determine if the land use was reasonable. Chapter 3 discusses some of the calculations the services used to determine the reasonableness of their existing land use.

STUDY'S INTENT

DOD documentation showed that the original impetus behind the study was apparently a congressional member's letter to the Secretary of Defense. The member was concerned about the scarcity of land on Oahu and suggested that DOD conduct a comprehensive review of its real property holdings in the State.

In describing the study's purpose and why it was needed, DOD's report on the results of the study stated:

- The study is the long-range master plan of the landholdings required to support the military's long-range presence in Hawaii.
- The scarcity of land to satisfy DOD's requirements, along with the increasing needs of the civilian population, have created a critical need for coordinated land use planning.
- Construction sites for most military facilities were dictated by availability of land rather than optimum locations. Because of decreasing land availability, the problem still exists. Also compounding the problem has been a lack of integrated planning and construction efforts among the services.
- DOD recognizes the need for a comprehensive and long-range planning analysis to determine land requirements and to serve as the foundation for effecting the highest and best use of these landholdings.

It is apparent that the study was conceived and represented to the public as a comprehensive, detailed evaluation of those lands that DOD would need to support its long-range presence in Hawaii. However, as stated by the Assistant Secretary, because of future budget restrictions and lack of conversion factors, the study was really a conceptual effort designed primarily to determine the reasonableness of existing land use.

GAO PROPOSAL TO REDO STUDY

In our report to DOD for comment, we proposed that the Secretary of Defense:

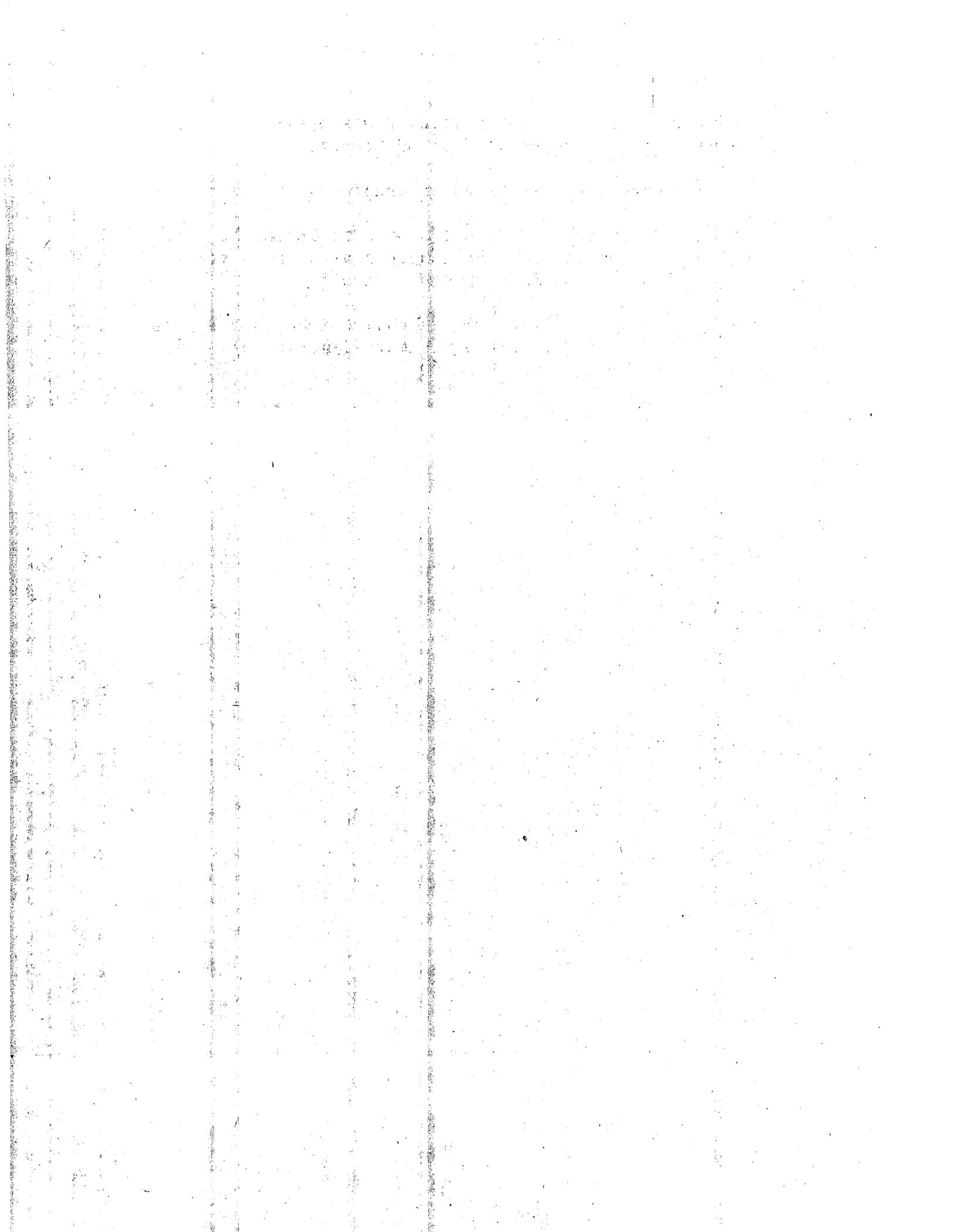
- Develop specific criteria for converting force levels into land area requirements.
- Direct the military services to restudy their land needs in Hawaii using the specific criteria.

In his response, the Assistant Secretary detailed why DOD does not believe such an effort would be feasible or productive.

(See app. II.) In recognizing DOD's position, we have eliminated these proposals from our report.

However, as discussed in chapter 3, we believe that the:

- Project FRESH report should no longer be represented to the public and the Congress as a valid study of DOD's long-range land needs in Hawaii.
- Results of the study should not be used as the basis for joint civilian-military land-use planning.



COMPARISON OF LAND-USE CRITERIA PRESCRIBED BY DOD
AND PROJECT FRESH STUDY TEAM
AND CRITERIA USED BY MILITARY SERVICES

Land-use category:	Criteria prescribed by		Criteria actually used by			
	DOD	Project FRESH planning team	Navy	Marine Corps	Army	Air Force
Residential	<u>Family Housing</u>					Base master plan for all items.
	<u>Enlisted</u> 4 BR - 6 units per acre	<u>Enlisted</u> 6 units per acre	<u>Enlisted</u> 5.5 units per acre	<u>Enlisted</u> 5.5 units per acre	<u>Enlisted</u> 5.5 units per acre	
	3 BR - 6.7 units per acre					
	2 BR - 7.5 units per acre					
	<u>Officer</u> 4 BR - 5.4 units per acre	<u>Officer</u> 5 units per acre	<u>Officer</u> 4.5 units per acre	<u>Officer</u> 4.5 units per acre	<u>Officer</u> 5.5 units per acre	

COMPARISON OF LAND-USE CRITERIA PRESCRIBED BY DOD
AND PROJECT FRESH STUDY TEAM
AND CRITERIA USED BY MILITARY SERVICES

Land-use category:	Criteria prescribed by		Criteria actually used by			
	DOD	Project FRESH planning team	Navy	Marine Corps	Army	Air Force
Residential (cont.)	<u>Officer</u>	<u>Officer</u>	<u>Officer</u>	<u>Officer</u>	<u>Officer</u>	<u>Officer</u>
	3 BR - 5.8 units per acre					Base master plan for all items.
	2 BR - 6.7 units per acre					
	<u>BEQ (100-man)</u>	<u>BEQ (100-man)</u>	<u>BEQ (100-man)</u>	<u>BEQ (100-man)</u>	<u>BEQ (100-man)</u>	
	Gross building area of .79 to 1.47 acres (includes 60 parking spaces)	1 story bldg.- 1.03 acres 2 story bldg.-.84 acres	1.3 acres	1.3 acres	Troop - .78 acres NCO - 1.03 acres	

COMPARISON OF LAND-USE CRITERIA PRESCRIBED BY DOD
AND PROJECT FRESH STUDY TEAM
AND CRITERIA USED BY MILITARY SERVICES

Land-use category:	Criteria prescribed by		Criteria actually used by			
	DOD	Project FRESH planning team	Navy	Marine Corps	Army	Air Force
Residential (cont.)	<u>BEQ (100-man)</u>	<u>BEQ (100-man)</u> 3 story bldg.- .78 acres	<u>BEQ (100-man)</u>	<u>BEQ (100-man)</u>	<u>BEQ (100-man)</u>	Base master plan for all items.
	<u>BOQ (100-man)</u> Net living area of 1.41 to 1.71 acres (includes 90 parking spaces)	<u>BOQ (100-man)</u> 1 story bldg.- 1.7 acres 2 story bldg.- 1.22 acres	<u>BOQ (100-man)</u> 2.2 acres	<u>BOQ (100-man)</u> 2.2 acres	<u>BOQ (100-man)</u> 1.22 acres	

COMPARISON OF LAND-USE CRITERIA PRESCRIBED BY DOD
AND PROJECT FRESH STUDY TEAM
AND CRITERIA USED BY MILITARY SERVICES

Land-use category:	Criteria prescribed by		Criteria actually used by			
	DOD	Project FRESH planning team	Navy	Marine Corps	Army	Air Force
Residential (cont.)	<u>BOQ (100-man)</u>	<u>BOQ (100-man)</u> 3 story bldg.- 1.06 acres	<u>BOQ (100-man)</u>	<u>BOQ (100-man)</u>	<u>BOQ (100-man)</u>	Base master plan for all items.

Note: BOQ - Bachelor Officer Quarters
BEQ - Bachelor Enlisted Quarters
BR - Bedroom

COMPARISON OF LAND-USE CRITERIA PRESCRIBED BY DOD
AND PROJECT FRESH STUDY TEAM
AND CRITERIA USED BY MILITARY SERVICES

Land-use category:	Criteria prescribed by		Criteria actually used by			
	DOD	Project FRESH planning team	Navy	Marine Corps	Army	Air Force
Community support	Floor area of individual structures and number of outdoor facilities generally based on military strength.	One acre per 100 men (excludes golf courses, skeet ranges, or riding academies)	<u>NAVSTA Pearl</u> Floor area of BFRL (note a) multiplied by a factor of five plus area for each athletic field or court, i.e., baseball- 5.7 acres basketball-.6 acre tennis-.5 acre	<u>MCAS, Kaneohe</u> Floor area of BFRL (note a) multiplied by a factor of five plus area for each athletic field and court, i.e., basketball-.6 acre tennis-.5 acre volleyball-.5 acre softball- 5.6 acres	<u>Schofield Barracks</u> Required floor area multiplied by a factor of three plus area for each athletic field and court, i.e., basketball-.18 acre tennis-.16 acre volleyball-.08 acre softball- 1.42 acres baseball- 3.15 acres	Base master plan.

COMPARISON OF LAND-USE CRITERIA PRESCRIBED BY DOD
AND PROJECT FRESH STUDY TEAM
AND CRITERIA USED BY MILITARY SERVICES

Land-use category:	Criteria prescribed by		Criteria actually used by			
	DOD	Project FRESH planning team	Navy	Marine Corps	Army	Air Force
Community support (cont.)			<u>NAVSTA Pearl</u> volleyball-.5 acre softball-1.42 acres <u>NAVSTA Barbers Point</u> All athletic courts multiplied by .6 acre, and all athletic fields multiplied by 5.6 acres.		<u>Fort Shafter</u> Same factors as above plus 25 percent. Required floor area and number of fields and courts for the Army based on 30,000 troop strength. Actual proposed strength is 25,000.	

COMPARISON OF LAND-USE CRITERIA PRESCRIBED BY DOD
AND PROJECT FRESH STUDY TEAM
AND CRITERIA USED BY MILITARY SERVICES

Land-use category:	Criteria prescribed by		Criteria actually used by			
	DOD	Project FRESH planning team	Navy	Marine Corps	Army	Air Force
Community support (cont.)			<u>NAVSTA Barbers Point</u> Floor area of BFRL multiplied by a factor of five.			Base master plan

COMPARISON OF LAND-USE CRITERIA PRESCRIBED BY DOD
AND PROJECT FRESH STUDY TEAM
AND CRITERIA USED BY MILITARY SERVICES

Criteria prescribed by

Land-use category:	Criteria prescribed by		Criteria actually used by			
	DOD	Project FRESH planning team	Navy	Marine Corps	Army	Air Force
Administration	Building net floor area of not less than 272 sq. ft. or more than 287 sq. ft. per person, including parking space of 157 sq. ft. per person	Land area of 515 sq. ft. per person (160 sq. ft. of building space plus 355 sq. ft. for parking, landscaping, and adjacent streets) on the basis of a single-story building.	BFRL floor area multiplied by a factor of 5 or about 810 sq. ft. per person on the basis of a single-story building.	<u>MCAS, Kaneohe</u> BFRL floor area multiplied by a factor of 5 or about 810 sq. ft. per person on the basis of a single-story building. <u>Camp Smith</u> BFRL floor area multiplied by a factor of 3.5 or	<u>Fort Shafter</u> Land area of 500 sq. ft. per person and master plan. <u>Schofield Barracks</u> Floor area multiplied by a factor of three or 885 sq. ft. per person on the basis of a single-story building.	Base master plan.

COMPARISON OF LAND-USE CRITERIA PRESCRIBED BY DOD
AND PROJECT FRESH STUDY TEAM
AND CRITERIA USED BY MILITARY SERVICES

Land-use category:	Criteria prescribed by		Criteria actually used by			
	DOD	Project FRESH planning team	Navy	Marine Corps	Army	Air Force
Administration (cont.)				Camp Smith about 567 sq. ft. per person on the basis of a single-story building.		Base master plan.

COMPARISON OF LAND-USE CRITERIA PRESCRIBED BY DOD
AND PROJECT FRESH STUDY TEAM
AND CRITERIA USED BY MILITARY SERVICES

Land-use category:	Criteria prescribed by		Criteria actually used by			
	DOD	Project FRESH planning team	Navy	Marine Corps	Army	Air Force
Light industrial:						
Warehouse	None	Land area is approximately double the net square footage of warehouse space.	Floor area identified in BFRL multiplied by a factor of 5.	Floor area multiplied by a factor of 5 and master plan.	1.03 acres per 10,000 sq. ft. of warehouse or about 4.5 times the net square footage of warehouse space.	Base master plan.
Maintenance	5,800 sq. ft. of floor area for up to 100 maintenance personnel.	1.4 acres for PW maintenance per 1,000 men baseloading (75	Floor area identified in BFRL multiplied by a factor of 5.	Floor area identified in BFRL multiplied by a factor of 5.	Master plan.	Base master plan.

COMPARISON OF LAND-USE CRITERIA PRESCRIBED BY DOD
AND PROJECT FRESH STUDY TEAM
AND CRITERIA USED BY MILITARY SERVICES

Land-use category:	Criteria prescribed by		Criteria actually used by			
	DOD	Project FRESH planning team	Navy	Marine Corps	Army	Air Force
Maintenance (cont.)		mainte- nance per- sonnel). 1.7 acres for other mainte- nance per 1,000 men baseload- ing.				
Open storage	None	2 acres per 1,000 men.	Area iden- tified in BFRL mul- tiplied by a fac- tor of 1.1 (four Navy installa- tions alone	Area iden- tified in BFRL multi- plied by a factor of 1.1.	Master plan.	Base master plan.

COMPARISON OF LAND-USE CRITERIA PRESCRIBED BY DOD
AND PROJECT FRESH STUDY TEAM
AND CRITERIA USED BY MILITARY SERVICES

Land-use category:	Criteria prescribed by		Criteria actually used by			
	DOD	Project FRESH planning team	Navy	Marine Corps	Army	Air Force
Open storage (cont.)			identified requirement equal to 4.4 acres per 1,000 of proposed Navy strengths).			
Miscellaneous	None	None	None	Master plan.	Master plan.	

COMPARISON OF LAND-USE CRITERIA PRESCRIBED BY DOD
AND PROJECT FRESH STUDY TEAM
AND CRITERIA USED BY MILITARY SERVICES

Land-use category:	Criteria prescribed by		Criteria actually used by			
	DOD	Project FRESH planning team	Navy	Marine Corps	Army	Air Force
Heavy industry:						
Shipyard	None	Existing land.	Existing land.	N/A	N/A	N/A
Berthing Wharf	None	1.5 acres per berth	Berthing area identified in BFRL multiplied by .5 acre for each 100 ft. of berth, or 1.8 acres per berth.	N/A	N/A	N/A
Berthing Pier	None	Overall length of vessels plus 40-foot		Berthing area identified in BFRL multiplied by .2	N/A	N/A

COMPARISON OF LAND-USE CRITERIA PRESCRIBED BY DOD
AND PROJECT FRESH STUDY TEAM
AND CRITERIA USED BY MILITARY SERVICES

Land-use category:	Criteria prescribed by		Criteria actually used by			
	DOD	Project FRESH planning team	Navy	Marine Corps	Army	Air Force
Berthing Pier (cont.)		clearance at inshore side and outboard side plus 50 ft. between vessels plus 50-foot pier.	Berthing area identified in BFRL multiplied by .2 acre for each 100 ft. of berth.			
Petroleum, oils and lubricants	None	5.7 acres for a 50,000 barrel tank.	Barrels identified in the BFRL multiplied by 3.5 sq. ft., or 4.0 acres for a	Barrels identified in the BFRL and 1.4 acres for a 1,000 barrel tank and 4.9 acres for a 50,000-barrel tank.	N/A	Base master plan.

COMPARISON OF LAND-USE CRITERIA PRESCRIBED BY DOD
AND PROJECT FRESH STUDY TEAM
AND CRITERIA USED BY MILITARY SERVICES

Land-use category:	Criteria prescribed by		Criteria actually used by			
	DOD	Project FRESH planning team	Navy	Marine Corps	Army	Air Force
Petroleum, oils and lubricants (cont.)			50,000 barrel tank.			
Facilities	None	None	Floor area identified in BFRL multiplied by five.	N/A	N/A	Base master plan.

COMPARISON OF LAND-USE CRITERIA PRESCRIBED BY DOD
AND PROJECT FRESH STUDY TEAM
AND CRITERIA USED BY MILITARY SERVICES

APPENDIX I

Land-use category:	Criteria prescribed by		Criteria actually used by			
	DOD	Project FRESH planning team	Navy	Marine Corps	Army	Air Force
Ammunition storage	Standards recommended by DOD Explosives Safety Board.	Based on quantity-safety radius related to "clusters" of magazines and ammunition wharfs.	Based on existing magazines and ammunition wharfs and related quantity-safety radius.	Based on existing magazines and related quantity-safety radius.	Area of 26 existing magazines without considering area for quantity-safety radius.	Base master plan.
Airfield Operations:						
Runway-10,000 ft.	None	A 10,000-foot runway requires 740 acres for runway,	Based on BFRL and general development map.	Based on BFRL and general development map.	Master plan.	Base master plan.

COMPARISON OF LAND-USE CRITERIA PRESCRIBED BY DOD
AND PROJECT FRESH STUDY TEAM
AND CRITERIA USED BY MILITARY SERVICES

Land-use category:	Criteria prescribed by		Criteria actually used by			
	DOD	Project FRESH planning team	Navy	Marine Corps	Army	Air Force
Runway-10,000 ft. (cont.)		clearance, and transition areas.				
Parking	None	66 acres for one Marine air group and 30 acres for one carrier air group for parking and maintenance.	Based on BFRL and general development map.	Based on BFRL and general development map.	Master plan.	Base master plan.
Maintenance	None	See above.	Floor area identified in BFRL multiplied by a factor of five.	Floor area identified in BFRL multiplied by a factor of five.	Master plan.	Base master plan.

COMPARISON OF LAND-USE CRITERIA PRESCRIBED BY DOD
AND PROJECT FRESH STUDY TEAM
AND CRITERIA USED BY MILITARY SERVICES

APPENDIX I

Criteria prescribed by

Land-use category:	Criteria prescribed by		Criteria actually used by			
	DOD	Project FRESH planning team	Navy	Marine Corps	Army	Air Force
Communications	None	Distances antenna field should be from inhabited structure (1 mile), power lines (2 miles) and radio transmitter (5 miles). No land area requirements shown for antennas.	Existing assets and general development map.	Existing assets and general development map.	Existing assets and master plan.	Base master plan.

COMPARISON OF LAND-USE CRITERIA PRESCRIBED BY DOD
AND PROJECT FRESH STUDY TEAM
AND CRITERIA USED BY MILITARY SERVICES

Land-use category:	Criteria prescribed by		Criteria actually used by			
	DOD	Project FRESH planning team	Navy	Marine Corps	Army	Air Force
Training area	None	<p>Close air support-combat training-204,000 acres (12 X 20 nautical miles).</p> <p>Infantry division (note b) (30,000 men)</p> <p>Cantonment area - 2,000 acres</p>	<p>Close air support-combat training-204,000 acres (note b).</p>	<p>Close air support-combat training-204,000 acres (note b).</p> <p>Marine Brigade</p> <p>Maneuver area - 50,000 acres.</p>	<p>190,000 acres for training area.</p>	<p>Base master plan.</p>

COMPARISON OF LAND-USE CRITERIA PRESCRIBED BY DOD
AND PROJECT FRESH STUDY TEAM
AND CRITERIA USED BY MILITARY SERVICES

Land-use category:	Criteria prescribed by		Criteria actually used by			
	DOD	Project FRESH planning team	Navy	Marine Corps	Army	Air Force
Training area (cont.)		Miscellaneous area - 1,000 acres Field exercise area - 47,000 acres Fire and impact area - <u>140,000</u> acres <u>190,000</u> acres.		Fire impact area - 30,000 acres.		

34

^aBFR: - Basic Facility Requirements List which is a listing of the essential facilities needed to perform the activities' mission, tasks, and functions and to support base loading workload, and assigned personnel as outlined in the Logistic Support Requirements.

Footnotes (cont.)

^bProjected strength of the Division is 15,000.

^cOne training area is for use by both Navy and Marine Corps.

GAO note: Overall Navy-Marine statistics equates to about 1 acre per 25 men--excluding golf courses. Overall Army requirement equates to about 1 acre per 16 men--excluding golf courses. Overall Air Force requirement equates to about 1 acre per 18 men--excluding golf courses.



ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301

INSTALLATIONS AND LOGISTICS

25 JUN 1974

Mr. F. J. Shafer
Director
Logistics and Communications
Division
U. S. General Accounting Office
Washington, D. C. 20548

Dear Mr. Shafer:

Reference is made to your letter of April 22, 1974 to the Secretary of Defense transmitting for review and comment a draft report on the military's study of its land needs in Hawaii. We are most appreciative of your observations and recommendations and would like to respond to specific matters covered in the draft report. (OSD Case #3822).

In October 1971, the Department of Defense (DoD) initiated a comprehensive review of the Department's real property holdings in the State of Hawaii. The study was designated Project FRESH -- Facilities Requirements Evaluation, State of Hawaii -- and was designed (1) to develop a master plan in support of the long-range military presence in Hawaii, and (2) to determine which landholdings could be released by DoD in consonance with Executive Order 11508. The study was released to the public in January 1973.

The Department of Defense believes that the Project FRESH study met its objectives. The accuracy of the study is well within the expected accuracy range of a conceptual study. GAO notes that certain problems were encountered in performing the study with regard to converting force levels into land area requirements. If it were possible to convert force levels into land area requirements with any degree of accuracy as proposed by GAO, the Department of Defense would find no problem in defining its long range land needs and base utilization. However, there is no means by which it can be determined scientifically that one man needs X acres for PX facilities, Y acres for rifle range practice or Z acres for maneuvers. The problems cited by GAO resulted from a lack of criteria and planning factors which could have been used by the

APPENDIX II

services to perform the conversion process. As indicated above, there is no means for developing such scientific factors. The study group did, however, develop factors for the major functions. Their use by the individual services had to be tempered by judgment when applied to specific activities. Added factors brought out by the study group were that application of these criteria would affect only a minor portion of the overall land requirement, and the fact that any future large-scale realignment of existing facilities would be unlikely within existing budget constraints, even though the purpose of such realignment would be to provide the highest and best use of all real property required by the military in Hawaii.

A restudy of land needs based on new criteria, assuming that such criteria would be scientifically developed, could readily be accomplished and would be consistent with the recommendation of the study itself which calls for continuing review and updating. However, without realigning current land uses, it is not believed that any restudy would produce a significant change in future land requirements or in identifying lands which are or will become excess under existing plans and programs.

GAO has identified what they believe are five shortcomings in the procedures used in the preparation of the study and makes three recommendations. We have addressed each of these stated shortcomings and recommendations in the enclosure and are hopeful that we have been responsive to the views of the GAO.

We appreciate your recommendations on this matter and are available to discuss this subject at further length should there be a need for additional information by your office.

Sincerely,



ARTHUR I. MENDOLIA
Assistant Secretary of Defense
(Installations & Logistics)

Enclosure

GAO Comments on OSD Case #3822
"Questionable Aspects of the Military's
Study of its Land Needs in Hawaii"

GAO Comment: 1. Lack of specific Department guidelines for converting force levels into land area requirements.

Defense Response: Defense agrees that there is a lack of specific criteria for determining land needs world-wide. If GAO has access to land use criteria which have not been considered in the FRESH study, we would be pleased to examine such criteria. In recognition of this problem in the early stages of the Project FRESH study, the study group prepared a set of conversion factors which were to be used as an aid to develop land use proposals for the three Services. As indicated in our cover letter, it is virtually impossible under any set of guidelines to convert force levels into land use requirements with any degree of accuracy except for the major requirements, such as housing.

GAO Comment: 2. Lack of supporting data to demonstrate the reasonableness of the methods and land use conversion factors developed by the study group.

Defense Response: Within the constraints which were discussed in our cover letter, ten Land Use Categories were considered. The acres of land under each land use category and the quality of the criteria used in converting requirements to acres are shown below.

Where the quality of criteria is listed as questionable, it is because there is such a multiplicity of facilities involved so that no single factor is meaningful. Where the quality of criteria is listed as good, there are relatively few different facilities involved such as in residential where the great majority of the area is family housing; or there is a blanket effect such as clearance requirements around airfields, communication operations or ammunition storage where the uses other than the primary use are within or incidental to the primary use. The criteria for training areas are considered to be excellent. These criteria have been developed by the Services and have been published, reviewed and refined over a relatively long period of time.

APPENDIX II

<u>Land Use Category</u>	<u>Quality of Criteria</u>	<u>Requirements Thousands of Acres</u>	<u>Assets Thousands of Acres</u>
Residential	Good	5.8	3.6
Community Support	Questionable	4.8	3.1
Administrative	Questionable	0.6	0.4
Light Industrial	Questionable	2.7	2.4
Heavy Industrial	Questionable	1.3	1.0
Ammunition Storage	Good	16.2	13.7
Airfield Operations	Good	5.5	4.5
Communications	Good	4.1	5.0
Training Area	Excellent	474.1*	418.4*
Unused Land	Not Applicable	0.1	7.7
Total		515.1*	459.8*

* Includes 174.8 acres of training area over water.

In evaluating the total acreages involved, it should be noted that 9,400 acres out of the 515,000 acres of requirement or 6,900 acres out of the 459,800 acres of assets fall in the questionable criteria category. These figures equate to 1.8% and 1.5%, respectively.

GAO Comment: 3. Failure of the individual Services to apply the land use conversion factors developed by the study group.'

GAO Comment: 4. Inconsistencies, both among and within the Military Services, in applying methods to determine requirements for similar type land.

Defense Response: Ninety percent of the Project FRESH effort was devoted to examining existing facilities and attempting to determine if the land use is reasonable. On page 11, the GAO report states that "...the Department issued new criteria for housing land use one month prior to publication of the FRESH report that rendered all of the housing calculations obsolete."

It is apparent that GAO considers the FRESH study to be similar to an accounting exercise in that X units of housing divided by Y units per acre equals Z acres. If one were looking only at future construction, this would be reasonably acceptable. However, in reviewing DoD housing, we have housing units built under a multiplicity of programs from 1911 to the present time. The space criteria for each program was different from each previous program. Each conformed to the criteria at the time it was built and unless it has

APPENDIX II

reached the state of being declared inadequate, each project is treated as adequate housing whether there be two units per acre or twelve units per acre. As each project becomes obsolete, the housing units built to replace the project will conform to current criteria. If built on the same site, it will be possible to build more units on the same site or to build the same number of units and have some land left over. Until replacement units are actually programmed, there is no way to say that a housing project of 650 units built in 1958 on 100 acres of land should really occupy only 80 acres of land under current criteria; therefore, the Navy should have 20 acres of land which is releasable. The same reasoning applies to many other categories of facilities.

The matter of inconsistent application of methods to determine requirements for similar type land is worthy of some comment. It is not normal practice in land use planning to search for a particular type of land to accommodate a specific function; but rather to find any land that will be of the proper size and location to permit a land use to be assigned to it. In the preparation of the FRESH study, the study group developed some area criteria to be used as an aid in determining land area requirements. This process works well when there are no existing facilities, but the criteria must be tempered with judgment when applied to existing facilities or functions. For this reason, no useful purpose would be served in identifying what land in an existing barracks complex, for example, appeared to be excess over what pure criteria application would demand. There would be no conceivable way to redivide such excess land or reassign its use to another function. Thus, inconsistencies are not really that but rather the result of good sound planning judgment in the application of criteria.

(See GAO note, p. 42.)

(See GAO note, p. 42.)

GAO Recommendation: 1. That the Secretary of Defense develop specific criteria for converting force levels into land area requirements.

Defense Comment: If such criteria could be developed on an effective basis within a reasonable period of time - but it is doubtful that they could be - use of these new specific criteria would not change the fact that there is no way to reduce the amount of land occupied by existing facilities unless Congressional authorization is received to "sell land and facilities" and use the proceeds to construct new facilities. The new criteria could be used to review all proposed construction. However, here again there would be little effect on the overall requirements for military land in Hawaii.

GAO Recommendation: 2. That the Secretary of Defense direct the Military Services to restudy their land needs in Hawaii using the Department's specific criteria, including consistent application

within and among the Services.

Defense Comment: a. If specific criteria are developed, it will be relatively easy to apply the criteria to proposed facilities. This is a goal we constantly seek for land use nation and world-wide. As noted above, it is not expected that there would be a significant change in land requirements nor would there be any significant change in the results of the study.

b. The criteria might also be applied against existing facilities. The result of this effort would be a determination that if we were to do it all over again today, we would use X acres more or Y acres less than we used when the facilities were originally constructed. Lacking a positive program permitting sale of land and facilities with the proceeds being used for replacement facilities, using the new specific criteria we gain only a theoretical answer indicating whether we are using too much or too little land.

GAO note: The deleted comments relate to matters omitted from or modified in this report.

Copies of GAO reports are available to the general public at a cost of \$1.00 a copy. There is no charge for reports furnished to Members of Congress and congressional committee staff members; officials of Federal, State, local, and foreign governments; members of the press; college libraries, faculty members, and students; and non-profit organizations.

Requesters entitled to reports without charge should address their requests to:

U.S. General Accounting Office
Distribution Section, Room 4522
441 G Street, NW,
Washington, D.C. 20548

Requesters who are required to pay for reports should send their requests with checks or money orders to:

U.S. General Accounting Office
Distribution Section
P.O. Box 1020
Washington, D.C. 20013

Checks or money orders should be made payable to the U.S. General Accounting Office. Stamps or Superintendent of Documents coupons will not be accepted. Please do not send cash.

To expedite filling your order, use the report number in the lower left corner of the front cover.

AN EQUAL OPPORTUNITY EMPLOYER

UNITED STATES
GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300

POSTAGE AND FEES PAID
U. S. GENERAL ACCOUNTING OFFICE



THIRD CLASS

**RECEIVED
USGAO**

MAR 6 1975

**TECHNICAL REFERENCE SERVICE
TRANSPORTATION
AND CLAIMS DIVISION**

