

196

JOHN WAIHEE  
GOVERNOR



STATE OF HAWAII  
DEPARTMENT OF DEFENSE  
OFFICE OF THE ADJUTANT GENERAL  
3949 DIAMOND HEAD ROAD, HONOLULU, HAWAII 96818-4495

EDWARD V. RICHARDSON  
MAJOR GENERAL  
ADJUTANT GENERAL

MYLES M. NAKATSU  
BRIGADIER GENERAL (M)  
DEPUTY ADJUTANT GENERAL

RECEIVED

'94 APR 14 12:17

OFFICE OF THE ADJUTANT GENERAL  
QUALITY CONTROL

APR 13 1994

HIARFM

Mr. Bruce Anderson  
Acting Director  
Office of Environmental Quality Control  
220 South King Street, 4th Floor  
Honolulu, Hawaii 96813

Dear Mr. Anderson:

The Hawaii Army National Guard received no comments regarding the draft environmental assessment for fielding a Medium Lift Company during the 30-day public comment period which began on January 8, 1994. The National Guard Bureau has determined that this project will not have significant environmental impact and has issued a Finding of No Significant Impact.

We have enclosed a completed OEQC Bulletin Publication Form and four copies of the Final Environmental Assessment for the Activation of a Medium Lift Company, AASF #1, Wheeler Army Airfield, together with a faxed copy of the Finding of No Significant Impact signed by General Bilo of the National Guard Bureau-ARE, Washington, D.C.

Should you have any questions, Major Ronald Swafford or Ms. Jane Yamamoto, may be contacted at 735-4659.

Sincerely,

Richard Young  
Major, EN, Hawaii  
Army National Guard  
Facility Management Officer

Enclosures



43

1994-05-08-0A-~~FEA~~-Hawaii Army  
National Guard, <sup>Activation of</sup> Medium Lift Helicopter Company <sup>MAY - 8 1994</sup>

FINAL  
ENVIRONMENTAL ASSESSMENT  
ACTIVATION OF A MEDIUM LIFT HELICOPTER COMPANY  
HAWAII ARMY NATIONAL GUARD  
ARMY AVIATION SUPPORT FACILITY #1  
WHEELER ARMY AIR FIELD  
WAHIAWA, OAHU, HAWAII

Prepared for the  
National Guard Bureau  
by the  
Hawaii Army National Guard  
April 1994



1. PURPOSE AND NEED FOR THE PROPOSED ACTION

Change in the Force Structure of the Army National Guard aviation program has reduced the number of attack battalions within the Army's inventory. The Hawaii Army National Guard (HIARNG) is currently converting its attack battalion to a medium lift company. This action encompasses both personnel and aircraft changes.

The number of aircraft will be halved. The type will change from attack helicopters (AH-1) to cargo helicopters (CH-47D, popularly called "Chinooks"). The purpose of this document is to address the impacts of this conversion as it relates to the environment. There are no medium lift companies currently located at HIARNG's Army Aviation Support Facility in central Oahu; neither are there HIARNG units with Chinooks. This environmental assessment documents the environmental considerations involved and the measures to be taken to mitigate any possible adverse environmental impacts.

2. DESCRIPTION OF THE PROPOSED ACTION

The proposed action is the conversion of the 1st Battalion, 193rd Aviation to a medium lift helicopter company. The unit stationing will remain at the Army Aviation Support Facility # 1 (AASF #1), HIARNG, at the Wheeler Army Air Field (WAAF) on the island of Oahu, Hawaii. The proposed action will cause a change in the type and number of aircraft.

The medium lift company will consist of 201 soldiers of which 39 are officers and warrant officers. The number of helicopters will be reduced from 31 to 16. Attack helicopters will be phased out, while cargo helicopters will be put into use. The helicopters now in use total 31, including 15 AH-1, 3 UH-1 and 13 OH-58. The first of the 16 Chinooks are scheduled to arrive at AASF #1 at WAAF in October 1993. The chart below summarizes the proposed action.

TYPE	NAME	LOSSES	GAINS
AH-1S	Cobra Attack Helicopter	15	
UH-1H	Huey Utility Helicopter	3	
OH-58A	Kiowa Light Utility Helicopter	13	
CH-47D	Medium Lift Helicopter		16
	TOTAL	31	16

The Chinook system will be phased in over a two-year period

operationally controlled by the US Army, Pacific. The lands are Federally controlled.

## 5. ENVIRONMENTAL IMPACT OF THE PROPOSED ACTION

5.1 CLIMATE. Neither the proposed action nor any alternative action would have a significant impact on the climate of Wheeler AAF or the surrounding area.

5.2 AIR QUALITY. The entire state of Hawaii is classified as an attainment area by the standards of the Clean Air Act. The emissions of the CH-47D which have a Lycoming T55 engine do meet the EPA standards. As the prevailing winds (the northeast trades) help with the dispersal of airborne pollutants, the proposed project including the helicopter fleet could have no more than a very minimal effect.

5.3 NOISE. Noise conditions at Wheeler can be described as minimal due to limited aviation activity there. Current noise sources include vehicular traffic and a variety of aircraft. Therefore, to evaluate the predicted noise impact on the environment from fielding the CH-47D helicopters, the HIARNG contracted for a noise study. The study was undertaken by the United States Army Environmental Hygiene Agency (USAEHA). Noise measurements were taken at Wheeler in January 1993. The results have been published in USAEHA Environmental Noise Study No.52-34-QR40-93, Requirements for Installation Compatible Use Zone Studies at Four Facilities of the Hawaii Army National Guard, AASF #1, Wheeler Army Airfield, Oahu, AASF 2, Hilo International Airport, Hawaii, Hawaii, Ukumehame and Pimoe Firing Ranges, Maui, Hawaii, 7-14 January 1993. The executive summary of this 167 page document is attached (See Exhibit 5).

The USAEHA study found that the noise level during a CH-47 operation will not be greater than the existing noise level. The number of AASF #1 aircraft to be operated will be half of the number of aircraft in operation now. Yet noise is an unavoidable impact of helicopter operations. Complaints regarding helicopter noise are received and investigated by the Public Affairs Office. No noise complaints received have been due to HIARNG helicopters. The most effective means of lessening noise is increasing distance and altitude separation from the source of the noise. Mitigation measures are discussed below, in section 6. No impact due to the proposed project is expected.

Air installation compatibility zone (AICUZ) studies have been conducted at Wheeler in the past and zones established. An AICUZ study for a given airfield normally identifies the areas covered by the Clear Zone, two levels of accident potential zones, and two levels of noise zones. The size and shape of these zones are based

on a number of factors, including the type of aircraft using the airfield; the total volume of air traffic; and, in the case of noise, actual noise measurements and consideration of the time of day and the duration of each occurrence. These results are plotted on a map. The activity at AASF #1 is included in the AICUZ studies for Wheeler AAF. (See Noise Contour Map, Exhibit 6).

**5.4 PHYSICAL SETTING.** The AASF #1 is a military facility on a military air field situated on earlier agricultural lands. The natural environment on this part of the Schofield plateau has been thoroughly disturbed by agricultural, military and urban use. This project is not expected to produce any significant impact on the physical setting; neither on the physiography nor the soils.

The parking apron at AASF #1 will need to be modified as each CH-47 requires a module area of 7,700 sq. ft. for parking.

Initially no major construction will be required to accommodate the planned change. Building 832 will serve as the armory. Eventually, a new hangar with allied shops may be needed but no major construction is programmed at this time.

#### **5.5 NATURAL RESOURCES.**

**5.5.1 Vegetation.** The vegetation at AASF #1 is limited to trees, shrubs and plants placed there for landscaping. The rest of the area is covered with impervious surfaces, asphalt, concrete, or roofing. Consultations with the U.S. Fish and Wildlife Service, the Hawaiian Heritage Program and the Hawaii Department of Land and Natural Resources indicate that there are no known listed or candidate threatened or endangered species in the project area.

The original indigenous flora of the central plateau area gave way to agriculture, a one-crop commercial agriculture, which in turn yielded to the demands of air transportation. Buildings, streets, runways, and other infrastructure required on air fields have been constructed during the last seven decades.

Alien plants species, first introduced by the early Polynesians, were augmented by others introduced intentionally and unintentionally by Europeans, Americans, Asians, Pacific Islanders and other immigrants to Hawaii in the eighteenth, nineteenth and twentieth centuries. These introduced botanical species have crowded out most of the indigenous vegetation. The vegetation zone for much of the higher portion of Oahu including Wheeler has been characterized as mixed mesic. The mixed mesic forests were open-canopy forests consisting of a diverse mixture of trees and shrubs. These forests have been seriously degraded on all the Hawaiian islands.

The crops on the agricultural lands neighboring Wheeler are not

expected to be affected, nor are the forests on the slopes of the Waianae Range a few miles to the west of the proposed project. The forests of the Koolau Range to the east are likewise not expected to be affected by the proposed project.

5.5.2 Wildlife. Hawaii's only land based endangered native mammal is the hoary bat. No sightings of endangered species on Wheeler AAF have been reported to the Hawaiian Heritage Program or the Department of Land and Natural Resources. The proposed addition of C-47s to the presence and operation of the aircraft already at Wheeler (with the phasing out of the attack helicopters) is not expected to have a significant impact on Hawaiian fauna or avifauna.

5.6 LAND USE. There will be no change in land use on the subject land parcel. Neither land ownership nor land use will be changed or affected by the proposed project. Neighboring land use is not expected to be influenced by the proposed project.

#### 5.7 WASTE DISPOSAL.

5.7.1 Solid Waste. The current quantity and rate of waste generated at AASF #1 is not expected to change appreciably. Waste is collected by a contractor and disposed of in a licensed waste disposal operation. During the modification of the parking apron the contractor will be required to remove and dispose of, off-site, all debris at a State-licensed landfill operation. The fielding of the CH-47s is not expected to generate significantly larger quantities of waste.

5.7.2 Hazardous Waste. The hazardous waste generated by the AASF #1 consists mostly of waste JP fuels. All hazardous and other non-hazardous waste oils, cleaners and lubricants are disposed of in accordance with the HIARNG Hazardous Waste Management Plan, adopted February 1991 .

5.8 WATER RESOURCES. Oahu's water resources include perennial and intermittent streams, a few natural ponds, some wetlands, aquifers, and a huge lens shaped body of basal fresh water more or less at sea level called the Ghyben-Herzberg lens which floats on the salt water. Of the streams on Oahu which have been measured, 80 percent have drainage areas smaller than 13 square kilometers. Stream channels are short and lack storage capacity. Flash floods are not uncommon. The quality of the fresh water from the basaltic aquifers is good. Oahu's water budget is composed of 40 percent evapotranspiration, 36 percent ground water recharge, and 24 percent surface water runoff.

5.8.1. Surface water. Surface water resources near the Airfield include, Kaukonalua and Waikele streams and the Wahiawa Reservoir. None of these are expected to be affected by the proposed project.

There is not expected to be any significant impact on surface water resources.

5.8.2. Ground Water. The water table lies at 840 feet below the surface. The large freshwater lens, mentioned above is the most extensive of Oahu's groundwater sources. Groundwater trapped between impermeable rocks (dikes) in the mountains is a second source. Groundwater "perched" on horizontal impermeable beds is a third, but minor source, on Oahu. Ground water is not expected to be affected by the proposed project.

5.8.3 Drinking Water. The water supply at the field is controlled by the Army. Neither quality nor quantity is expected to be affected by the proposal.

5.8.4 Waste Water. AASF #1 waste water flows to the Army controlled sewage treatment plant at Wheeler. Water from the aircraft wash facilities is processed through an oil water separator. The separated oil sludge is disposed of at a permitted facility. No additional washracks are programmed for the proposed addition of CH-47s. No significant impact to waste water is foreseen.

5.8.5 Spill Plans. The Spill Prevention Control and Countermeasure Plan and the Installation Spill Contingency Plan adopted by the HIARNG in the spring of 1992 specifically included the AASF #1. Procedures established in the plan would be followed in case of a spill of petroleum or hazardous material. The Oil and Hazardous Substance Spill Prevention and Response Plan, of the U.S. Army Support Command, Hawaii included plans for Wheeler AAF. In case of a spill, established procedures would be followed, both in clean-up and reporting.

There is not now and nor will there be in the immediate future any underground storage of fuel at the AASF #1. All fuels are temporarily contained in military refueling vehicles parked in designated areas.

5.9 CULTURAL RESOURCES. There are no known archaeological sites on Wheeler. The area was a modern agricultural area for years before the first airfield was established in the 'twenties. This means that the site has been greatly disturbed. Therefore, no significant impact to archaeological resources is expected from the proposed project.

Wheeler Field was established in 1922. Many of the original buildings are still standing and are of historical interest. Wheeler was the field from which Amelia Earhart flew to Oakland, California in 1935. Adjacent to Schofield Barracks (a large Army installation) and near Pearl Harbor, it suffered heavy destruction on December 7, 1941. Part of Wheeler Field is now on both the



State and the Federal Register of Historic Places. The proposed action is expected to have no impact on historic or cultural resources.

5.10. SOCIOECONOMIC. Tourism, the military, and agriculture have been major components of Oahu's economy in the twentieth century. On a statewide basis, tourism now provides 35 percent of the state gross product, the military 18 percent and agriculture 5 percent. On Oahu the military share is probably somewhat larger and the agricultural share somewhat less.

5.10.1 Population. The forty three thousand people living in the Wahiawa census district are not expected to be affected by the execution of this proposal. National Guard members stationed at the AASF #1 are residents of Oahu. This project is not expected to affect the socioeconomic character of the island. There should be no significant impacts on the numbers, health, institutions, or activities of the residents or tourists of the area immediately surrounding Wheeler AAF. Conditions which affect the aviation workers at Wheeler, including the HIARNG unit stationed there, are governed by Occupational Health and Safety standards and regulations.

The location, distribution, or density of the human population will not be affected by the proposed project. No significant impact on socioeconomic conditions is expected. The execution of this project is not expected to affect the economy of Wahiawa or that of the county as a whole.

5.11 ENERGY. Because fuel consumption is influenced by many factors (speed, terrain, hours of use, etc.) exact figures are not available for anticipated fuel consumption should the proposed project be implemented. No significant impacts on energy resources are foreseen from the proposed action.

5.11.1 Electromagnetic emissions. Such emissions from CH-47D operations are very low. At no time will crews, passengers or bystanders be exposed to hazardous levels of electromagnetic radiation as defined by Army Medical Standard AR-583. No person will be exposed to electromagnetic radiation power densities of greater than 50 milliwatts per square milliwatts per square centimeter.

## 6. MITIGATIVE MEASURES

6.1 NOISE. Helicopters do produce noise (unwanted sound). The size of the helicopter fleet at AASF #1 is being reduced from 31 to 16; and even though the CH-47D produces less noise than earlier Chinooks, measures will be taken to further mitigate the effects. The sound produced by the HIARNG helicopters creates an impact that

is more of a nuisance than a danger to the residents of the area surrounding Wheeler. Measures to be undertaken to help alleviate the disturbing sounds include the following:

6.1.1 Crew Training. The Army "Fly Neighborly" Program will be incorporated into crew training and mission briefings. The Fly Neighborly Guide, published by the Helicopter Association International in February 1992, outlines the steps below as effective means of noise abatement for the Boeing 234 and CH-47:

- \* Control movement should be gradual and smooth.
- \* Noise exposure is:
  - lower on the left side than on the right side of the helicopter.
  - lower to the sides of the flight path than directly underneath, and
  - lower upwind than downwind of the helicopter.
- \* Plan takeoff path away from noise sensitive areas.
- \* Climb to cruise altitude at best rate of climb airspeed.
- \* When crossing noise sensitive areas, limit airspeeds to 140 knots or Velocity not to exceed (Vne), whichever is less.
- \* Use 100% RPM in level flight.
- \* Plan routes to keep noise sensitive areas on the left side of the helicopter.
- \* Near noise sensitive areas use 85 knots as the minimum airspeed and 1,000 fpm as the minimum rate of descent.
- \* Plan the approach and landing to keep noise sensitive areas forward and to the left of the helicopter.
- \* Avoid descending directly over the noise sensitive areas.

6.1.2 Use of established flight corridors. Existing corridors in and out of Wheeler AAF are the Pineapple Intersection (north) and Kahu Radio Beacon (south). Corridor and reporting procedures are contained in the Wheeler AAF Standard Operating Procedures (SOP).

6.1.3 Multiple takeoffs. Closed traffic patterns at Wheeler AAF that require multiple takeoffs and landings within the airport boundaries will be in accord with the Wheeler Army Airfield SOP.

6.1.4 Minimum altitude. Require all aircraft on takeoff to climb to a minimum altitude of 1,500 ft. above ground level and maintain at or above 2,000 ft. for as long as mission requirements allow.

6.1.5 Abatement procedures. Designate noise sensitive areas and "NO FLY" areas on aircrew flight planning maps as an aid in preventing incursion into these areas. Briefing officers will incorporate noise abatement procedures and noise sensitive areas into the written aircrew briefings.

6.1.6 Noise complaints. Noise complaints are received through the Noise Hotline, telephone: 732-1711, in the State Department of Defense Public Affairs Office. The noise complaints received will be documented and investigated to preclude recurring noise problems. Any noise complaints received while the subject aircraft is still airborne would require Flight Operations to order the departure of the aircraft from the affected area.

6.1.7 Protective devices. Aircrews and support personnel will use protective devices to prevent injurious noise. All passengers will be provided with adequate hearing protection prior to takeoff.

6.1.8 Scheduling. Flights will be scheduled, in so far as is possible, to avoid those hours when residents expect quiet, except when military operations are required. Unnecessary flights will not be permitted.

6.1.9 Noise buffer. A belt of trees and plants will be planted to help mitigate the noise impact at ground level by creating a sound buffer. Wherever possible grass will be planted near the run-up pad. Studies show that the "soft" surroundings (where grass grows) mitigate the run-up noise.

6.2 ELECTROMAGNETIC EMISSIONS. The effects of electromagnetic emissions will be mitigated by limiting occupancy in an area where the helicopter is being serviced or by not operating the source equipment while the helicopter is on the ground. Some high power equipment is automatically turned off when an aircraft lands.

## 7. AGENCIES AND PERSONS CONSULTED

American Lung Association of Hawaii. Mr. James W. Morrow.

City and County of Honolulu, Board of Water Supply.

Hawaiian Heritage Program, The Nature Conservancy. Mr. Roy Kam.

National Guard Bureau. MAJ Dan Reinke and Mr. Eric Andersen..

State of Connecticut ARNG FMO ENV. LT Ralph Hedenberg.

State of Hawaii

Department of Defense. COL Melvin M. Ida, LTC Jerry M. Matsuda, MAJ Clarence J. Gunderson, Ms. Nancy Chappell.

Hawaii Army National Guard. COL Clarence M. Agena,

COL Donald D. Orton, COL George F. Sheridan, Jr.,

COL Gerald J. Silva, LTC John K. Hao, LTC Orlan L. Peterson,

Jr., MAJ Richard S.W. Young, Mr. Louis N.H.M. Miranda, Jr.

State of Hawaii, Department of Land and Natural Resources,  
Division of Forests and Wildlife. Ms. Carolyn Corn.

State Historic Preservation Division. Mr. Tom Dye, Ms. Tonia Moy, Ms. Carol Ogata.

U. S. Army, Corps of Engineers, Pacific Division. Mr. Ray Nakahara, Mr. David Sox.

U. S. Army Support Command-Hawaii (USASCH). Mr. Alvin Char, Mr. Jon Fukuda, Mr. Mark Salley.

U. S. Army Environmental Hygiene Agency, Aberdeen Proving Ground, MD. Dr. George Luz.

U. S. Fish and Wildlife Service, Pacific Islands Office. Mr. Robert Smith.

#### 8. CONCLUSION/DETERMINATION

The proposed action would result in the most effective method for achieving compliance with the existing training and mission requirements of the Department of the Army and the Hawaii Army National Guard. The proposed action is not likely to involve any of the following:

- destruction of any natural or cultural resource;
- curtailment of the range of beneficial uses of the environment;
- conflict with the State's long-term goals or guidelines as expressed in Chapter 344, Hawaii Revised Statutes;
- substantial effect on the economic or social welfare of the community or state;
- substantial effect on public health;
- substantial secondary effects, such as population changes or infrastructure demands;
- substantial degradation of environmental quality;
- cumulatively a considerable effect on the environment, or to involve a commitment to larger action;
- substantial effect on a rare, threatened, or endangered species or its habitat;
- significant effect on the air or water quality or ambient noise levels;
- nor will the proposed project affect an environmentally sensitive area, such as a flood plain, tsunami zone, erosion-prone area, geologically hazardous land, estuary, freshwater area, or coastal waters.

Should cumulative impacts over time appear to be affecting the human environment, additional mitigation measures will be implemented as appropriate.

Based on the above discussion, and taking into account the suggested mitigation measures, implementation of this project does

not appear to be a major action significantly affecting the quality of the natural or human environment. There are no indications that implementation of the proposed action will violate Federal, State, or County environmental laws or regulations. Therefore, an Environmental Impact Statement (EIS) will not be prepared. A Finding of No Significant Impact is anticipated. It will be published in the Bulletin of the Office of Environmental Quality Control, State of Hawaii, and the Federal Register.

#### 9. SOURCES

-Connecticut, State of. ARNG FMO. EA of the Proposed Conversion from Sikorsky CH-54B Skycrane Helicopters to Boeing CH-47D Chinook Helicopters at AASF, Windsor Locks. Connecticut: 1992

-Hawaii Audubon Society. Hawaii's Birds. Honolulu: 1989

-University of Hawaii, Dept. of Geography. Atlas of Hawaii. U.H. Press. Honolulu: 1980

-Hawaii, State of. Dept of Business and Economic Development. Data Book 1992. Honolulu: 1993

-Luz, George A. U.S. Army Environmental Hygiene Agency. Review of Helicopter Noise Assessments at Wheeler Army Airfield: 1972-1985. unpublished. April 1992

-Luz, George A. U.S.A.E.H.A. Environmental Noise Study No.52-34-OR40-93, Requirements for Installation Compatible Use Zone Studies at Four Facilities of the Hawaii Army National Guard. Aberdeen Proving Ground: July 1993.

-McDonald, G.A. et al. Volcanoes in the Sea, The Geology of Hawaii. Second Edition, U.H. Press. Honolulu: 1983

-Morrow, James W. et al. Characterization of Volcanic Aerosol in Two Populated Areas on the Island of Hawaii. Air and Waste Management Association, Vancouver: 1991

-Parish, LTC G. Pennsylvania Dept. of Military Affairs. Environmental Assessment, Proposed Location of Army Aviation Support Facility, and Subsequent Material, Personnel, and Operation Changes. 1988.

-Rubins, P., and B. Doyle. U.S. Army Air Mobility Research and Development Laboratory. T53 and T55 Gas Turbine Combustor and Engine Exhaust Emission Measurements. Fort Eustis: 1973

-Sohmer, S. and R. Gustafson. Plants and Flowers of Hawaii.

U.H. Press. Honolulu: 1987

-Stearns, H.T. U.S. Geological Survey. Geology of the Hawaiian Islands. Honolulu: 1967

-Tomich, P. Quentin. Mammals of Hawaii. Revised Ed. Bishop Museum Press. Honolulu: 1986

-Thompson, R. U.S. Army Research and Development Command. EA for CH-47 Modernization. St. Louis: 1982

-U. S. Army National Guard. Material Fielding Plan. August 1991

-U. S. Dept. of the Navy. Military Property Requirements in Hawaii. Pearl Harbor: April 1979

#### 10. APPENDICES

Exhibit 1. Location Maps, A, B, and C

Exhibit 2. Site Map

Exhibit 3. Geologic Map

Exhibit 4. Military Map

Exhibit 5. Executive Summary, Requirements for Installation Compatible Use Zone Studies at Four Facilities of the Hawaii Army National Guard ("Noise Study")

Exhibit 6. Noise Contour Map

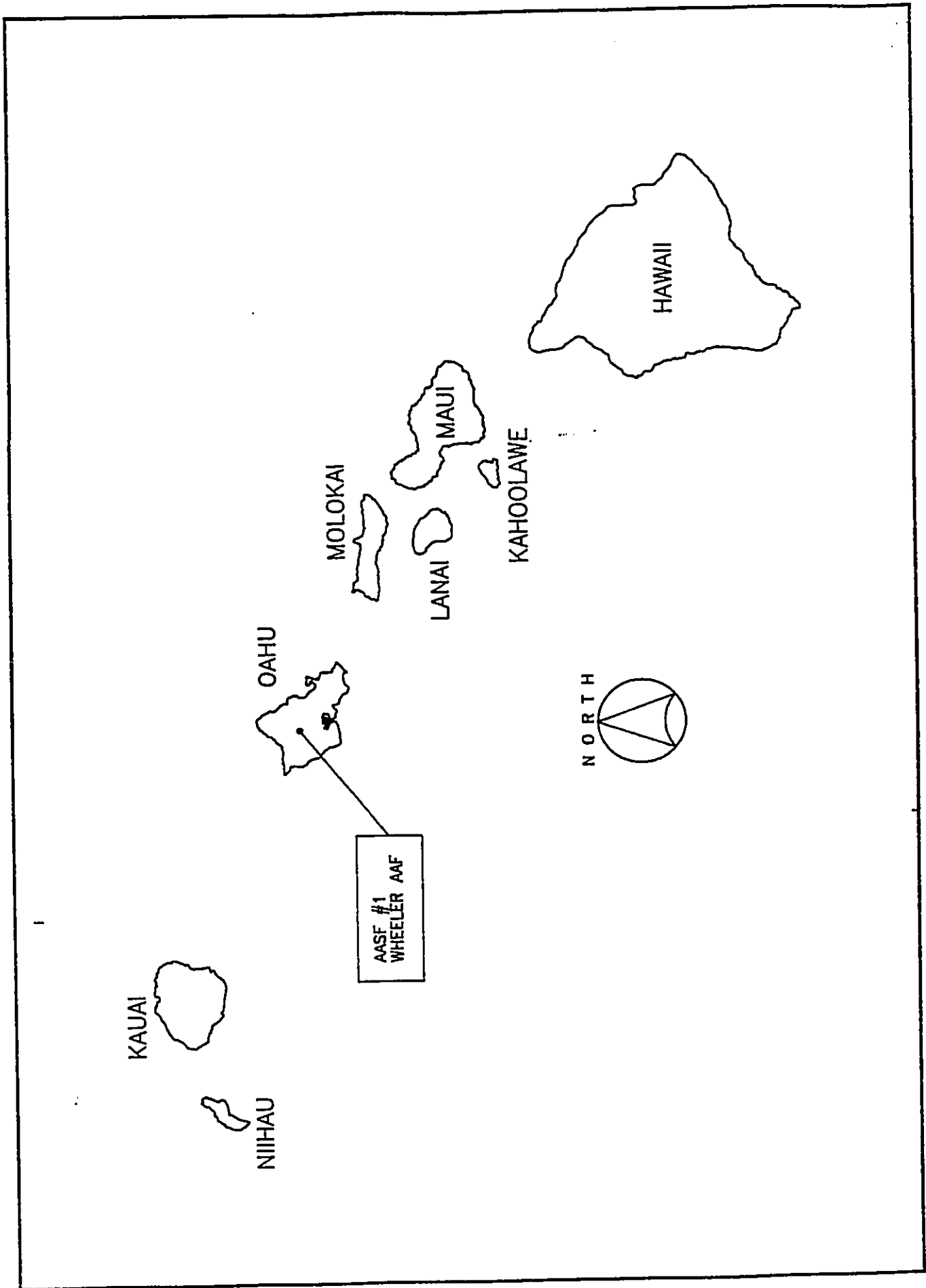


Exhibit 1 - Location Map A, Main Hawaiian Islands.

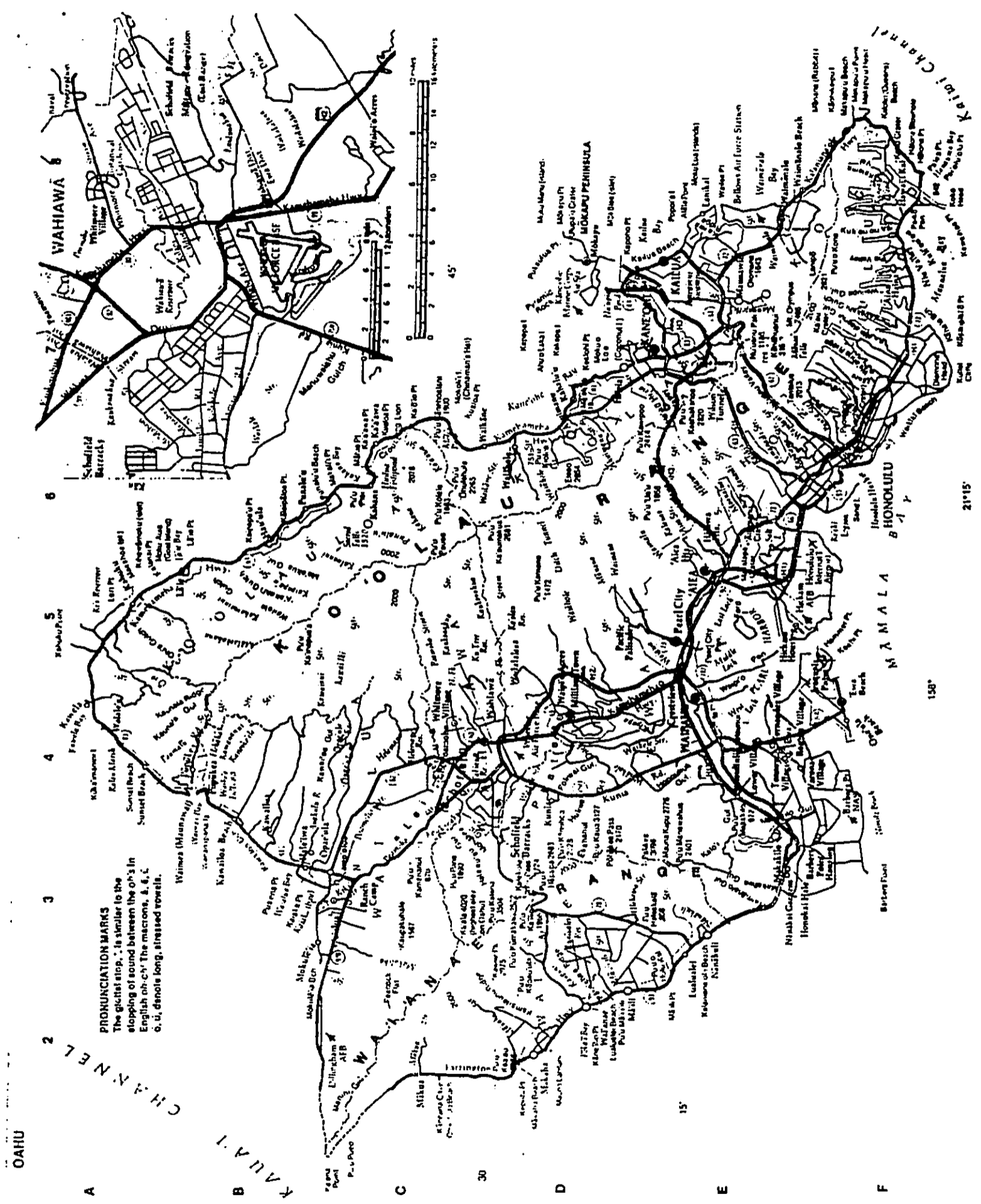
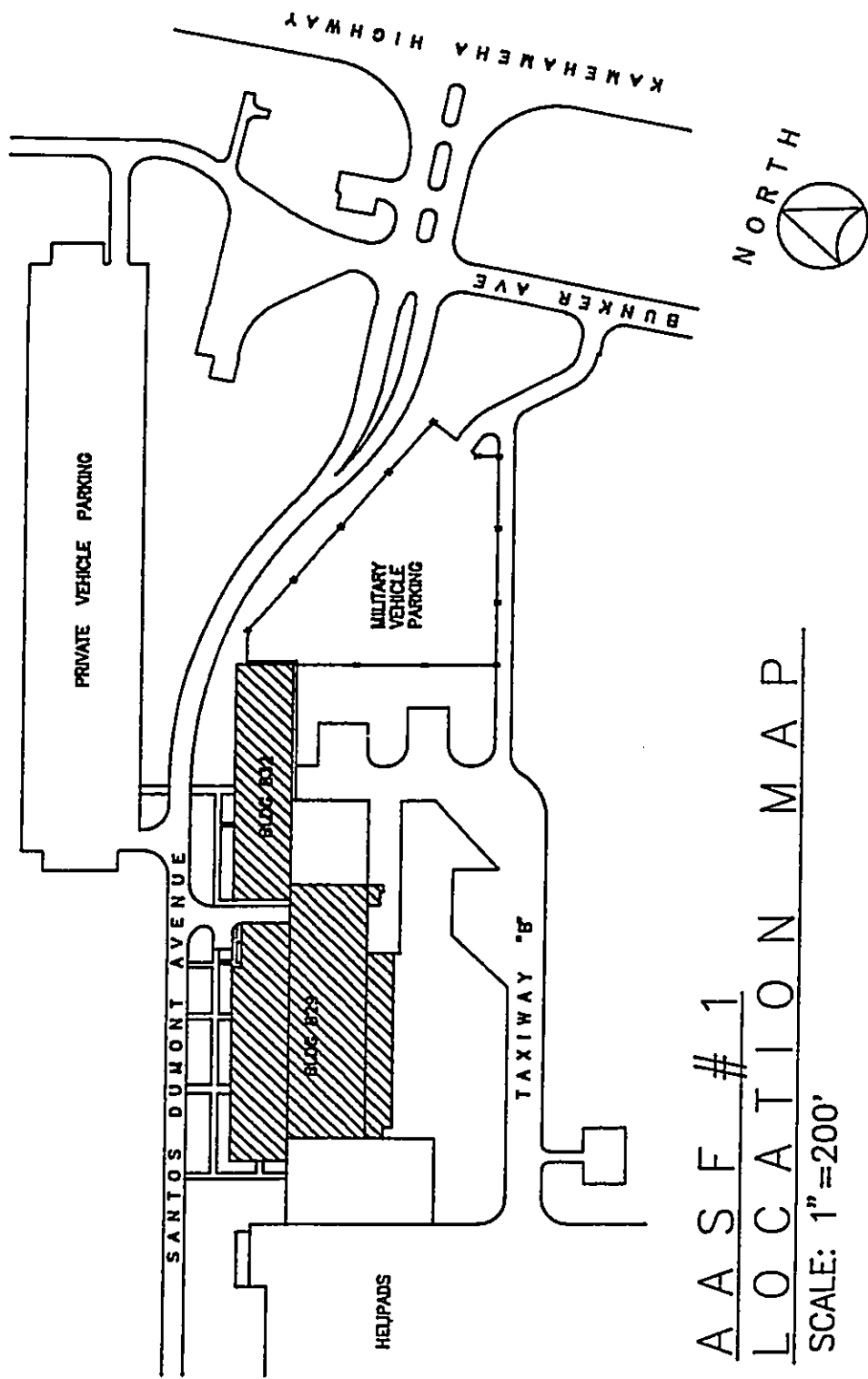


Exhibit 1 - Location Map B, Island of Oahu.



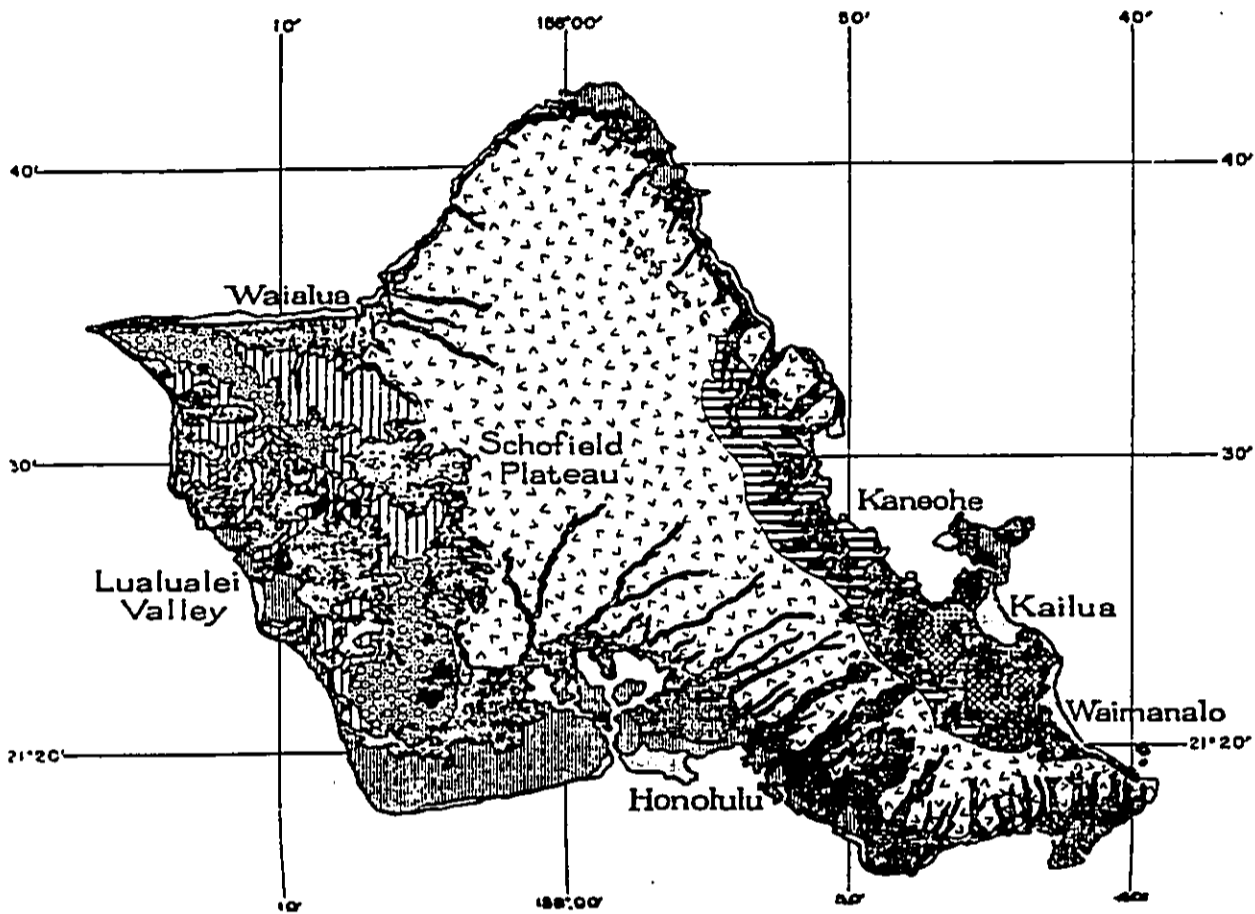




A A S F # 1  
L O C A T I O N M A P  
 SCALE: 1" = 200'

Exhibit 2 - Site Map.

74



75

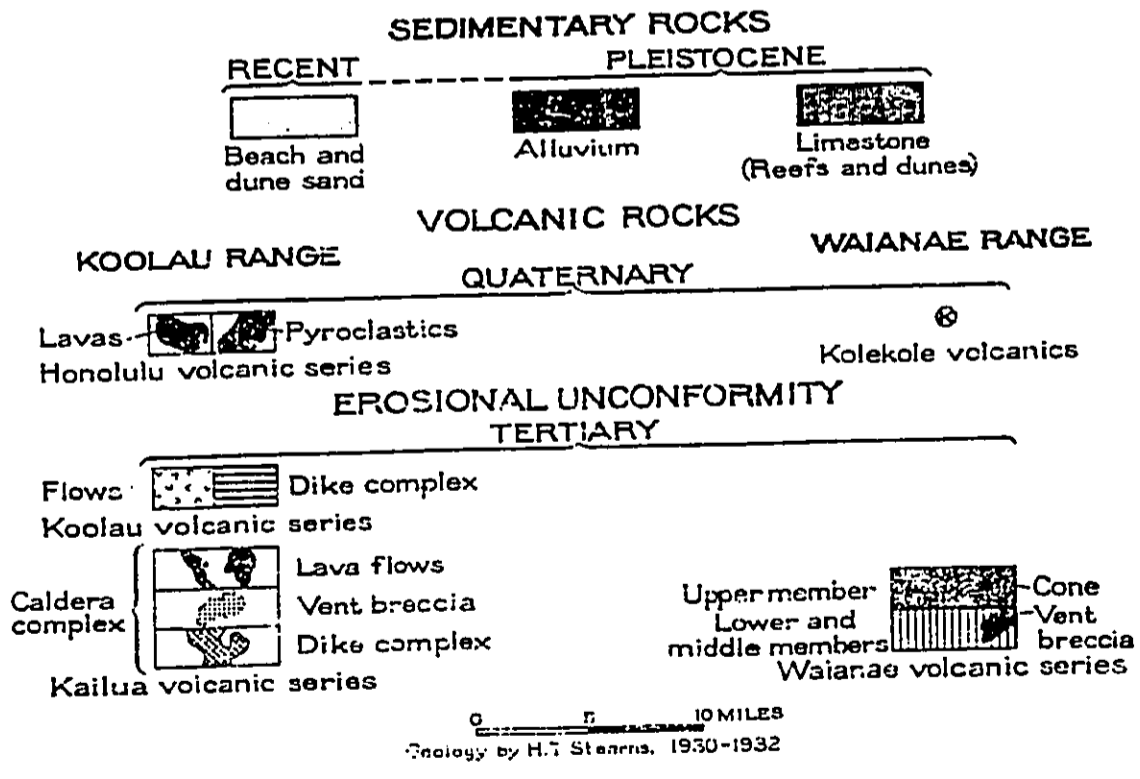
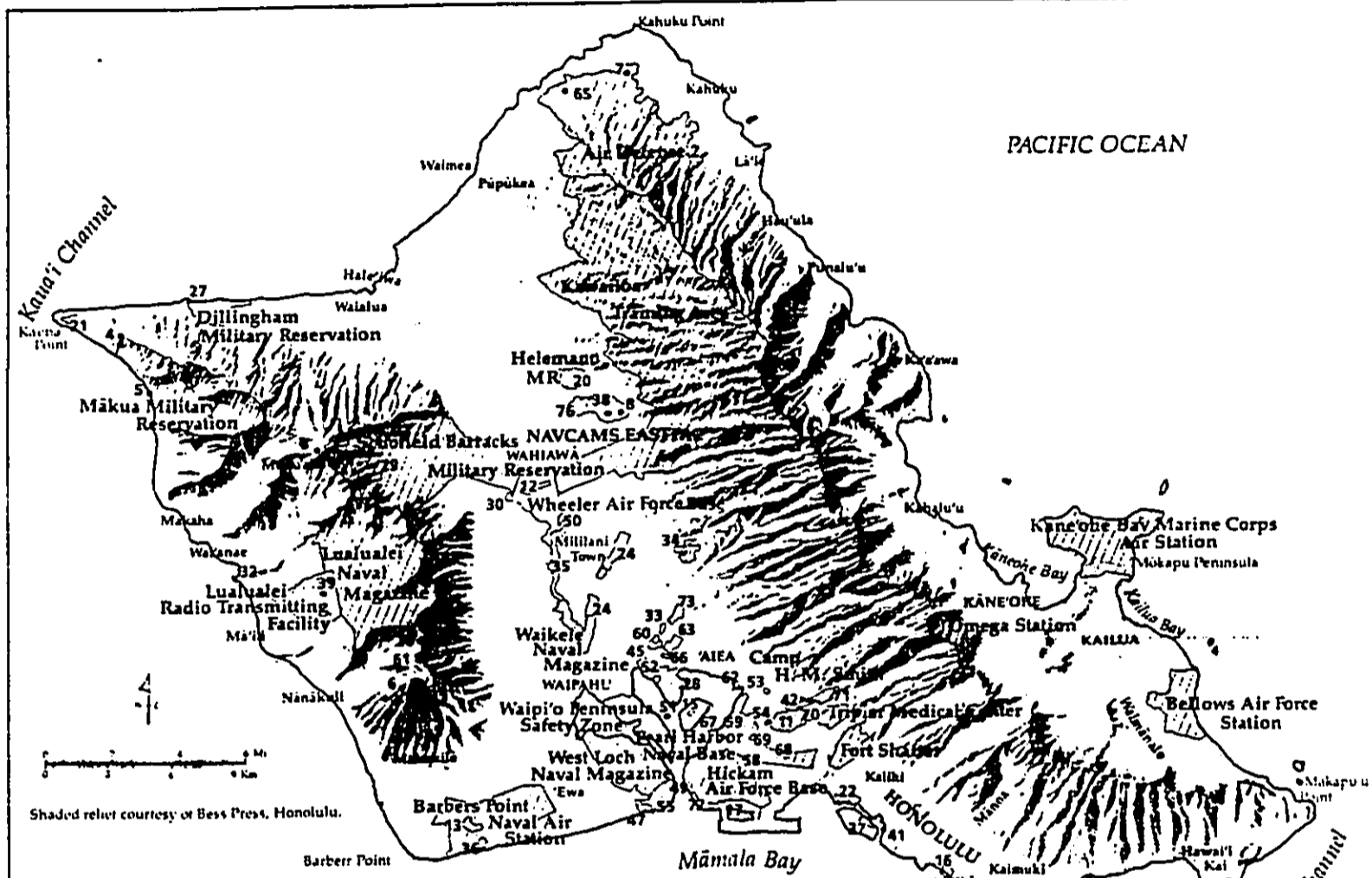


Figure 11 - Geologic map of the Island of Oahu. Faults and dikes omitted.

Exhibit 3 - Geologic Map.



Shaded relief courtesy of Bess Press, Honolulu.

INDEX		
Locator	Installation (map page in this section)	
<b>AIR FORCE</b>		
1	Barbers Point Naval Air Station (24, 25)	
2	Hickam Air Force Base (2, 3)	
3	Kāʻala Air Force Station	
4	Kāneʻohe Point Satellite Tracking Station	
5	Mākuā Sub Cable Site	
6	Pālehua Solar Observatory Research Site	
7	Punahonua Air Force Station	
8	Wānīāwā Communication Station	
9	Wheeler Air Force Base (5)	
<b>ARMY</b>		
10	Air Defense 2	
11	Ālāmānō Military Reservation	
12	Army Airfield, Wheeler AFB (5)	
13	Barbers Point Army Helicopter Facility (24)	
14	Dillingham Military Reservation	
15	Fort Island Army Boat Facility (19)	
16	Fort DeRussy Military Reservation (6)	
17	Fort Kamehameha Military Reservation	
18	Fort Ruger Military Reservation	
19	Fort Shafter Military Reservation (10, 11)	
20	Helemano Military Reservation (7)	
21	Kāneʻohe Point Military Reservation	
22	Kapūlānā Military Reservation (13)	
23	Kawānāʻoa Training Area	
24	Kipapa Ammunition Storage Sites	
25	Mākuā Military Reservation	
26	Mauna Kapu Communication Station	
27	Mokulāʻia Army Beach	
28	Pearl City Peninsula Ramp Site	
29	Schofield Barracks Military Reservation (8, 9)	
30	US Army Kuna Field Station	
31	US Army Tropic Medical Center (12)	
32	Waiʻanae-Kai Military Reservation	
33	Waiʻanae-Gulch National Guard Storage Area	
34	Waiʻanae Military Reservation	
35	Waikakalāua Ammunition Storage Site	
<b>COAST GUARD</b>		
36	Air Station Barbers Point (24)	
37	Base Honolulu	
38	Communication Station Honolulu (28)	
39	Communication Station Honolulu Transmitting (29)	
40	Omega Station	
41	Pier 4	
42	Red Hill Housing Area	
43	Waikūpe Quarters	
<b>MARINE CORPS</b>		
44	Camp H.M. Smith (16)	
45	Mānana Housing (16)	
46	Kāneʻohe Bay Marine Corps Air Station (14, 15)	
47	Pūʻuoa Training Facility (16)	
<b>NAVY</b>		
48	Barbers Point Naval Air Station (24, 25)	
49	Bishop Point (18)	
50	Camp Stover Housing	
51	Degaussing Station	
52	ʻEwa Drum Storage	
53	Hālawā Housing (22)	
54	Hālawā Water Storage	
55	Troquois Point Housing	
56	Lualualei Naval Magazine (26)	
57	Lualualei Radio Transmitting Facility (29)	
58	Lynch Park	
59	Makalapa (21)	
60	Mānana Housing	
61	Maunakapu	
62	McGrew Point Housing (22)	
63	Naval Supply Center Mānana Storage	
64	NAVCAM EASTPAC (28)	
65	ʻŌpana Communications Site	
66	Pearl City Junction	
67	Pearl Harbor Naval Base (18, 19, 20, 21)	
68	Pearl Harbor Housing (23)	
69	Public Works Center (23)	
70	Red Hill Housing	
71	Red Hill Fuel Storage	
72	Tri-Service Sewage Treatment Plant	
73	Waiʻanae Water Supply	
74	Waipiʻo Peninsula Safety Zone	
75	Waikēle Naval Magazine (13)	
76	West Loch Naval Magazine (27)	

Exhibit 4 - Military Map.



DEPARTMENT OF THE ARMY  
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY  
ABERDEEN PROVING GROUND, MARYLAND 21010-5422



REPLY TO  
ATTENTION OF

EXECUTIVE SUMMARY  
ENVIRONMENTAL NOISE STUDY NO. 52-34-QR40-93  
REQUIREMENTS FOR INSTALLATION COMPATIBLE USE ZONE  
STUDIES AT FOUR FACILITIES OF THE  
HAWAII ARMY NATIONAL GUARD  
AASF #1, WHEELER ARMY AIRFIELD, OAHU, HAWAII  
AASF #2, HILO INTERNATIONAL AIRPORT, HAWAII, HAWAII  
UKUMEHAME AND PIMOIE FIRING RANGES, MAUI, HAWAII  
7-14 JANUARY 1993

1. **PURPOSES.** To conduct onsite noise monitoring to support environmental documentation for stationing of CH-47 aircraft at the Hawaii Army National Guard Aviation Support Facility (AASF #1) at Wheeler Army Airfield, Oahu, and to determine whether there is a need for Installation Compatible Use Zone (ICUZ) studies at AASF #1, at AASF #2, Hilo International Airport, Hawaii or at Ukumehame and Pimoe Firing Ranges, Maui.
2. **CONCLUSIONS.** Because CH-47 runups at AASF #1 will be farther from the closest military housing than those for the current fleet of light and medium helicopters, the average noise level during a CH-47 operation will not be greater than is already there during other AASF #1 operations. At AASF #2, the noise of helicopter operations is overshadowed by the noise of commercial jets. Elimination of all rotary wing operations at AASF #2 would not lead to any significant reduction in the day-night average sound level experienced by persons living in the vicinity of Hilo International Airport. At Ukumehame Firing Range, the ambient noise from surf and highway traffic is high enough to mask the noise of small arms fire for persons using the beach. At Pimoe Firing Range, the ambient noise is so low and the topography so conducive to sound propagation that an ICUZ study should be performed if there is any potential for development in the vicinity of the range.
3. **RECOMMENDATIONS.** Prepare a single-page ICUZ statement explaining that a separate ICUZ study is not needed for AASF #1 since its noise is already covered by the ICUZ study for Wheeler Army Airfield. Prepare a single-page ICUZ statement explaining that a separate ICUZ study is not needed for AASF #2 since its noise is overshadowed by the noise of commercial aviation at Hilo International Airport. Use the measurement data contained in this report to demonstrate that there would not be a significant reduction in noise levels around Hilo International Airport if Army National Guard helicopter operations were eliminated. Determine the potential for land development in the vicinity of Ukumehame and Pimoe Firing Ranges. If (and only if) there is a potential for land development down range from Ukumehame Firing Range or within 2 kilometers of Pimoe Firing Range, arrange for an onsite monitoring study of the amount of range noise propagating into the developable areas.

Exhibit 5 - Executive Summary, Environmental Noise Study.

