AQM-37 Facility

Pacific Missile Range Facility Barking Sands, Kauai, Hawaii

Environmental Assessment

Prepared for:
Pacific Missile Range Facility
Barking Sands, Kauai, Hawaii

February 1997

DEPARTMENT OF DEFENSE
DEPARTMENT OF THE NAVY

FINDING OF NO SIGNIFICANT IMPACT FOR THE AQM-37 FACILITY, PACIFIC MISSILE RANGE FACILITY BARKING SANDS, KAUAI, HAWAII

Pursuant to Council on Environmental Quality regulations (40 CFR Parts 1500-1508) implementing procedural provisions of the National Environmental Policy Act (NEPA), the Department of the Navy gives notice that an Environmental Assessment (EA) has been prepared and an Environmental Impact Statement is not required for the AQM-37 facility at Pacific Missile Range Facility (PMRF) Barking Sands, Kauai, Hawaii.

The proposed action is to construct a maintenance facility for the Air Launched Drone Missile (AQM-37) program at PMRF Barking Sands. The facility will consist of constructing a 2,940 square foot (273 m^2) concrete building for target assembly and work-up. The building will include a one-ton hoist in the work area, fire protection, and utility connections. Supporting facilities will include the construction of a new 155,000 gallon (587 kl) water tank, a 1200 GPM booster pump, and a 200 square foot (18.6 m^2) pumphouse for fire protection. A septic tank with leach field will be installed to support the facility's wastewater requirements. Two existing facilities will also be used: an inert materials storage; and an ordnance magazine at Kamokala Ridge for long-term storage of containerized AQM-37 targets.

The AQM-37 is an unmanned missile which is used as an aerial target to test the Navy's combat weapons systems on surface ships and aircraft, as well as other DOD combat weapons systems. The AQM-37 targets are currently launched from aircraft in flight on ranges controlled by PMRF Barking Sands. The aircraft carrying the AQM-37 currently fly to the PMRF ranges from Naval Air Station (NAS) Barbers Point, which is scheduled to close in 1999 as part of the Base Realignment and Closure program. Replacement ground support facilities are required and have been proposed at PMRF Barking Sands.

Multiple alternatives were considered for the proposed action. Included in these alternatives were: the no action alternative; renovation/conversion of existing facilities; lease of commercial facilities; and siting at alternate Hawaii location. The no action alternative would not provide the required AQM-37 shore facilities when the NAS Barbers Point facilities close. Lack of appropriate, available facilities eliminated the alternatives to renovate, convert and/or lease existing facilities. Marine Corps Base Hawaii, Kaneohe Bay and Hickam Air Force Base were examined as viable alternate locations for the proposed facility. Building the facilities at either of these locations would require greater aircraft transit time to the PMRF training range, and would eliminate operational flexibility provided by collocating the shoreside support facility with the training range at PMRF Barking Sands. PMRF was, therefore, determined to be preferable to other Hawaii locations.

No significant environmental impacts will occur due to the proposed action. The proposed action will have no significant impact on topography, geology, or soils. Best Management

Practices will be employed during construction of the proposed action. Temporary soil erosion control measures will be used as appropriate and disturbed earth will be stabilized and replanted. No significant impacts to surface water or ground water resources will result from the proposed action. No impacts to wetlands will occur due to the proposed action. The State of Hawaii is in attainment of National Ambient Air Quality Standards. Temporary, minimal air impacts may occur due to construction. Dust control measures will be employed during construction to mitigate potential effects to other aspects of air quality. Short term noise impacts will be mitigated by limiting construction activity to daytime hours. Aircraft operations will be similar to existing conditions at PMRF, and will not cause a significant increase in aircraft-related noise over existing levels. No additional permanent personnel are associated with the proposed action. No traffic impacts will occur at or around PMRF Barking Sands due to the proposed action. No significant impacts to water supply, electricity, or other infrastructure will occur. The new water tank with booster pump and pumphouse will be constructed to provide adequate fire protection. The proposed septic tanks with absorption bed will accommodate wastewater requirements of the facility.

The proposed facility construction site is located adjacent to the existing ordnance/Aerial Targets Maintenance Complex on PMRF. The proposed facility is sited within the 100-year flood plain, and has been reviewed in accordance with Executive Order 11988. No practicable alternative to siting the project in the flood plain has been identified. A Safety and Evacuation Plan for the facility will be developed by PMRF. The proposed action will have no adverse impact on the natural and beneficial values of the flood plain. No endangered or threatened plant or animal species will be impacted. No critical habitat for any threatened or endangered species or species of special concern will be affected as a result of implementing the proposed action. The federally threatened Newell's shearwater inhabits the area around PMRF Barking Sands. During the fall, fledglings attempting to fly to the open ocean may become disoriented by urban lighting. Therefore, design and construction of exterior lighting on the proposed facilities will conform with the State of Hawaii Department of Land and Natural Resources, and U.S. Fish and Wildlife regulations. In addition, external lighting of the facility will be minimized during peak fledging season of the Newell's shearwater in October and November. A recovery plan for injured, disoriented, or downed shearwaters during fledging season will be developed. The State Historic Preservation Officer has concurred with the determination that the proposed project will have no adverse effect on historic properties. Though no archeological sites are known to exist at the proposed construction site, archeological monitoring of construction activities for possible artifacts will occur. The project is located completely within the boundaries of PMRF Barking Sands and will have no spillover effect on the coastal zone.

No significant impacts from hazardous materials handling and disposal are expected. Standard operating procedures will be developed for the operation of the proposed facility to minimize hazards related to explosives safety and hazardous materials. The PMRF Oil and Hazardous Substances Spill Contingency Plan will be updated to address the AQM-37 facility. The facility will generate a 115 foot explosives safety quantity distance (ESQD) arc because of missile motor and propellant components. The Facility will be sited at least that distance from any inhabited building or public roadway. Appropriate Department of Defense and State of Hawaii Department of Transportation regulations will be followed during transport of targets to the

magazine and between the magazine and the main base facility. There is no known petroleum or other subsurface contamination of the proposed project area. The proposed action will not have a disproportionately high or adverse effect to low income or minority populations.

Based on information gathered during preparation of the EA, the Navy finds that construction and operation of the AQM-37 maintenance facility at PMRF Barking Sands, Kauai, Hawaii will result in no significant adverse environmental impacts.

The EA addressing this action may be obtained from: Commander, Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii 96860-7300 (Attn: Mr. Gerald Gibbons, Code 231GG) telephone (808) 471-9338. A limited number of copies of the EA are available to fill single copy requests.

25 July 1997 — Thomas J. Peeling

Dated

Thomas J. Peeling
Special Assistant for Environmental Planning
Environmental Protection, Safety and Occupational Health Division
Deputy Chief of Naval Operations (Logistics)

COVER SHEET

Proposed Action:	Construction and operation of an AQM-37 target missile maintenance facility at Pacific Missile Range Facility (PACMISRANFAC) Barking Sands, Kauai, Hawaii. Supporting facilities include water tank and pump for fire protection, and septic tank with absorption bed for wastewater requirements. An existing storage building and ordnance magazine will also be used to support AQM-37 operations.
Type of Document:	Environmental Assessment (EA)
Lead Agency:	Pacific Missile Range Facility (PACMISRANFAC) Barking Sands, Kauai, Hawaii
Coordinating: Agency:	Pacific Division, Naval Facilities Engineering Command Pearl Harbor, Hawaii
Contact:	Mr. Gerald Gibbons, Code 231GG Environmental Planning Division Pacific Division, Naval Facilities Engineering Command Pearl Harbor, Hawaii 96860-7300 Telephone (808) 471-9338

The AQM-37 is an unmanned missile used as an aerial target to test the combat weapons system on Navy surface ships and aircraft, and other DOD combat weapons systems. The AQM-37 target is mounted to a platform aircraft, carried aloft and launched while the aircraft is in flight. Existing facilities to support the AQM-37 program are located at Naval Air Station Barbers Point, scheduled to close in 1999 as part of the federal BRAC initiative. PACMISRANFAC was selected as the preferred site for the replacement facilities because of its proximity to the training range where the AQM-37 testing is conducted. A new facility is required due to a lack of existing facilities available for renovation, conversion or lease.

The project involves construction of a 2,940 square foot (273 m^2) concrete building adjacent to the existing ordnance/aerial targets maintenance complex and aircraft taxiway. The facility will be used for missile target assembly, work-up and short-term storage, and includes a one-ton hoist in the work area, fire protection and utility connections. Supporting facilities to be constructed include a 155,000 gallon (587 kl) water tank, booster pump and pumphouse for fire protection. A septic tank with absorption bed (leach field) will be installed to support the facility's wastewater requirements. No other major utility upgrades to PACMISRANFAC systems are required. An existing storage building at the main base and an ordnance magazine at the Kamokala Ridge area will also be used to support the AQM-37 program.

Operation of the facility will not increase PACMISRANFAC personnel, as the facility will be staffed by the base ordnance department. The AQM-37 platform aircraft will be deployed from Hickam Air Force Base on Oahu. The increase in aircraft take-offs and landings at PACMISRANFAC will be nominal, in light of ongoing aircraft operations. The project will not change the frequency or duration of ongoing training exercises requiring the AQM-37 target. The proposed action is consistent with the PACMISRANFAC Master Plan.

The project will not result in any significant adverse environmental impacts that cannot be mitigated, either during construction or operation of the facility. The AQM-37 assembly building, water tank, septic tank and absorption bed will be sited within the 100-year flood plain (Zone VE). In compliance with Executive Order 11988, the Navy has determined there is no practicable alternative to siting the project in the flood plain and that the project will have no adverse impact on the natural and beneficial values of the flood plain. There will be no adverse impacts to threatened or endangered species and the Navy has completed an informal Section 7 Endangered Species Act consultation with the U.S. Fish and Wildlife Service. Exterior lighting will be designed to protect the Newell's Shearwater birds from injury. Potential adverse effects to historic properties will be mitigated by archeological monitoring during construction. The SHPO has concurred that the project will have "no adverse effect" on historic properties. There is no spillover into the coastal zone. The project is in conformance with the federal Clean Air Act. The proposed action will not have a disproportionate impact on low-income or minority populations.

TABLE OF CONTENTS

Section Page

Section Page

List of Figures

List of Tables

List of Acronyms

AICUZ	air installations compatible use zone
AQM	Air Launched Drone Missile
BRAC	Base Realignment and Closure
CAA	Clean Air Act
CAD	Cartridge Activated Device
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CINCPACFLT	Commander in Chief, Pacific Fleet
CZMA	Coastal Zone Management Act
DERA	Defense Environmental Restoration Act
DLNR SHPD	Department of Land and Natural Resources, State Historic Preservation Division
DOD	Department of Defense
DOH	Department of Health
DRMO	Defense Reutilization and Marketing Office

EA	environmental assessment
ESQD	explosives safety quantity distance
FONSI	Finding of No Significant Impact
IRFNA	Inhibited Red Fuming Nitric Acid
IR	installation restoration
m^2	square meters
kl	kiloliters (thousand liters)
MAF	Mixed Amine Fuel
MCBH	Marine Corps Base Hawaii
MILCON	military construction
NEPA	National Environmental Policy Act
NAS BARPT	Naval Air Station Barbers Point
NAVMAG	Naval Magazine
NEW	Net Explosive Weight
NPDES	National Pollutant Discharge Elimination System
PACMISRANFAC	Pacific Missile Range Facility
PACNAVFACENGCOM	Pacific Division Naval Facilities Engineering Command
POL	petroleum, oil and lubricants
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act
SHPO	State Historic Preservation Officer

EXECUTIVE SUMMARY

This Environmental Assessment (EA) has been prepared by the Department of the Navy in accordance with Council on Environmental Quality regulations and OPNAVINST 5090.1B of 1 November 1994 which implements the National Environmental Policy Act (NEPA) of 1969.

The proposed action is to construct a maintenance facility for the Air Launched Drone Missile (AQM)-37 program at the Pacific Missile Range Facility (PACMISRANFAC) Barking Sands, Kauai, Hawaii. The AQM-37 is an unmanned missile which is used as an aerial target to test the Navy's combat weapons systems on surface ships and aircraft, as well as other DOD combat weapons systems. The AQM-37 targets will be used by both surface and air units in test and training exercises. Existing shoreside facilities supporting the AQM-37 program are located at Naval Air Station Barbers Point (NAS BARPT), which is scheduled to close in 1999 as part of the BRAC initiative. Replacement facilities are required to accommodate this function, and have been proposed at PACMISRANFAC. This location would provide support facilities in proximity to the PACMISRANFAC training range, where the exercises which require the AQM-37 target are conducted.

The project site is adjacent to the existing ordnance/aerial targets maintenance complex and next to the runway ordnance handling area and aircraft taxiway. The proposed project will involve construction of a 2,940 square foot (273 m^2) concrete building for target assembly and work-up. The building will include a one-ton hoist in the work area for lifting the targets from their containers, fire protection and utility connections. Supporting facilities to be constructed include a new 155,000 gallon (587 kl) water tank, a 1200 GPM booster pump and a 200 SF (18.6 m^2) pumphouse for fire protection. A septic tank with leach field will be installed to support the facility's wastewater requirements. Two existing facilities will also be utilized for the AQM-37 program: a pre-engineered building will be used for inert materials storage, and an ordnance magazine at the Kamokala Ridge magazine area will be used for long-term storage of containerized AQM-37 targets.

There will be no change to the existing frequency or duration of existing training exercises which occur four to five times per year and last about one week. During each exercise, up to eight targets may be brought to the facility, assembled and worked-up prior to being mounted on the platform aircraft (target

work-up and loading was previously handled at NAS Barbers Point). The AQM-37 is then carried aloft to the PACMISRANFAC training range and launched from the platform aircraft while in flight.

Alternatives to the proposed action include 1) no action, 2) renovation/ conversion of existing facilities; 3) lease of commercial facilities; and 4) siting at an alternate Hawaii location. The no action alternative would not provide the required AQM-37 shore facilities when the NAS BARPT facilities are closed. The alternative to renovate, modernize, alter or convert an existing building was eliminated due to a lack of available facilities at PACMISRANFAC. The alternative to lease commercial facilities was also eliminated due to a lack of appropriate facilities. Also, in this option, there would be no "resident" ordnance department to staff the AQM-37 facility. Operational inefficiencies would result if PACMISRANFAC ordnance staff were required to support a separate off-base site, and following assembly, the built-up targets would need to be transported via public roads to the airfield. The final alternative was to utilize another Hawaii location, such as MCBH Kaneohe Bay or Hickam AFB. While these are viable locations, they would require a greater aircraft transit time to the training range. This eliminates much of the operational flexibility provided by collocating the shoreside support facility with the training range at PACMISRANFAC.

No significant environmental impacts that cannot be mitigated are expected as a result of the proposed action. The AQM-37 facility will be sited within the 100-year flood plain (VE Zone), and has been reviewed in accordance with Executive Order 11988. The Navy has determined that there is no practicable alternative to siting the project in the flood plain, and that the project will have no adverse impact on the natural and beneficial values of the flood plain. As a mitigation measure, a Safety and Evacuation Plan for the facility will be developed by PACMISRANFAC.

Other than the proposed fire protection and wastewater improvements, no major upgrades are required for other utility systems. Archeological monitoring will be conducted during utility trench excavation, and the State Historic Preservation Officer (SHPO) has concurred with the Navy's determination that the project will have "no adverse effect" on historic properties.

The project will not impact sensitive biological habitats or endangered species. Construction will not adversely affect threatened or endangered species or critical habitats. An informal Section 7 Endangered Species Act consultation with the U.S. Fish and Wildlife Service has been completed (Appendix A). The AQM-

37 facility's exterior lighting will be designed to conform with the State of Hawaii and federal guidelines for protection of Newell's Shearwater birds. In addition, the Navy will 1) minimize or eliminate use of external lighting during peak fledging season in October and November; 2) institute a plan for recovering disoriented birds and taking them to the nearest "shearwater aid station," most likely a county fire station; and 3) insure that employees regularly search the area for downed birds during fledging season. The U.S. Fish and Wildlife Service has determined that as long as the above conditions are met, the project is not likely to adversely affect any protected species.

The project is located within the boundaries of PACMISRANFAC and is excluded from the State's coastal zone under the Coastal Zone Management Act. Storage of targets at the Kamokala magazine area, leased from the State of Hawaii, does not require a CZM consistency determination, as it does not involve a new use of the area. The project will have no spillover effect on the coastal zone.

During construction, sound construction techniques and best management practices will be followed to minimize excessive dust and erosion. Construction will be limited to normal working hours. Construction-related noise and dust increases will be temporary. The project is in conformance with the federal Clean Air Act Section 176(c), which pertains to federal actions.

The project will not increase the number of personnel or home-based aircraft at PACMISRANFAC or increase the number of range users. There will be up to 50 additional (platform) aircraft take-offs and landings per year, which is not significant in light of the total number of air operations presently occurring. More likely, there will be far fewer than 50 additional take-offs and landings annually. Moreover, duration of take-off and landing will be short and predominantly over the ocean, and will not cause a significant increase in noise at the base.

Standard operating procedures will be developed for operation of the facility to minimize hazards related to explosives safety, hazardous materials, etc. These procedures will be approved by the base command. The PACMISRANFAC Oil and Hazardous Substances Spill Contingency Plan will be updated to address hypergolic fuels, including target upload on the launch aircraft and the AQM-37 being jettisoned during take-off. The Spill Response team will be adequately trained to respond to both hypergolic fuel and inhibited red fuming nitric acid spills. The PACMISRANFAC air crash fire team will have adequate fire fighting equipment and trained personnel for AQM-37 platform aircraft operations.

The facility will generate a 115-foot ESQD arc, and will be sited at least this distance from any inhabited building or public roadway. U.S. Department of Defense and State of Hawaii Department of Transportation regulations regarding transport of ordnance will be followed during transport of the targets to the magazine and between the magazine and the main base facility. The targets will be mounted on the platform aircraft in the red label area, the runway's authorized ordnance handling area.

There is no known petroleum or other subsurface contamination of the project site. The project will not involve construction or demolition which could release hazardous materials.

Ongoing target firings at the range are continuing actions which have been reviewed and approved for environmental compliance by the PACMISRANFAC Public Works department. All required environmental documentation for ongoing training operations has been completed and approved.

The project has been reviewed in accordance with Executive Order 12898 and Secretary of the Navy Notice 5090 for environmental justice. There will be no known significant or adverse environmental impacts to minority or low-income communities as a result of the project.

In summary, the environmental impacts associated with the proposed project are not significant and can be mitigated through appropriate design and engineering.

The EA is on file and may be reviewed by interested parties at the place of origin: Commander, Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii, 96860-7300 (Attn. Mr. Gerald Gibbons, Code 231GG), telephone (808) 471-9338. A limited number of copies of the EA are available to fill single copy requests.

CHAPTER ONE
PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

This Environmental Assessment (EA) is prepared pursuant to the National Environmental Policy Act (NEPA) and in accordance with OPNAVINST 5090.1B of 1 November 1994. The EA supports the construction and operation of facilities to support the AQM-37 target program at the Pacific Missile Range Facility (PACMISRANFAC) Barking Sands, Kauai, Hawaii. Two existing storage facilities will also be used to support the AQM-37 target operations.

1.2 PURPOSE AND NEED FOR PROJECT

The Navy's weapons systems program has a requirement to operate Air Launched Drone Missile AQM-37 aerial targets in Hawaii, for combat system ship qualification trials (CSSQT) following initial fitting and requalification after major overhaul. The AQM-37 targets are also required for Navy and other DOD air-to-air intercept programs.

In Hawaii, the qualification/requalification of the Navy weapons systems and other DOD combat weapons systems are conducted at the instrumented ocean range at the PACMISRANFAC Barking Sands, Kauai. Shoreside support facilities are currently located at Naval Air Station, Barbers Point (NAS BARPT). The federal Base Realignment and Closure Commission 1993 (BRAC 93) calls for the closure of NAS BARPT by 1999, which will result in the need to relocate AQM-37 maintenance facilities.

After a review of several alternatives, the Navy has decided to construct the replacement facility at PACMISRANFAC, because of its proximity to the training range where the AQM-37 targets are used to test the Navy and other DOD weapons systems.

1.3 LIST OF POSSIBLE ENVIRONMENTAL PERMITS AND APPROVALS REQUIRED

The following is a listing of environmental permits and approvals that may be required for the project. PACNAVFACENGCOM will ascertain which permits are applicable in this case and will obtain all the necessary permits. The project's relationship to these various policies are discussed in Chapter 4.

Permit/Approval	Agency
Federal	
Section 106, National Historic Preservation Act	Dept. of Land & Natural Resources-State Historic Preservation Division Advisory Council on Historic Preservation
Section 7, Endangered Species Act *(for building exterior lighting)*	U.S. Fish and Wildlife Service
Other	
Excavation Permit	PACMISRANFAC
Safety and Evacuation Plan	PACMISRANFAC

CHAPTER TWO
ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 INTRODUCTION

This chapter describes the proposed Air Launched Drone Missile (AQM)-37 facilities to be constructed at PACMISRANFAC, and the operations to be conducted at the facilities. Target launchings and missile firings at the offshore test range are continuing actions and are not within the scope of this EA.

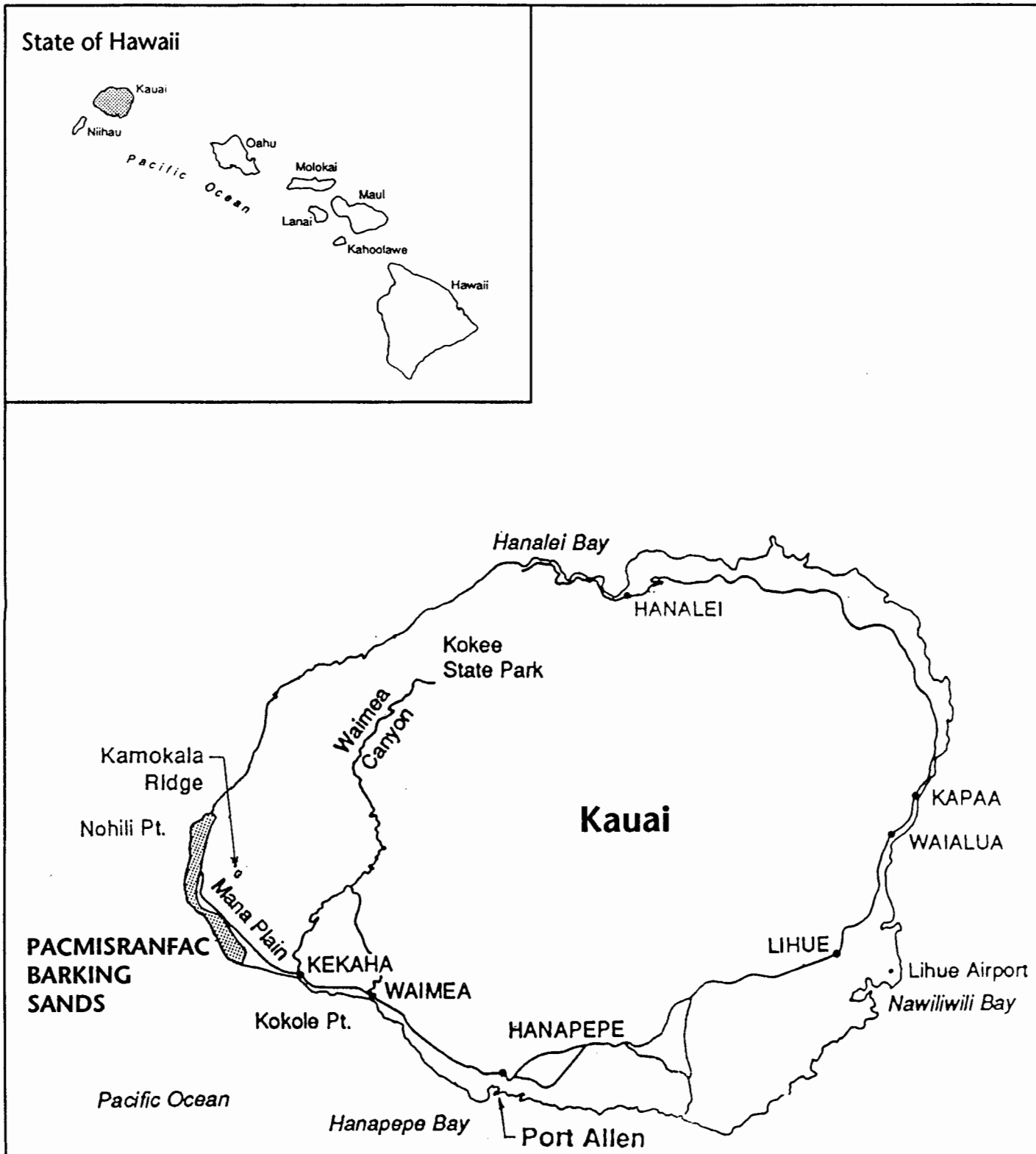
Several options to the proposed action are discussed, including 1) "no action;" 2) renovation/conversion; 3) lease of commercial facilities; and 4) alternate Hawaii location.

2.2 DESCRIPTION OF THE PROPOSED ACTION

The proposed project will involve construction of a target missile assembly and work-up facility to replace facilities located at NAS BARPT, scheduled to close in 1999. The AQM-37 maintenance facility is proposed at PACMISRANFAC Barking Sands, Kauai (Figure 1). The AQM-37 program will also utilize an existing cave magazine at the Kamokala Ridge ordnance storage area for long-term storage of containerized AQM-37 targets, and a pre-engineered building to store inert materials. (Figure 2)

The AQM-37 is an unmanned missile which is used as an aerial target for qualification/requalification of Navy weapons system programs on surface ships and aircraft, and to test other DOD combat weapons systems. The AQM-37 is used by both surface and air units in test and training exercises. The assembled target is approximately 14 feet (4.3 m) long by 3.3 feet (1 m) wide, and weighs 565 pounds (256 kg) when flight-ready. The pre-fueled target has a self-contained hypergolic propellant system consisting of Mixed Amine Fuel (MAF) and Inhibited Red Fuming Nitric Acid (IRFNA) as an oxidizer. During work-up, the target is pressurized with nitrogen gas. Each target has an explosive weight of 29 pounds and a Net Explosive Weight (NEW) of 282 pounds.

The actual launching of the AQM-37 targets occurs at the PACMISRANFAC instrumented ocean range. These activities are presently ongoing, and will not be altered by the relocation of shoreside facilities from NAS BARPT to



General Location

AQM-37 Facility

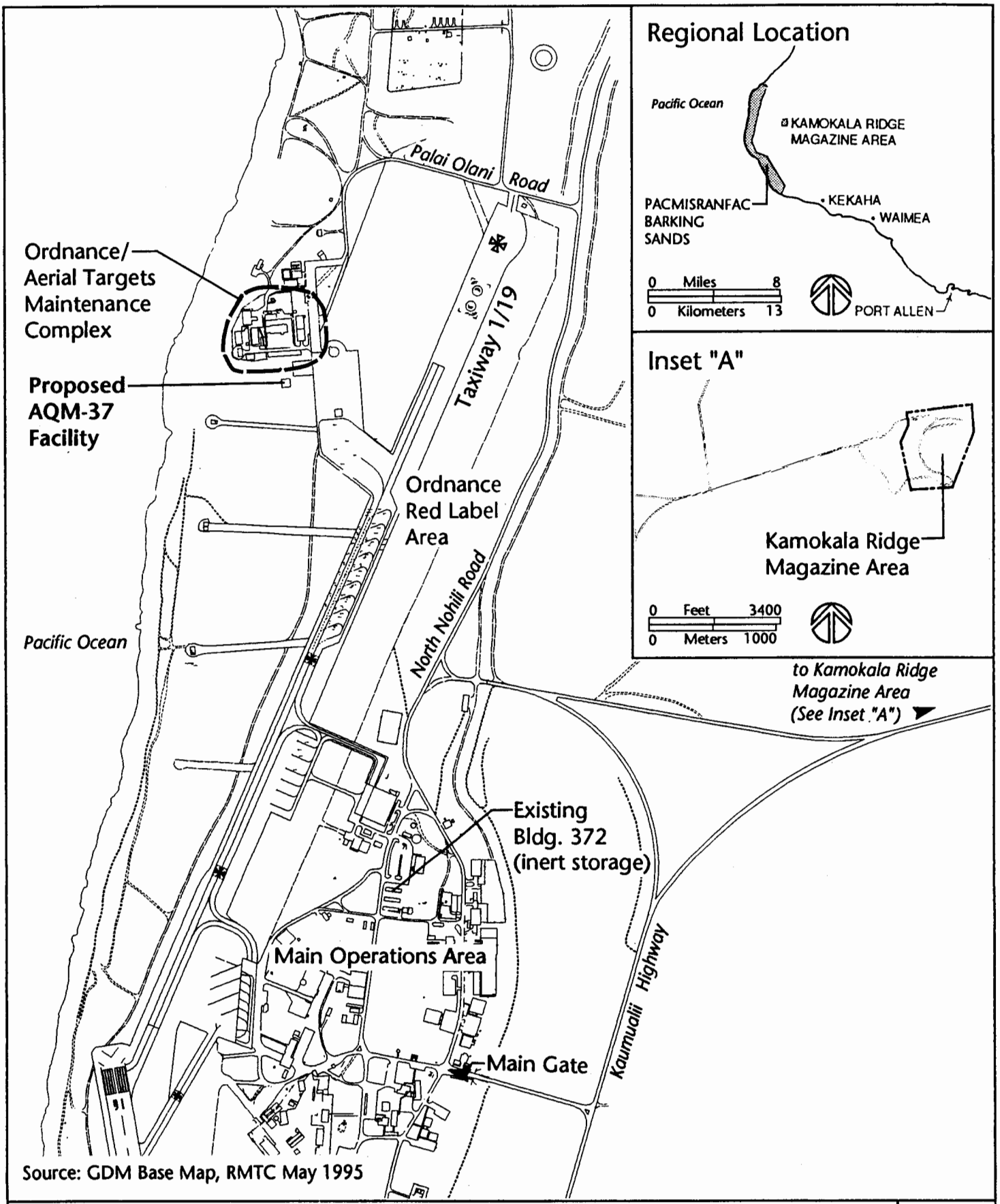
Pacific Missile Range Facility, Barking Sands, Kauai, Hawaii

0 Miles 6

0 Kilometers 10

Figure

1



Proposed Facilities

AQM-37 Facility

Pacific Missile Range Facility, Barking Sands, Kauai, Hawaii

0 Feet 800
0 Meters 250

Figure 2

PACMISRANFAC. As continuing actions, the target launching and associated activities are not addressed in this EA.

2.2.1 Proposed Construction

The project is a proposal to construct a new 2,940 square foot (273 m^2) concrete building adjacent to the aerial targets/ordnance area to support AQM-37 maintenance operations (Figures 3 and 4). The building will be sited on a vacant site immediately south of the Ordnance/Aerial Targets Maintenance Complex, including Bldg. 412, Ordnance Department headquarters. The target soft landing pad is located to the southeast of the project site.

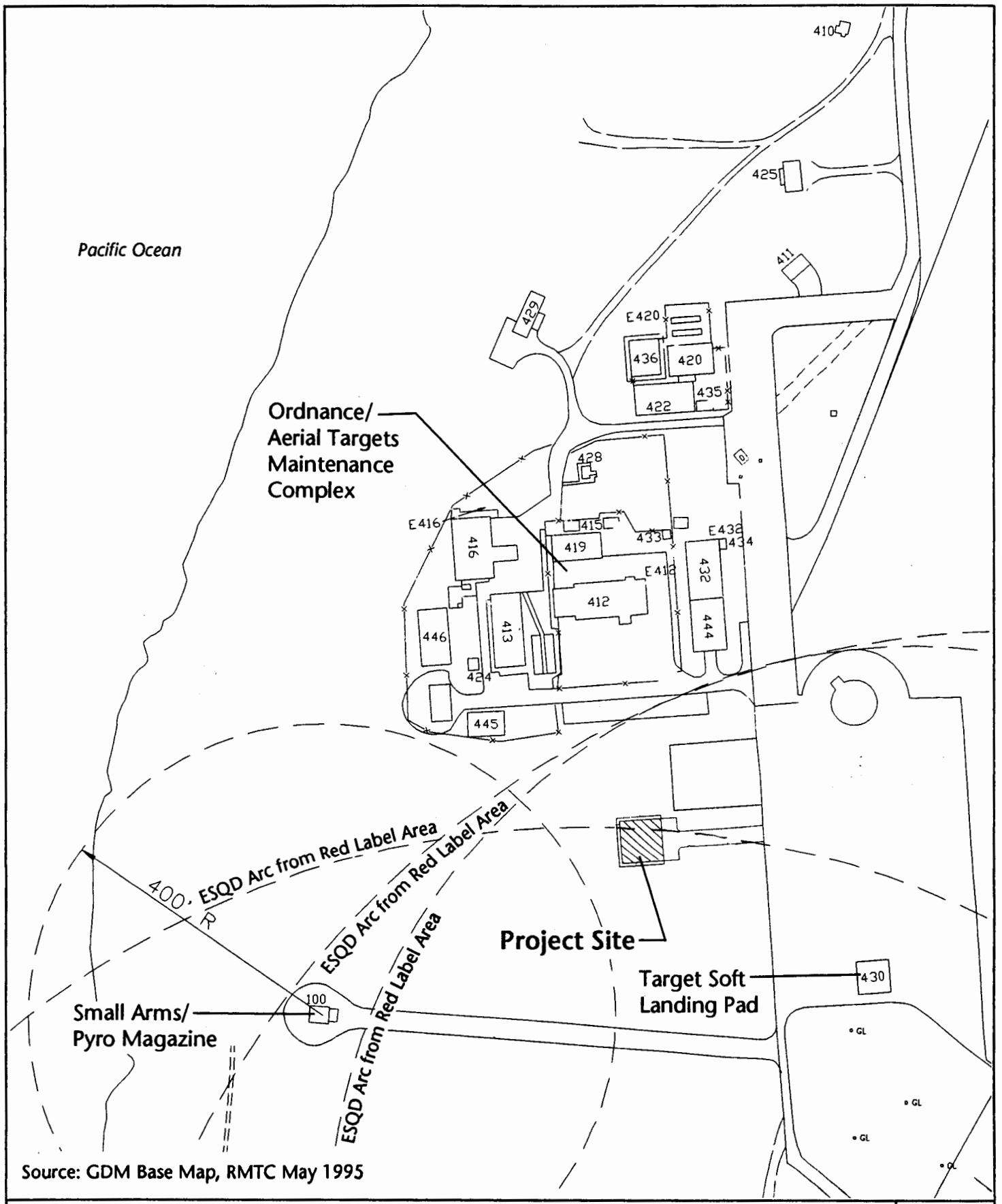
The proposed AQM-37 facility will include work spaces for target build-up and check out, a restroom, and overnight storage space for built-up targets. The project also includes a one-ton hoist in the work area for lifting the targets from their containers, fire protection and utility connections. Exterior lights will be designed to meet Hawaii and U.S. Fish and Wildlife standards for protection of Newell's Shearwater birds.

Supporting facilities to be constructed adjacent to the AQM-37 assembly building include a new 155,000 gallon (587 kl) water tank, a 1,200 gallons per minute (4.5 kl per minute) booster pump and a 200 sf (18.6 m^2) pumphouse, to support the facility's fire protection requirements. The water tank will be sized for the fire sprinkler system demand. New water piping will connect to an existing 8-inch water line, located approximately 250 feet (76.2 m) northwest of the project site. The diesel-driven booster pump will be housed in a separate building, and is estimated to operate less than 100 hours per year. An above-ground fuel oil tank with spill protection will be provided in the fire pump building.

Potable water, electrical and communication service connections will be made from the adjacent aerial targets/ordnance area. A septic tank with leach field will be installed to support the wastewater requirements of the facility. (Figures 5, 6 and 7)

2.2.2 Use of Existing Facilities

Two existing facilities at PACMISRANFAC will also be used to support AQM-37 operations. Building 372, a 1,920 sf (178 m^2) pre-engineered metal building located near the Public Works Office, will be used to store inert materials (e.g., fins, nose cones, etc.). Facility 1, an existing high explosive magazine at the



Source: GDM Base Map, RMTC May 1995

Project Vicinity

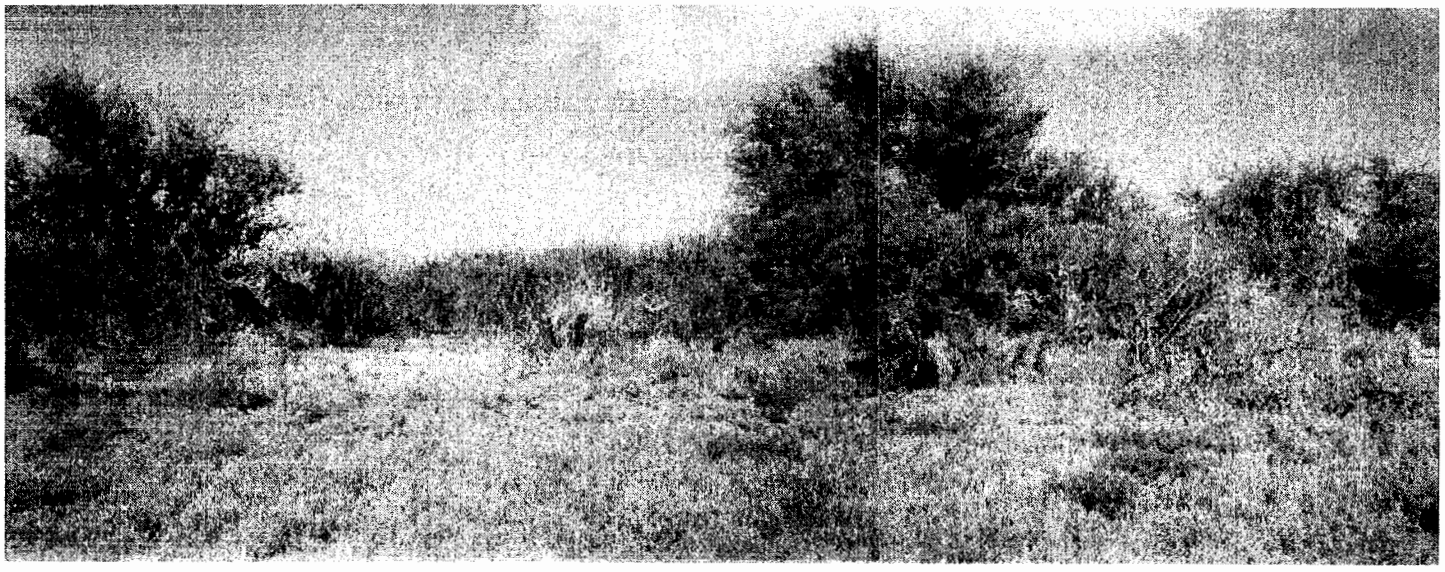
AQM-37 Facility

Pacific Missile Range Facility, Barking Sands, Kauai, Hawaii

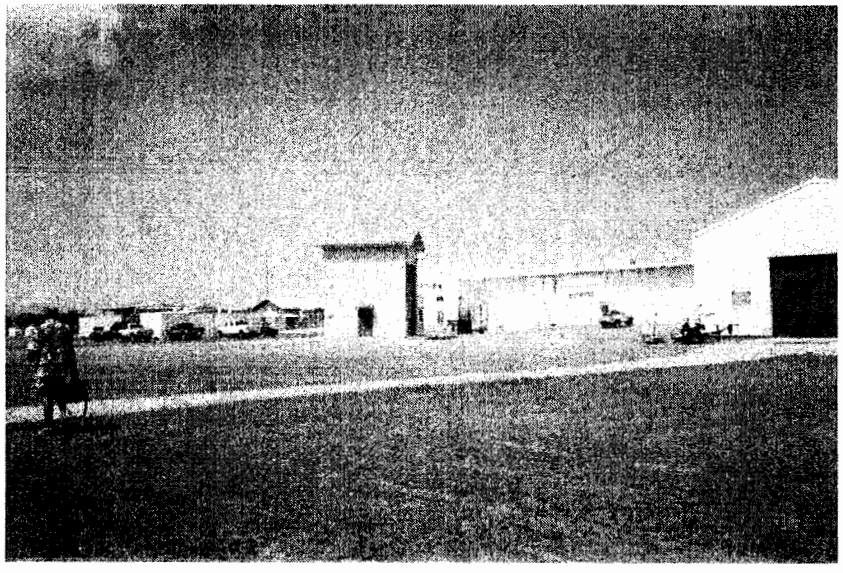
0 Feet 180

0 Meters 55

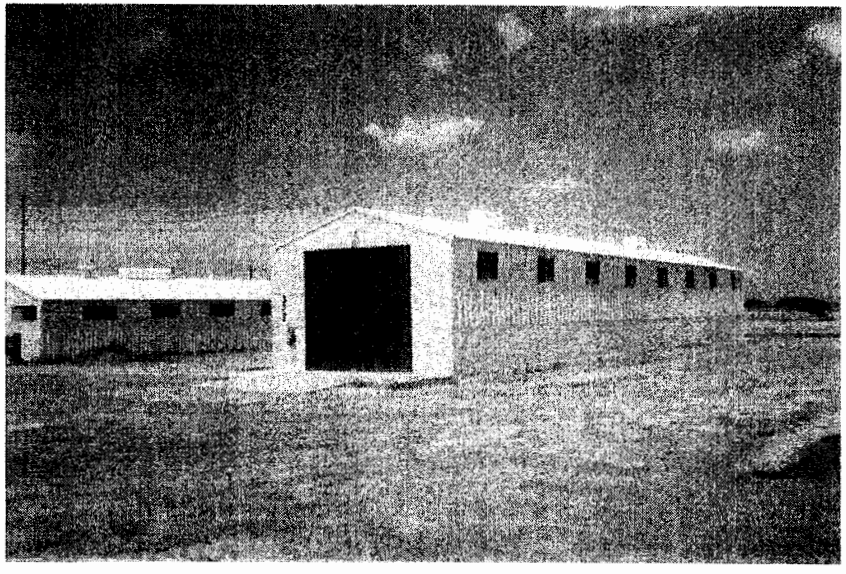
Figure 3



Project Site, looking west.



Aerial Targets/Ordnance complex adjacent to Project Site.



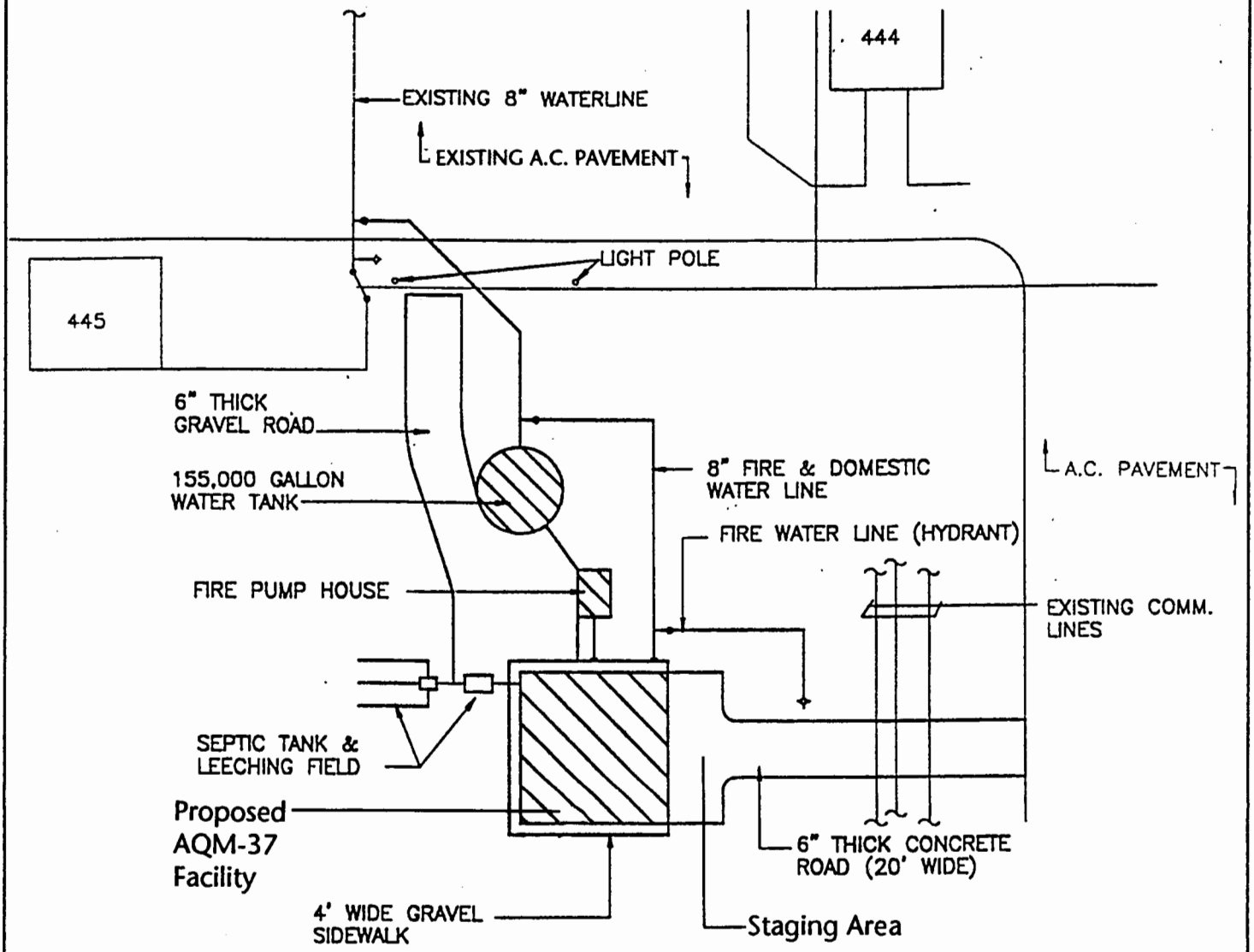
Bldg. 372 in the Main Operations Area, to be used for inert material storage.

Site Photographs

AQM-37 Facility

Pacific Missile Range Facility, Barking Sands, Kauai, Hawaii

Figure 4



Source: AQM Facility Final Executive Summary Report, April 19, 1996

Site Layout and Utility Plan

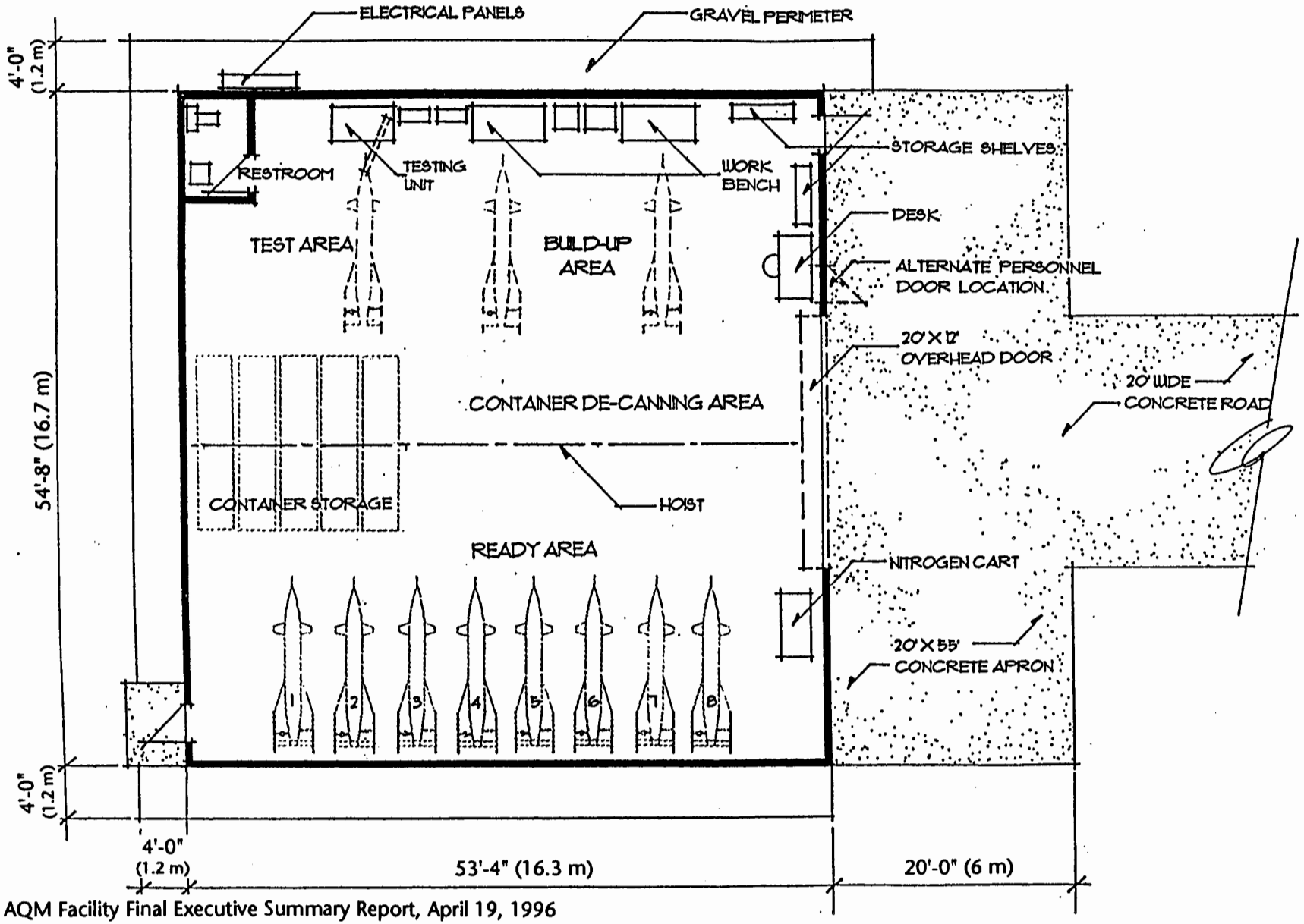
AQM-37 Facility

Pacific Missile Range Facility, Barking Sands, Kauai, Hawaii

0 Feet 60

0 Meters 20

Figure 5



Source: AQM Facility Final Executive Summary Report, April 19, 1996

Building Floor Plan

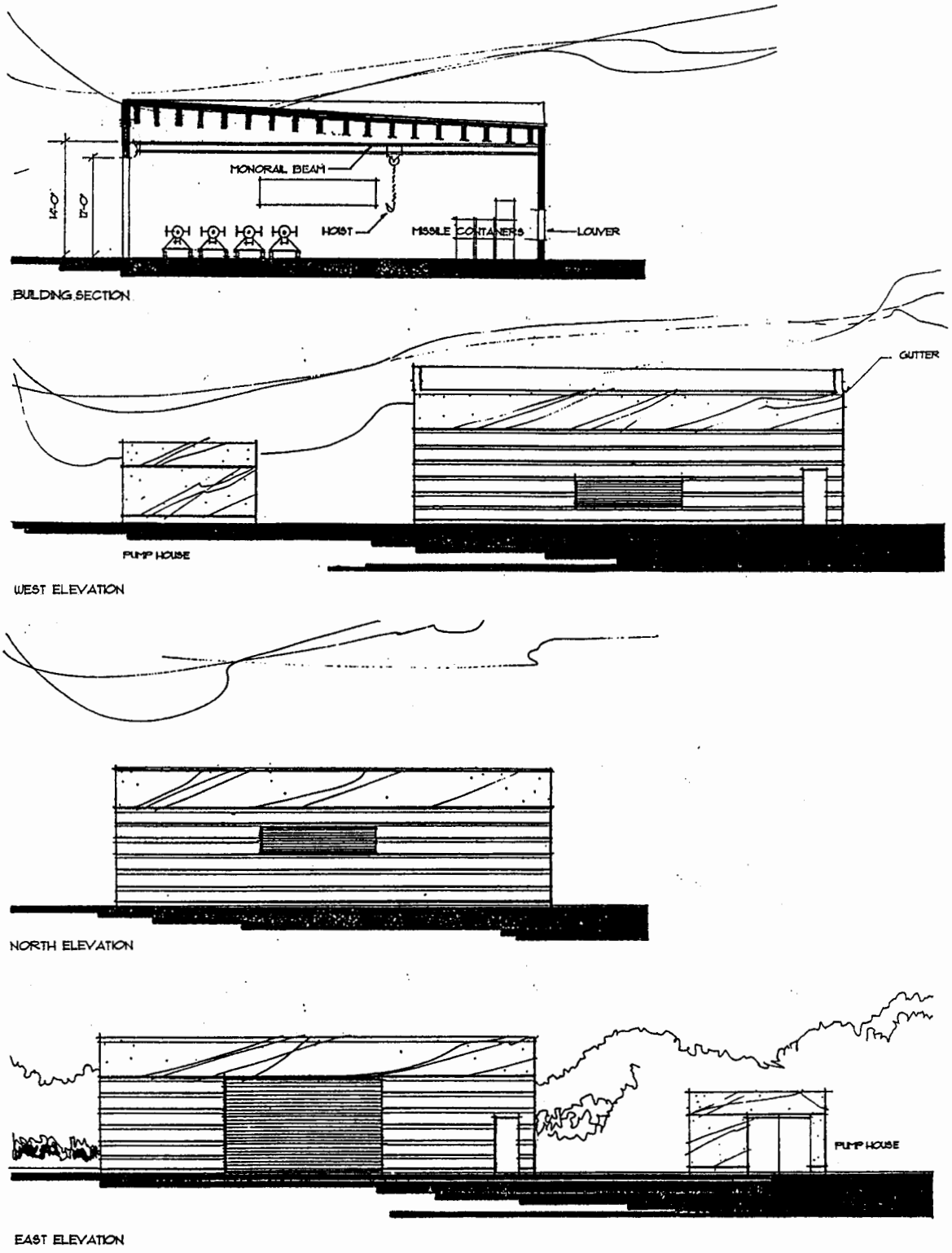
AQM-37 Facility

Pacific Missile Range Facility, Barking Sands, Kauai, Hawaii

0 Feet 12

0 Meters 4

Figure 6



Source: AQM Facility Final Executive Summary Report, April 19, 1996

Building Section & Elevations

AQM-37 Facility

Pacific Missile Range Facility, Barking Sands, Kauai, Hawaii

0 Feet 20

0 Meters 6

Figure 7

Kamokala Ridge magazine area will be used for long-term storage of containerized AQM-37 targets. Up to 30 AQM-37 targets are expected to be stored in the magazine which is 1,716 sf (159 m^2) in size. The Kamokala Ridge area is located about two miles (3.2 km) east of PACMISRANFAC, in the mountains overlooking the main base.

2.2.3 Proposed Operations

Overview

Each year, approximately 30 targets will be delivered from the manufacturer to PACMISRANFAC via air (PACMISRANFAC airfield) or surface ship (to Nawiliwili Harbor) to accommodate the annual training needs requiring AQM-37 targets. The targets, each within an individual metal storage container, will be stored in the Kamokala Ridge magazine until work-up. In preparation for a training evolution, typically six to eight targets (primary and back-up targets) will be transported from the magazine to the AQM-37 facility for work-up and assembly. However, up to 15 targets can be accommodated in the proposed facility. Component parts, including wing kits, vertical stabilizers, extended performance kits and battery kits, will be stored separately in an inert storehouse (Bldg. 372) until they are needed for target assembly.

At the proposed AQM-37 facility, targets will be assembled, prepared for launch, and possibly stored overnight. Unused targets will be disassembled, their fuel tanks depressurized and returned to the magazine following the training exercise. The entire process of target work-up, assembly, launch and return of unused targets will normally take about two to three weeks. The expected operational range launch and test period will last from three to ten days.

Assembly Operations

The missile targets, which are partially assembled and pre-fueled, will be trucked in the facility from the magazine to an ordnance staging area adjacent to the AQM-37 facility. Targets and fins/stabilizers in shipping containers will be transferred into the assembly building by fork-lift. Inside the facility, the targets will be offloaded with forklifts and removed from their storage containers ("decanned") by hoist. Batteries and electronics will be checked, and wings, vertical stabilizers, canards, cartridge activated devices (CADs) and batteries will be installed. Once the targets are assembled, they will be tested and stored on the dollies until needed.

Prior to the start of the training exercise, the targets will be moved outside on a Mark 7 transport trailer, pressurized with nitrogen and brought back into the facility for short-term storage. The target may be stored in the facility overnight until the following day's test exercise. Once work-up is completed, vehicular transport must be minimized due to the sensitive nature of the propellant system. Also, the nitrogen charging is only effective for 72 hours. The targets will be towed on the Mark 7 trailers to the adjacent "Red Label" area, which is authorized for ordnance handling, and mounted onto the launch aircraft.

Target assembly and work-up will be conducted primarily by PACMISRANFAC ordnance and aerial targets personnel, based in Bldg. 412. Occasionally, personnel from the Naval Air Weapons Center, Point Mugu, California may assist with target assembly. No new permanent PACMISRANFAC personnel are required.

2.2.4 Aircraft Operations

Although the shoreside support facilities will be relocated to PACMISRANFAC, no additional aircraft will be permanently based there. The AQM-37 platform aircraft, currently the F-4, may be replaced by the F-14 or the F-16 in the near future. During each exercise, two platform aircraft will operate as a detachment out of PACMISRANFAC. Over the week-long exercise, up to five AQM-37 target launches will be conducted. For each target launch, one or both of the platform aircraft will load the targets and depart for the training range. Each aircraft is designed to carry one target, although some aircraft may be retrofitted to carry two, one as a spare. Following the completion of the exercise, the platform aircraft will leave PACMISRANFAC and return to their home base.

There will be a slight overall increase in aircraft operations at PACMISRANFAC due to the AQM-37 facility. Up to five target launches are expected during each exercise or rotation, with each launch involving one or both of the platform aircraft loading a target, taking off and subsequently landing. This will result in up to ten take-offs and landings per exercise. The exercises/rotations will be conducted four to five times per year, depending on Navy and other DOD training, qualification and requalification requirements. Assuming five exercises per year, up to 50 additional aircraft take-offs and landings annually are possible (10 take-offs/landings per exercise x 5 exercises/year), though fewer are anticipated.

2.2.5 Range Test Operations

At the range, the AQM-37 target is air-launched from the platform aircraft and travels on a preprogrammed flight path. An anti-air or air-to-air missile is then fired by the ship, aircraft or from land to destroy the AQM-37 target. If the intercept is unsuccessful, the AQM-37 target has a pre-programmed self-destruct operation. After destruction, the target falls into the ocean and is not recovered (Figure 8).

Range testing using the AQM-37 targets is currently ongoing. There will be no increase in training frequency, intensity or duration due to the relocation of the proposed facilities to PACMISRANFAC.

2.3 NO ACTION ALTERNATIVE

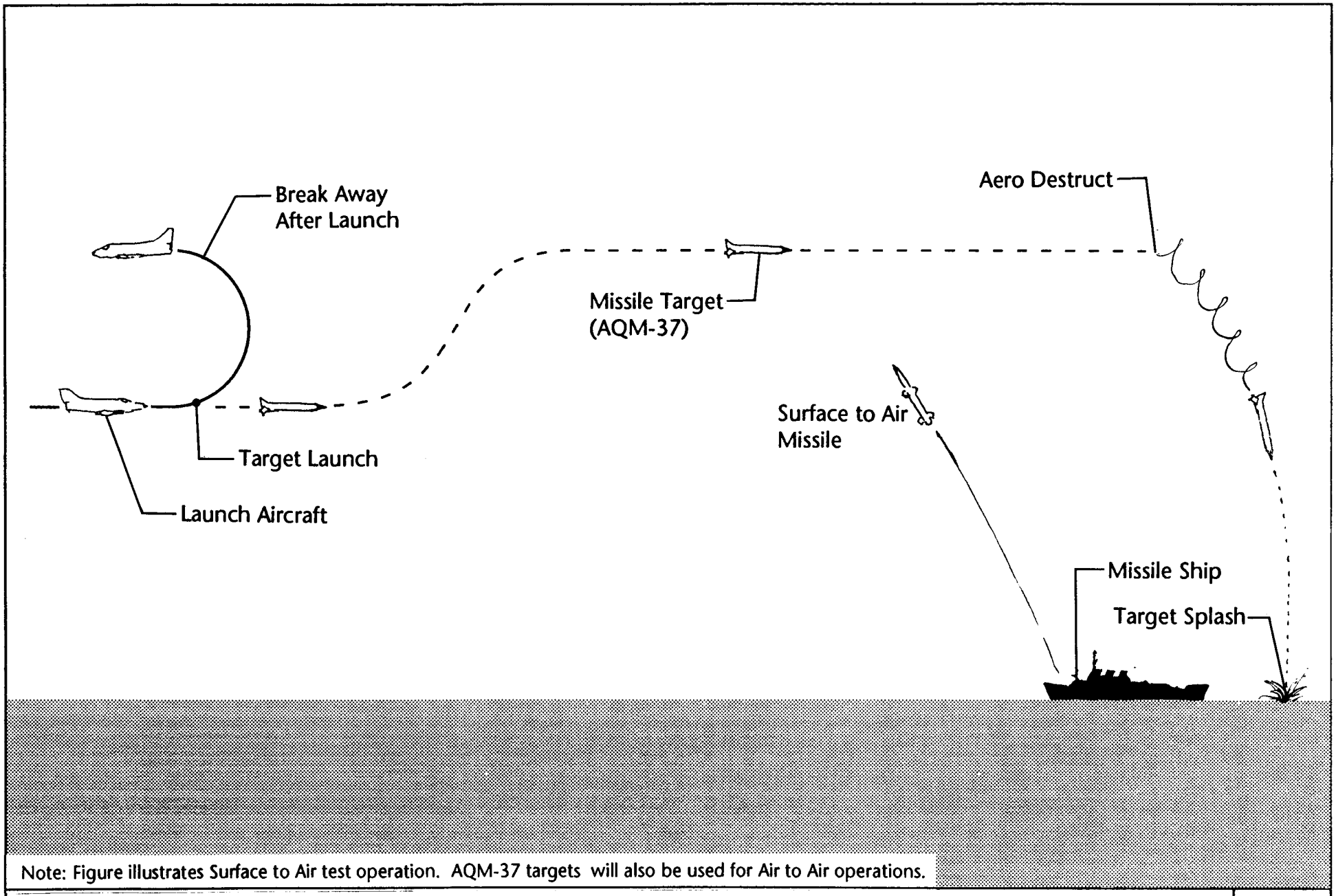
The no-action alternative would result in no construction of AQM-37 facilities at PACMISRANFAC. Under this scenario, existing AQM-37 assembly and storage facilities at NAS BARPT will be displaced upon base closure in 1999. Without replacement facilities, testing of Navy and other DOD weapons systems could not continue. For this reason, the no action alternative was not considered a viable alternative.

2.4 RENOVATION/CONVERSION

A second alternative to the proposed action is to renovate, modify or convert an existing PACMISRANFAC facility to adequately fulfill the target assembly and overnight storage requirements of the AQM-37 target program. This alternative was investigated but eliminated. Existing ordnance handling facilities are already utilized for other ordnance handling requirements. Because the AQM-37 facilities are incompatible with other ordnance operations (due to the use of liquid fuels), a separate facility is required. Although existing PACMISRANFAC facilities are available for long-term target storage and inert material storage, none are available for assembly, build-up and storage. As a result, this option was eliminated.

2.5 LEASE COMMERCIAL FACILITIES

Another option which was considered was to lease commercial facilities for the AQM-37 functions. However, an investigation revealed there were no commercial facilities in the area which could support the program's space, safety



Note: Figure illustrates Surface to Air test operation. AQM-37 targets will also be used for Air to Air operations.

AQM-37 Testing Operations

AQM-37 Facility

Pacific Missile Range Facility, Barking Sands, Kauai, Hawaii

Figure 8

and security requirements. Proposed onshore operations associated with the project require a "resident" ordnance department/personnel to provide manpower for transport/storage and target assembly and work-up. This support would not be readily available at an off-base, commercial site. If support were provided by the PACMISRANFAC ordnance department, operational inefficiencies would result, since ordnance activities would be split between PACMISRANFAC and the off-base site. Moreover, an off-base assembly site would require transporting the built-up targets to the PACMISRANFAC airfield. This would be time consuming, operationally inefficient and could increase risks to public safety. For these reasons, this alternative was eliminated from further consideration.

2.6 OTHER HAWAII LOCATION

A final alternative considered was to relocate the AQM-37 facilities from NAS Barbers Point to another location, such as Marine Corps Base Hawaii (MCBH) Kaneohe Bay, Naval Magazine (NAVMAG) Lualualei, or Hickam Air Force Base. NAVMAG Lualualei was eliminated primarily because it has no available aircraft runway. Both Hickam AFB and MCBH Kaneohe Bay have adequate runways, and MCBH Kaneohe Bay has ordnance operations and storage facilities available. However, both of these facilities are further from the training range than PACMISRANFAC. During an exercise, there would be an additional aircraft transit time between the work-up facility and the range. If a delay in operations were to occur while the aircraft was in transit, it would either need to circle, possibly requiring air refueling, or return to the airfield. Not only is this inefficient, but presents a safety hazard in landing with the fueled targets. A PACMISRANFAC location, on the other hand, provides a more immediate response time, with little or no lag time between take-off and arrival at the range.

Overall, the logistical advantage of collocating shoreside support facilities with the existing training range make PACMISRANFAC preferable to other Hawaii-based locations.

2.7 ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION AND ALTERNATIVES

The environmental impacts of the proposed action are discussed in Chapter 4, Environmental Consequences. Overall, there are no significant environmental impacts that cannot be mitigated.

The project will be constructed within the 100-year flood zone (Zone VE), but will have no adverse impact on the natural and beneficial values of the flood plain. A Safety and Evacuation Plan for the facility will be developed by PACMISRANFAC. Shoreside construction for the proposed alternative will take place in a previously disturbed site. An archeological reconnaissance survey of the project area was conducted by PACNAVFACENGCOM. No archeological sites were encountered. The State Historic Preservation Officer (SHPO) has concurred that the project will have "no adverse effect" on significant historic sites, provided archeological monitoring of ground disturbing activities associated with the construction phase of the project is conducted. The construction contract will include archeological monitoring and the SHPO has reviewed and approved the archeological monitoring scope of work. There are no threatened or endangered flora or fauna on the project site or in the immediate vicinity. Temporary air quality and noise impacts will occur during construction. Dust will be controlled by proper construction and erosion control techniques.

No increase in personnel is anticipated with the relocation of AQM-37 facilities, as primary support will be provided by PACMISRANFAC ordnance and aerial targets staff. If additional personnel are required, they will be minimal and temporary. There will be no increase in the number of aircraft permanently based at PACMISRANFAC. There will be no more than 50 additional aircraft take-offs and landings per year. This incremental increase is not expected to significantly increase aircraft noise above current levels, or have adverse air quality impacts at the base.

The project will provide adequate fire protection for the AQM-37 facility. Standard operating procedures will be developed and approved by the base command for operation of the facility. These procedures will be followed by ordnance personnel during work-up, assembly and target handling. The PACMISRANFAC Oil and Hazardous Substances Spill Contingency Plan will be updated to address the AQM-37's hypergolic fuels. Airfield crash fire rescue will have adequate training, equipment and personnel to support the AQM-37 aircraft operations. The facility generates a 115-foot ESQD arc, and maintains this distance from inhabited buildings and public traffic routes, as required by NAVSEA OP-5 regulations (3,000 lbs. NEW, class 1.3).

Vehicular transport of the targets over public roads to and from the magazine will comply with DOD regulations for transporting ordnance. The mounting of the targets onto aircraft will be conducted by the ordnance and aerial targets staff

and occur in the taxiway Red Label area, the authorized ordnance handling area. Target testing at the range is a continuing action which has been reviewed by the PACMISRANFAC range operators and public works staff. Existing procedures to maintain range safety and minimize environmental hazards will be continued. The relocation of the AQM-37 facilities from NAS BARPT to PACMISRANFAC will not change the type, or increase the frequency or duration of training which presently occurs at PACMISRANFAC.

The project has been reviewed for environmental justice, and there will be no adverse impact to minority or low-income communities. The project is consistent with the PACMISRANFAC Master Plan and Hawaii Military Land Use Plan.

The no-action alternative would have no construction-related environmental impacts. However, it would result in the cessation of all ongoing AQM-37 training operations once NAS BARPT closed, which would severely hamper Navy combat weapons training, qualification and requalification and jeopardize fleet readiness. It would also hamper combat system training conducted by other DOD activities. The alternative to renovate or convert existing PACMISRANFAC facilities could have construction-period impacts similar to or less than the proposed project, assuming appropriate facilities were available. However, other than the existing high explosive magazine and inert storage facility, no available facilities were identified. The commercial lease option could have similar or fewer construction-period impacts, again assuming appropriate facilities were available. However, no appropriate facilities were identified. Even if available, this alternative could lead to operational inefficiencies, since a resident ordnance staff would be needed at the leased site. The alternative to provide AQM-37 facilities at another location such as Hickam AFB or MCBH Kaneohe Bay could have short-term, construction-period impacts similar to the proposed action, assuming new facilities are constructed. During operation, this alternative could be less operationally efficient than the preferred alternative, since targets would be mounted onto aircraft and then transited to the PACMISRANFAC range. If a delay in the operation were to occur, the aircraft may need to refuel in the air until the exercise is resumed, or be forced to return to the airfield. Also, certification to land aircraft with hypergolic fuel would be required for operations at these airfields.

A comparison of the environmental effects of the proposed action and the alternatives is presented in Table 1.

Table 1:
Environmental Effects of Alternatives

	Proposed Action	No Action	Renovate/Convert Facilities	Lease Commercial Facilities	Other DOD Facility
Utility Demand	Adequate electrical, potable water capacity. Water tank and pumphouse for fire protection to be provided.	None	Same operational period utility demand.	Same operational period utility demand. Other utility upgrades may be required depending on location.	Same operational period utility demand. Other utility upgrades may be required depending on location.
Reuse of Existing Facilities	Partial reuse (inert storage and magazine storage)	None	Only partial reuse is achievable (see proposed action).	Depends on location	Depends on location
Flood Hazard	Facility within 100-year flood zone (Zone VE). No adverse effect on natural and beneficial values of flood plain.	None	No additional impact, although selected facility may also be in flood plain.	Depends on location	Depends on location
Flora and Fauna	No threatened or endangered terrestrial flora or fauna in vicinity.	None	Depends on location	Depends on location	Depends on location
Cultural Resources	No adverse effect. Site previously disturbed; no known surface archeological sites. Potential for intact subsurface cultural deposits.	None	Depends on location	Depends on location	Depends on location
Aesthetic/Visual	No significant impact. Facility sited in existing ordnance/target operations area	None	Depends on location	Depends on location	Depends on location
Socio-economic	No increase in base loading.	None	Same as proposed action	Separate ordnance staff may be required to support	Depends on location. Separate ordnance staff may be required.

Table 1 (continued)

	Proposed Action	No Action	Renovate/Convert Facilities	Lease Commercial Facilities	Other DOD Facility
Noise	Increase in construction period noise. Slight increase in aircraft take-offs and landings (max. 50 per year); but not a significant increase over existing air operations.	None	Same as proposed action	Same as proposed action	Same as proposed action
Vehicular Traffic	No increase in on-base or off-base traffic.	None	Same as proposed action	Depends on location	Depends on location
Solid and Hazardous Waste	No haz waste anticipated. Oil and Hazardous Substances Spill Contingency Plan to be updated.	None	Same as proposed action	Spill prevention and control measures at off-base location need to be developed.	Same as proposed action; spill prevention and control plan to be updated for project.
Air Quality	Negligible impact due to increased platform aircraft flights.	None	Same as proposed action	Same as proposed action	Same as proposed action.
Explosives Safety	115-ft. ESQD around AQM-37 facility. DOT and DOD regulations followed for vehicular transport. Red Label area used for aircraft loading.	None	Same as proposed action	Same as proposed action. Built-up targets would need to be transported via public road to PACMISRANFAC.	Same as proposed action. Vehicular transport of targets may be via public roads, depending on location and facilities available.
Operational Efficiency	Efficient use of Ordnance Dept. staff for build-up activities. Close proximity to range is efficient for training.	Would not provide needed AQM-37 facilities, jeopardizing fleet readiness.	Same as proposed action	Split operations for Ordnance staff would be inefficient. Transport of fueled targets to PACMISRANFAC airfield less efficient.	Aircraft would require transit time to training range, which could be inefficient if delay or problems were to occur enroute.

CHAPTER THREE
AFFECTED ENVIRONMENT

3.1 LOCATION AND PHYSICAL CONDITIONS

3.1.1 Location

The Pacific Missile Range Facility (PACMISRANFAC) Barking Sands is located on the west side of the island of Kauai, the fourth largest of the eight major Hawaiian Islands. The Barking Sands facility is the primary site of the Pacific Missile Range Facility, Hawaii Area, as shown previously in Figure 1.

The project site is adjacent to the existing ordnance/aerial targets maintenance complex and next to the runway ordnance handling area and aircraft taxiway.

Existing Bldg. 372, which will be used for inert storage, is located at the main base, south of the project site. The existing high explosives magazine to be used for long-term storage is located at Kamokala Ridge, to the northeast of the PACMISRANFAC main base. The Kamokala Ridge magazine area is on State-owned land leased by the federal government.

3.1.2 Topography/Soils

The island of Kauai, the oldest in the Hawaiian islands, is 33 miles long and 25 miles wide (53 by 40 km). The island began as a huge shield volcano, and still retains its roughly circular shape. The highest point on the island is Kawaikini Peak, at the center of the island, which rises 5,170 feet (1,575 m) above sea level. The northern portion of the island is characterized by high cliffs formed by wave action. The low lands along the island's perimeter comprise most of the potentially usable land.

PACMISRANFAC Barking Sands is located on a low lying coastal plain on the west coast of Kauai. Elevations vary from sea level to +25 feet (7.6 m) over most of the Mana Plain, with some sand dunes in the north rising to over 100 feet (30.5 m) above sea level. The project site is fairly flat, and is at an elevation of about 13 feet (3.9 m).

The soils on Kauai are primarily volcanic in origin. Most of the soil underlying the PACMISRANFAC Barking Sands is in the *Jaucas-Mokuleia* soil association.

3.1.3 Flood Hazard

The site is located in a special flood hazard area inundated by the 100-year flood, according to the Federal Emergency Management Agency (Figure 9). Specifically, the site lies within Zone VE; coastal flood with velocity hazard (wave action); base flood elevation determined. Base flood elevation is determined at 16 feet (4.9 m).

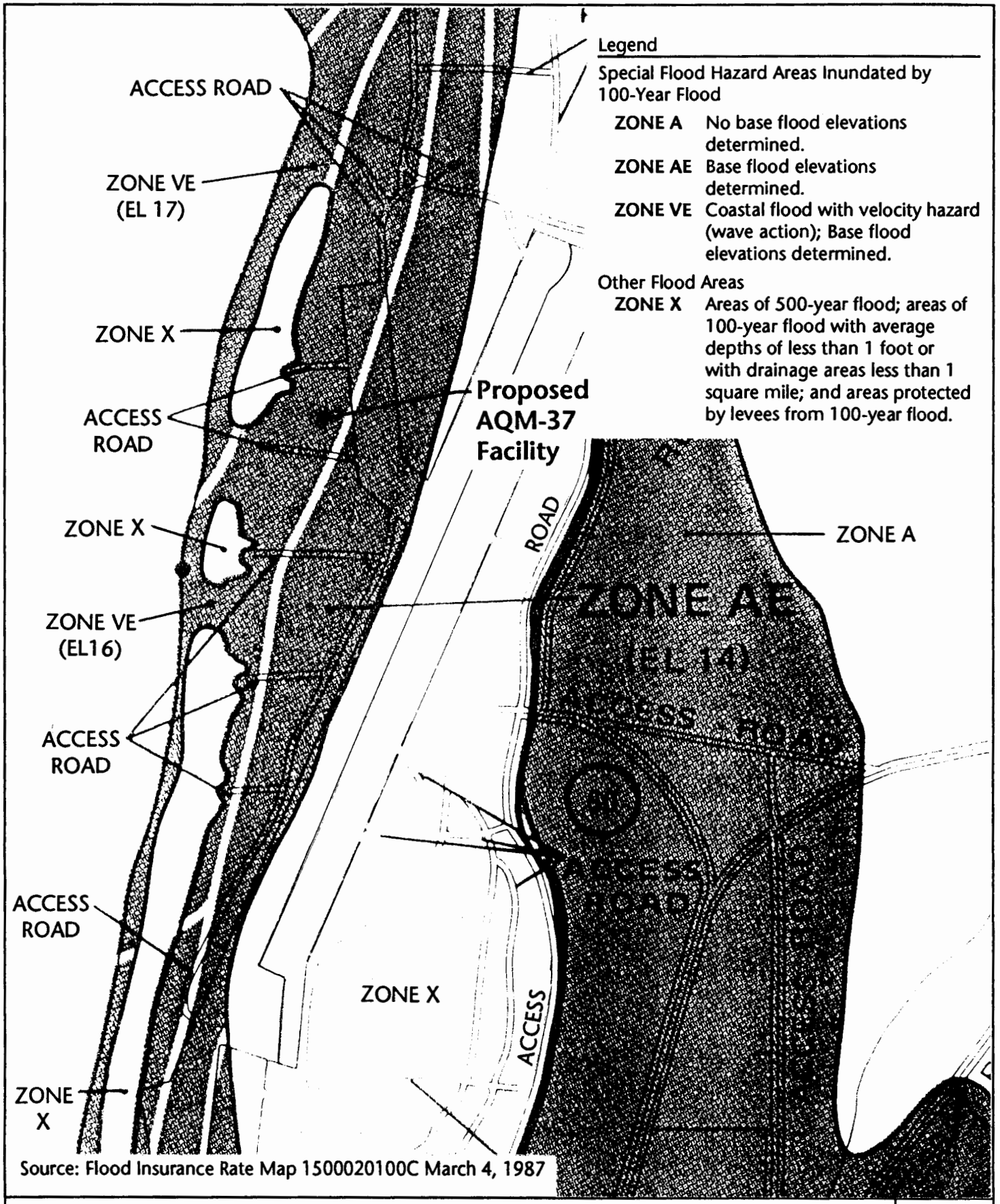
3.1.4 Climate

The climate of the island of Kauai is generally mild throughout the year. The west side of the island is generally leeward of the northeasterly tradewinds. Accordingly, a calm or light variable wind prevails between the Mana Plain and Makaha Point, south and north of PACMISRANFAC, respectively. Strong wind conditions at PACMISRANFAC generally only occur during the winter season as a result of Kona storms, consisting of strong southerly winds and intense rainfall. Due to the marine influence and the prevailing northeast tradewinds, there is very little seasonal variation in temperature. At PACMISRANFAC Barking Sands, long, hot dry periods are common. The mean annual temperature range is 70 to 78 degrees Fahrenheit (21 to 26 degrees Celsius). Mean annual rainfall over a 34-year period is 22.9 inches (58 cm), with 75 percent of this during the period between October and March.

3.2 EXISTING FACILITIES AND UTILITIES

3.2.1 Existing Facilities

The AQM-37 facilities will be located adjacent to the aerial targets/ordnance complex, located near the northern end of the airfield taxiway. Facilities in this complex include Bldg. 445, Aerial Targets Office; Bldg. 446, Remote Target Storage; Bldg. 413, BQM Maintenance Building; Bldg. 416, BQM Engine/Avionics Storage Building; Bldg. 412, Ordnance Department Building; and Bldg. 432, Vandal Maintenance Facility. The vacant, undeveloped site is also adjacent to the target soft landing pad and hard landing pad where ordnance is loaded onto fixed wing aircraft and helicopters for training operations. Torpedoes and BQM drones are landed in this area.



Flood Insurance Rate Map

AQM-37 Facility

Pacific Missile Range Facility, Barking Sands, Kauai, Hawaii

0 Feet 800

0 Meters 250

Figure 9

A former operational vehicle storage building, Bldg. 372, in the central operational area of the base will be used for inert materials storage. This pre-engineered building is 1,920 SF (178 m^2) in size and is located near the main gate along Lii Road. An existing high explosive cave magazine at the Kamokala Ridge magazine area will be used for long-term missile storage.

3.2.2 Utilities

Electrical System

Kauai Electric Company provides commercial power to PACMISRANFAC Barking Sands from the Mana substation. Power to the main base is supplied at 12.5 kV, reduced to 4.16 kV for distribution by a 2,000 kVA transformer serving the Operations Building area and by a bank of three 167 kVA transformers which serve the remainder of the base.

Electricity for Range Operations is provided by the PACMISRANFAC main base power plant, with commercial power used as a back-up. PACMISRANFAC Barking Sands operates diesel generators to support range operations.

Water System

Potable water is supplied to main base PACMISRANFAC from the County of Kauai Water Department and Kekaha Sugar Company. The main base area is supplied by the Mana Well, owned and maintained by Kekaha Sugar Company. Water is delivered from the well to one 100,000 gallon (378 kl) storage tank and one 420,000 gallon (1,088 kl) storage tank, both located near the main gate of the base, and two 126,000 gallon (477 kl) storage tanks at Kokole Point. From there, it is distributed through a network of six and eight-inch pipes.

A water flow test at the project site indicated that water supply is not adequate for firefighting purposes without a fire pump and water storage tank. Base water supply is adequate for the project's hose water demand.

Wastewater System

PACMISRANFAC has two wastewater treatment facilities: a treatment plant which serves the main base area, and an oxidation/leach pond serving the southern family housing and community support areas. The sewage treatment plant has a capacity of 30,000 gallons per day (gpd) (114 kl/day), and handles

about 29,000 gpd (110 kl/day). The project area is not served by the wastewater system.

3.3 TERRESTRIAL FLORA AND FAUNA

3.3.1 Flora

The vegetation at PACMISRANFAC, including the project area, is sparse. Vegetation on the site consists of kiawe (*Prosopis pallida*), koa haole (*Leucaena leucocephala*) and buffel grass (*Cenchurus ciliaris*). The only native species present on the site is *'ilima* (*Sida fallix*). The only potentially threatened or endangered plant species at PACMISRANFAC is *'ohai* (*Sesbania tomentosa*), a federally listed endangered species. Based on a June 1996 site survey conducted by PACNAVFACENGCOM, the *'ohai* is not present in the project area.

3.3.2 Fauna

The most sensitive biological habitats at PACMISRANFAC are the Nohili dunes north of the project area, and remnants of the Mana wetland which is located inland of the project area, preserved as irrigation ditches and small reservoirs. The Kawaiele State Wildlife Sanctuary and ponds and ditches on the Mana plain will continue to provide critical waterbird habitat. None of these areas is adjacent to the proposed project.

A total of 39 bird species have been observed at PACMISRANFAC, including four federally listed endangered species and one state listed endangered species. The federally listed endangered species include the non-migratory, endemic Hawaiian duck (*koloa*), Hawaiian or American coot (*alaeke'oke'o*), Hawaiian or black-necked stilt (*ae'o*) and Hawaiian gallinule or moorhen (*alae'ula*). The state-listed endangered Hawaii owl (*pueo*) has also been observed at PACMISRANFAC.

Newell's Shearwater (*Puffinus newelli*), a federally listed threatened species, is believed to fly over PACMISRANFAC at night. During the fall, fledglings attempting to fly to the open ocean become disoriented by urban lighting and may strike objects such as buildings, trees and wires.

During the June 1996 site survey, no resident endangered or threatened species were observed on the site or in the area. The Pacific golden plover (*Pluvalis*

fulva) and the Laysan albatross (*Diomedia imutabilis*), both of which have previously been observed in the area, were not observed. These two species migrate to the North Pacific during the summer months and are protected under the Migratory Bird Treaty Act.

3.4 CULTURAL RESOURCES

There is substantial evidence that PACMISRANFAC and surrounding areas was used extensively by native Hawaiians. A number of archeological surveys of Kauai's west coast and the Mana Plain have been conducted over the last 60 years. PACMISRANFAC has been found to contain a number of archeological resources, particularly human burials, some of which have been encountered during construction projects. Most of the previously identified burials have been mapped and recorded by the base Public Works Office.

No known archeological sites are located in the immediate project vicinity. Skeletal remains have been identified in the sand dune 650 feet (200 m) seaward *(makai)* of Building 100, the small arms/pyro magazine (State Inventory of Historic Places Site 50-30-05-1831); it is unclear whether or not the remains were human. Building 100 is located approximately 400 feet (120 m) southwest of the proposed AQM-37 assembly building.

An archeological reconnaissance survey of the project site was completed by PACNAVFACENGCOM in June 1996. The survey noted that the surface of the project area has been previously disturbed after WWII, and there is evidence of prior livestock grazing and land leveling associated with military construction, possibly during World War II. No archeological sites were identified at the project site.

3.5 AESTHETIC AND VISUAL ENVIRONMENT

The complex of single story, pre-engineered and concrete maintenance facilities adjacent to and north of the site is known as the aerial targets/ordnance area. The general area, which is adjacent to the airfield taxiway, is open and sparsely developed. There are unobstructed views of the mountains across the taxiway, although views of the ocean are obstructed by the heavy vegetation along the sand dune. Most of the project site is overgrown with shrubs and small trees.

3.6 SOCIO-ECONOMIC

The Pacific Missile Range Facility is located on the west side of the island of Kauai, and is a major contributor to the island's overall economy. As the largest industrial employer on the island, PACMISRANFAC provides almost 1,000 jobs.

In 1996, PACMISRANFAC had 110 permanently stationed military personnel. Base personnel are housed either in family housing, located in the southern area of PACMISRANFAC, or in private off-base housing. The PACMISRANFAC ordnance and aerial targets department, which will support the AQM-37 facility, had 13 employees in mid-1996. The ordnance and aerial targets department is based in Bldg. 412, near the proposed AQM-37 facility.

3.7 ENVIRONMENTAL JUSTICE

In accordance with Executive Order 12898 dated 11 February 1994, and Secretary of the Navy Notice 5090 dated 27 May 1994, the Navy is required to identify and address, as appropriate, the potential for disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations. For the proposed project, the Navy has not directly or indirectly used criteria, methods or practices that discriminate on the basis of race, color or national origin. There are no low income or minority communities adjacent to the project site, nor will there be known significant or adverse environmental impacts, including human health, economic or social effects, to these communities from the project or its mitigation measures.

3.8 NOISE

The existing noise environment in the area in the project vicinity includes the background sound of the wind and birds, occasional trucks and automobiles and regular helicopter and fixed wing aircraft take-offs and landings. The project area is adjacent to Taxiway 1/19, the soft landing pad where torpedoes are unloaded via helicopter, and the interim ordnance handling pad (Red Label area). As a result, the area is exposed to regular noise from helicopter operations. According to the PACMISRANFAC Air Installations Compatible Use Zone (AICUZ) study (1979), the project site is within the 70 Ldn noise contour from the fixed wing aircraft runway. The site is just outside the aircraft clear zone.

3.9 GROUND/DRINKING WATER SUPPLY AND QUALITY

Three brackish (non-potable) aquifers have been detected beneath PACMISRANFAC. The deepest aquifer is a basal lens of brackish water in the basalt bedrock, several hundred feet below the ground surface. The other two aquifers are in the caprock and beach sands.

3.10 VEHICLE TRAFFIC

Vehicular traffic enters PACMISRANFAC from the Kaumualii Highway through two primary and two secondary gates. The main station and northern area are served by the main gate. The southern gate provides access to the family housing and personnel support areas. On-base roads are generally two-lane.

The project area is accessed via Palai Olani Road, which branches off North Nohili Road, the base's primary north-south access roadway. Most vehicular traffic in the project area is associated with the surrounding ordnance and missile shops.

The Kamokala Ridge magazine area, located in the mountains overlooking the main base, is accessed by the Kamokala Ridge Road, which runs from Kaumualii Highway. Access into the gated magazine area, which is leased from the State of Hawaii, is restricted to authorized personnel.

3.11 SOLID WASTE/HAZARDOUS WASTE MANAGEMENT

Non-hazardous solid waste is collected by Navy operation and maintenance contractors and disposed of at the county-operated Kekaha landfill.

Hazardous waste disposal at PACMISRANFAC is handled by the base operations and maintenance contractor. Hazardous waste is accumulated at PACMISRANFAC for less than 90 days, and then disposed through the Defense Reutilization and Marketing Office (DRMO) Pacific. According to the Hazardous Waste Annual Report, PACMISRANFAC generated 40,773 pounds (18,500 kg) of hazardous waste in 1995.

3.12 AIR QUALITY

The prevailing northeast tradewinds result in light and variable surface winds at PACMISRANFAC, and generally good air quality. Strong, gusty northerly or

south-southeasterly winds with speeds up to 30 knots can result from weather patterns creating a tight pressure gradient along the cliff line northeast of the base.

The State of Hawaii is in attainment of the National Ambient Air Quality Standards (NAAQS) established for carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter less than 10 microns in diameter (PM-10) and lead.

Air emissions at PACMISRANFAC occur from stationary and mobile sources; however, only the operation of stationary sources are regulated by the federal Clean Air Act. All stationary sources at the main base, including the generators in the power plant Bldg. 112, are included in covered source permit P-806-1305 from the State Department of Health. PACMISRANFAC has submitted a covered source permit application to the State Department of Health and is awaiting its approval. Electrical power to the project will be provided by existing generators.

3.13 EXPLOSIVES SAFETY QUANTITY DISTANCE

Hazard zones have been established by the Department of Defense (DOD) for various quantities and types of explosives. Minimum distances are prescribed for separating explosives from inhabited structures, from public roads, and from other explosives. These minimum distances are identified as explosives safety quantity distance (ESQD) arcs.

The project site is within the area encumbered by ESQD arcs from the Red Label area, located on a portion of Taxiway 1/19 (Figure 3). The ESQD arc has a 1,250-foot (381 m) radius. This area serves as a temporary ordnance handling pad until permanent facilities are constructed by MILCON project P-908.

Building 100, Small Arms/Pyrotechnics magazine, located near the project site, also generates an ESQD arc with a 400-foot (122 m) radius (Figure 3).

The Kamokala Ridge magazine area, located to the east of the main base, is the primary ordnance storage area used by PACMISRANFAC and its tenants. Each high explosive magazine generates an arc with a 2,350-foot (716 m) radius, many of which encumber off-station land owned by the State and leased by Kekaha Sugar Company for sugarcane cultivation.

CHAPTER FOUR
ENVIRONMENTAL CONSEQUENCES

4.1 DIRECT EFFECTS AND THEIR SIGNIFICANCE

4.1.1 Location and Physical Conditions

The project will clear the overgrown, vacant site and construct a 2,940 square foot (273 m^2) concrete building, water tank and pumphouse. Other than these new facilities adjacent to an existing operational area, the project will not have significant impact on the physical conditions at PACMISRANFAC. The site has been disturbed in the past after WWII. The new building will be physically similar to and compatible with the other target assembly and test buildings in the vicinity. The use of an existing magazine at Kamokala Ridge and a vacant, pre-engineered building for inert materials storage will not affect the physical environment around these facilities. Loading of the targets onto platform aircraft at the taxiway ordnance area will not impact physical conditions at the base.

4.1.2 Flood Hazard

Under Executive Order 11988, Floodplain Management, siting of facilities in a flood zone requires a finding that there are no practicable alternatives to siting outside the flood plain, and upon such a finding, incorporation of design modifications to minimize potential harm to or within the flood plain. The proposed AQM-37 assembly building, fire pump house and 155,000 gallon water tank will be constructed in the 100-year flood plain, specifically within Zone VE. The floor elevation of the proposed AQM-37 building is 14 feet above mean sea level (msl), approximately two feet below base flood elevation.

An evaluation of alternatives to the proposed action, including alternative sites, was conducted, and it was determined that there were no practicable alternatives to the proposed site. Various design options were evaluated, and it was determined that elevating the building above the flood plain would be cost prohibitive. As a flood mitigation measure, a Safety and Evacuation Plan for the facility will be developed by PACMISRANFAC. The design of the proposed improvements will minimize potential harm to the flood plain.

In compliance with Executive Order 11988, the Navy has determined there is no practicable alternative to siting the project in the flood plain, and that the project

will have no adverse impact on the natural and beneficial values of the flood plain.

4.1.3 Utilities

The construction and operation of the AQM-37 facilities will not significantly increase demand on existing utility systems at PACMISRANFAC. The existing electrical, potable water and communication facilities at the base will adequately provide for the facility's utility needs, and no upgrades are required. Utility connections will be made from the adjacent ordnance area. Because the existing utilities cannot support the building's fire fighting requirements, a new 155,000 gallon (587 kl) water tank with a booster pump and pumphouse will be constructed to provide adequate fire protection. The proposed septic tank with absorption bed (leach field) will accommodate wastewater requirements. No permits or approvals are required from the State of Hawaii Department of Health (DOH) for the septic tank and absorption bed, as they will be located on federal property. However, the Navy will notify the DOH of the improvements. The project will not increase permanent base population or the number of home-based aircraft which could in turn increase basewide utility demand.

4.1.4 Target Launch Operations

The launching of the assembled AQM-37 target missiles at the PACMISRANFAC training range is presently ongoing. As a continuing action, the environmental impacts of these activities have been reviewed and approved by PACMISRANFAC Public Works and Range Operations staffs. Any recommended environmental mitigation measures are being followed by range users. The launching of the AQM-37 targets and associated combat weapons system testing are not within the scope of this environmental assessment, as no change is proposed by this action.

4.1.5 Terrestrial Flora and Fauna

The project will not have any significant impact on terrestrial flora or fauna. The undeveloped project site has been previously cleared and disturbed by construction in the area. The project site has been surveyed, and there is no evidence that the *'ohai* (*Sesbania tomentosa*), a federally listed endangered species, is present.

The project will not impact sensitive biological habitats or endangered bird species at PACMISRANFAC. PACNAVFACENGCOM has completed an informal Section 7 (Endangered Species Act) consultation with the U.S. Fish and Wildlife Service for the project (Appendix A). The AQM-37 facility's exterior lighting will be designed to conform with the State of Hawaii Department of Land and Natural Resources and the U.S. Fish and Wildlife publication, *The Newell's Shearwater Light Attraction Problem: A Guide for Architects, Planners and Resort Managers.* In addition, the Navy will 1) minimize or eliminate use of external lighting during peak fledging season in October and November; 2) institute a plan for recovering disoriented birds and taking them to the nearest "shearwater aid station," most likely a county fire station; and 3) insure that employees regularly search the area for downed birds during fledging season. The U.S. Fish and Wildlife Service has determined that as long as the above conditions are met, the project is not likely to adversely affect any protected species.

4.1.6 Cultural Resources

The proposed project will include excavation of utility line trenches. Although no known archeological sites are known in the project vicinity, potential adverse effects will be mitigated by conducting archeological monitoring of all trench excavations (Appendix B).

Section 106 of the National Historic Preservation Act of 1966 requires federal agencies to consider the effects of their actions on historic properties. In Hawaii, the Section 106 review process is implemented by the State Historic Preservation Officer (SHPO) in the Hawaii Department of Land and Natural Resources, State Historic Preservation Division (DLNR-SHPD).

A Section 106 consultation for the proposed project, including a scope of work for archeological monitoring, has been completed. The SHPO has concurred with the Navy's determination that the project will have "no adverse effect" on historic properties (Appendix B). The Advisory Council on Historic Preservation (ACHP) has been notified of the project. No response from ACHP was received during the 30-day comment period.

4.1.7 Aesthetic and Visual Impact

The project will have no significant adverse aesthetic or visual impact at PACMISRANFAC. The project site is within an existing operational and missile maintenance area, outside the heavily traveled area of the base. It is not visible

from the public highway. The proposed single-story, concrete building will be similar to and compatible with the adjacent missile maintenance facilities in the area.

The additional aircraft take-off and landings that will occur during training exercises will mostly occur over water and will not have a significant visual impact from the base. The target launch activities are conducted at the offshore range and are not visible from the base.

4.1.8 Socio-Economic Impact

The relocation of AQM-37 shore support facilities to PACMISRANFAC will not increase the number of permanent personnel at the base or the number of AQM-37 range operations. Existing PACMISRANFAC ordnance and aerial targets personnel will staff the facility, possibly with occasional assistance from personnel from the Naval Air Warfare Center, Point Mugu, California. The current 4 to 5 annual AQM-37 weekly rotations or exercises will remain the same.

The presence of AQM-37 shoreside facilities will further enhance PACMISRANFAC's value to the Navy and other DOD combat weapons system testing programs. The base will continue to be a major employer and contribute to the overall economic well-being of the island of Kauai. The project will not require a commitment of County services or resources.

4.1.9 Environmental Justice

As discussed in Chapter 3, the construction and operation of the AQM-37 facilities and associated mitigation measures will not result in any significant or adverse environmental impacts, including human health impacts, or economic or social effects to minority or low-income communities.

4.1.10 Noise

Construction-Period Impacts

Temporary noise will be generated during construction of the building, water tank, pumphouse, etc. The construction contractor will be responsible for ensuring that its employees are provided with hearing protection devices, if needed, and that applicable occupational safety and health noise regulations

are followed. Construction activity will be limited to normal working hours. The project site is away from the main base area, and not adjacent to noise-sensitive (i.e., residential) land uses.

Operational Impacts: Aircraft

The relocation of the AQM-37 facilities to PACMISRANFAC will cause a nominal increase in the number of aircraft flights at the landing field during the training rotations, expected to occur four to five times a year. During these exercises, each lasting about one week in duration, two platform aircraft will operate as a detachment out of PACMISRANFAC. Each training exercise will involve a maximum of five target launches, with one or both of the platform aircraft in the air per launch. Assuming a maximum scenario where both aircraft are used for every target launch, there would be up to ten aircraft take-offs and landings per launch event (i.e., two aircraft take-offs/landings x five target launches). At approximately three to five exercises annually, this would result a *maximum* of 50 additional aircraft landings and take-offs per year (ten landings and take-offs x five exercises/year). However, the number of take-offs and landings per year is expected to be fewer than this. Following each week-long exercise, the platform aircraft will return to their home base.

The increase in aircraft operations is not significant in the context of PACMISRANFAC's current air operations. Aircraft flight patterns will be similar to current conditions, with take-offs and landings will be of short duration and predominantly over the ocean areas. As such, the project will not cause a significant increase in aircraft-related noise over existing levels.

4.1.11 Ground/Drinking Water Supply and Quality Issues

Construction of the AQM-37 facility will not have any impact on the brackish water aquifers beneath PACMISRANFAC. The construction contractor will use procedures to prevent runoff or discharge into the ocean. If hydrotesting is done to test the integrity of the water tank or pipeline, a National Pollutant Discharge Elimination System (NPDES) General Permit Notice of Intent (NOI) may be required. The permit, issued by the State of Hawaii Department of Health (DOH), will be obtained prior to any release or discharge of hydrotesting waters to surface waters (via storm drains). An NPDES permit is not required for operation of the facility. During operation, spill prevention and control measures will be followed to minimize and/or mitigate the potential for leaks or spills of fuels or

other pollutants. The septic tank and absorption bed will not adversely impact groundwater aquifers.

4.1.12 Vehicle Traffic

The presence of the AQM-37 maintenance facilities will not increase traffic at the base or on off-base roadways. There will be no increase in the number of PACMISRANFAC support personnel or range users who could increase on-base traffic flow.

The AQM-37 targets will be transported from the off-base Kamokala Ridge magazine area to the on-base facility prior to the training rotation. Transport will occur during the day and will not adversely impact traffic on or off-base. All DOD and State Department of Transportation regulations will be followed.

4.1.13 Solid/Hazardous Waste Management

Construction-Period Impacts

The contractor will dispose of non-hazardous construction period debris at the municipal landfill. There is no indication that there are contaminated soils in the project area. During recent construction of Bldg. 420, an existing water line in the vicinity was found to be transite asbestos pipe. The construction contractor will determine whether the AQM-37 project will connect to water mains composed of transite asbestos; and if so, will undertake the appropriate asbestos abatement.

Operational Period

No operations are planned in the AQM-37 assembly building that will discharge any abnormal gaseous or liquid pollutants. Standard operating procedures for the facility will be established to minimize the possibility of an inadvertent release or leak of hazardous materials. The floor of the AQM-37 facility will be sloped inward to preclude runoff from leaving the interior of the building, in the event of an inadvertent spill or leak.

PACMISRANFAC's Oil and Hazardous Substances Spill Contingency Plan will be updated to address hypergolic fuel at the proposed facility, including possible hypergolic fuel leakage when the targets are uploaded on the launch aircraft and jettisoned during aircraft take-off. The existing Spill Response Team, which is

trained to respond to hypergolic fuel spills, will also be trained to respond to inhibited red fuming nitric acid. All established procedures will be followed.

PACMISRANFAC crash fire response teams will be properly trained and provided with adequate fire fighting equipment and personnel in the event of a platform aircraft crash during take-off or landing.

During target firings on the range, standard operating procedures will continue to be followed to minimize the inadvertent release of hazardous materials, and to reduce risks to personnel and the environment. Hazardous materials are handled and disposed in accordance with federal and state regulations. The construction of the AQM-37 facilities at PACMISRANFAC will not increase the likelihood of encountering or generating hazardous materials.

4.1.14 Air Quality

Section 176(c) of the Clean Air Act (CAA) prohibits any federal agency from engaging in, supporting, providing financial assistance for, licensing, permitting, or approving any activity that does not conform to an applicable State Implementation Plan or Federal Implementation Plan. The Environmental Protection Agency criteria for conformance with Section 176(c) has been outlined by the Chief of Naval Operations (OPNAVINST 5090 Ser N457/4U596107, of 26 April 1994). Because the State of Hawaii is in attainment of the National Ambient Air Quality Standards (NAAQS), the proposed action (i.e., AQM-37 project) has been determined to conform with Section 176(c) of the CAA.

Construction-Related Impacts

Construction of the AQM-37 facility will result in temporary increases in airborne sand and fugitive dust in the area. The construction contractor will be responsible for dust control, and proper construction and erosion control techniques will be used to mitigate these temporary impacts. Exhaust emissions from on-site mobile and stationary construction equipment will be temporary. The construction contractor will be responsible for obtaining any necessary permits associated with construction equipment.

Operational Impacts

The operation of the AQM-37 facility will not result in significant increases in emissions or other air quality impacts. Electrical power will be provided by existing generators on base, which are covered by an operating permit from the State Department of Health. No new generators or operating permits will be required. The diesel fire pump's operating time is estimated to be less than 100 hours per year.

The additional aircraft landings and take-offs during the quarterly training rotations will have some impact on air quality. However, in the context of PACMISRANFAC's overall air operations, the incremental impact will not be significant.

4.1.15 Demolition/Construction Debris Disposal/Dewatering

There will be no hazardous debris generated during construction. All construction debris will be disposed of by the contractor. No dewatering will be required during building construction.

4.1.16 Explosives Safety Quantity Distance

The Kamokala Ridge cave magazine provides adequate explosives safety for long-term storage of AQM-37 targets. It is anticipated that about 30 targets will be stored in the magazine, although more could be accommodated. During transport of the targets along public highways, Department of Defense and State of Hawaii Department of Transportation regulations regarding transport of ordnance will be followed. These regulations require placards on the trucks, shored load, tarpaulins, etc. All transport of ordnance is conducted during the day.

The AQM-37 facility is sited within the 1,250-foot ESQD arc generated by the Red Label area. Due to the presence of the fueled targets, the AQM-37 facility will generate an ESQD arc with a 115-foot radius (based on a maximum of 15 targets). The building has been sited to maintain this 115-foot distance from other habitable buildings and public traffic routes.

Fueled targets will be hauled on a trailer to the taxiway and loaded onto the aircraft at the Red Label area by PACMISRANFAC ordnance personnel. All standard operating procedures and ordnance handling regulations will be

followed, per NAVORDCEN ltr 8020 Ser N71/125 of 15 March 95 (*"Hazards of Electromagnetic Radiation to Ordnance Survey of Pacific Missile Range Facility"*).

4.2 INDIRECT EFFECTS AND THEIR SIGNIFICANCE

By providing facilities to support combat weapons testing, the project will support Navy fleet and DOD readiness. There will be no significant indirect effects on land use, population, air, water or other natural resources by the construction of the AQM-37 facility.

4.3 POSSIBLE CONFLICTS BETWEEN THE PROPOSED ACTION AND THE OBJECTIVES OF FEDERAL AND LOCAL LAND USE POLICIES, PLANS AND CONTROLS

This section provides an overview of the project's consistency with major federal and state land use policies, plans and controls. A listing of environmental permits and approvals is included in Chapter 1.

4.3.1 PACMISRANFAC Master Plan and Hawaii Military Land Use Plan

The *Master Plan for the Pacific Missile Range Facility Hawaii Area* (PACNAVFACENGCOM, October 1990) provides guidelines for land use and facility development at PACMISRANFAC over a five to eight year time frame. The area where the AQM-37 facility is proposed is designated for "operational" land use in the proposed land use plan and includes a complex of missile target maintenance shops. Overall, the project is consistent with the PACMISRANFAC Master Plan.

The project is also consistent with the *Hawaii Military Land Use Master Plan* (PACNAVFACENGCOM, July 1995) which identifies the project area for continued operational use.

4.3.2 Coastal Zone Management Act

The purpose of the Coastal Zone Management Act (CZMA) is to encourage states to manage and conserve coastal areas as a unique, irreplaceable resource. The CZMA states that lands subject solely to the discretion of the federal government are excluded from the State's coastal zone. However, federal activities which directly affect the coastal zone are to be conducted in a

manner consistent with the State's Coastal Zone Management program, to the maximum extent practicable.

The project site is located within the boundaries of the PACMISRANFAC main base. Thus, it is excluded from the State's coastal zone management area, and no consistency determination is required under the CZMA. The Kamokala Ridge magazine area is located on State-owned land leased by the federal government. AQM-37 targets will be stored in one of the magazines. No new CZM consistency determination is required, since use of the magazine has already been determined to be consistent with the State's CZM program and no new use is proposed. The project has no spillover into the coastal zone.

4.3.3 State and Local Land Use Policies and Agreements

State and local (County of Kauai) land use policies are preempted for areas of the project located entirely on federal property at the Pacific Missile Range Facility. As such, the project is not subject to state or local land use policies.

Storage at the Kamokala Ridge magazine is covered under the Navy's existing lease from the State of Hawaii (State of Hawaii General Lease S-3852 of 20 August 1964). Review of Navy plans at Kamokala Ridge by the State of Hawaii is not required. The leased area may be used for "government purposes" in accordance with the lease.

4.4 ENERGY REQUIREMENTS AND CONSERVATION POTENTIAL OF VARIOUS ALTERNATIVES AND MITIGATION MEASURES

4.4.1 Construction Period

Construction of the AQM-37 facility will require machinery and equipment with temporary, short-term energy requirements. These energy requirements would be similar for construction of facilities at another location and somewhat less for the renovation/modernization option. The no-action and lease of commercial facilities would not entail construction period energy expenditures.

4.4.2 Operational Period

During target assembly and storage, machinery and personnel will be dedicated to staffing the facility. These operational period requirements would be similar for any of the alternatives, with the exception of the no-action alternative. The

proposed alternative to locate AQM-37 facilities at PACMISRANFAC could potentially reduce aircraft fuel consumption by providing shore support facilities in close proximity to the PACMISRANFAC training range. The proximity of the facility to the training range will reduce air transit time and provide immediate aircraft access to the range. This could eliminate unnecessary fuel consumption if the target firings were delayed or postponed.

4.5 IRRETRIEVABLE AND IRREVERSIBLE RESOURCE COMMITMENTS

Construction and operation of the AQM-37 facility will utilize fiscal resources, labor and materials. Operation of the facility will slightly increase electrical energy consumption and demand on the wastewater system. The project site and existing ordnance magazine and Bldg. 372 will be unavailable for other uses.

4.6 SHORT-TERM VERSUS LONG-TERM PRODUCTIVITY

The construction of the facility will have short-term impacts on the physical conditions of the project site. However, there will be no significant long-term impacts on the physical characteristics of the area or on the biological environment.

The proposed project will enable Navy and other DOD combat weapons system testing to continue at the PACMISRANFAC range, enhancing fleet readiness and capabilities.

4.7 CUMULATIVE IMPACTS

The project will not significantly increase utility demand at PACMISRANFAC. The construction of the new facility will slightly expand the physical boundaries of the existing ordnance/maintenance area, but not increase the number of personnel, aircraft or range users. There will be a slight rise in aircraft take-offs and landings at PACMISRANFAC during the quarterly exercises, which in itself will not be substantial. However, over time, the cumulative effect of this and other proposed air operations could result in measurable increases in noise and airfield use. Although no increases in combat weapons system testing is planned at present, the availability of AQM-37 support facilities at PACMISRANFAC could be a consideration if such increases were planned in the future.

4.8 MEANS OF MITIGATING POTENTIALLY ADVERSE EFFECTS

No significant adverse effects which cannot be mitigated were identified. Temporary, construction related impacts such as noise and dust will be mitigated through standard construction techniques and other measures. All occupational safety and health guidelines will be followed during construction and operation of the facility.

The construction will not impact endangered flora or fauna or cultural resources. All lighting will conform with the State of Hawaii and U.S. Fish and Wildlife Service guidelines to protect the Newell's shearwater, a federally threatened bird species. Erosion control and best management practices will be employed during construction, and no runoff will flow into the ocean.

Standard operating procedures will be developed and approved by the command, in order to enhance safety in the operation of the facility. Established AQM-37 target work-up and assembly procedures and protocol for transport and handling of ordnance will be followed. PACMISRANFAC's Oily and Hazardous Substances Spill Contingency Plan will be modified to accommodate possible fuel spills or leaks during work-up, uploading onto the launch aircraft and jettisoning during aircraft take-off. Airfield crash fire teams will have adequate training, equipment and personnel to cover AQM-37 take-offs and landings.

Target launch and weapons system testing operations are continuing actions and their environmental consequences have been previously reviewed by PACMISRANFAC. Any requirements for environmental mitigation have been identified and are being followed by range users.

It is the conclusion of this document that the proposed action and alternatives will have not have adverse impacts on cultural resources, water quality, marine biology, etc., which cannot be adequately mitigated. No significant adverse environmental impacts have been identified as likely to result from the proposed project.

A summary of potential impacts and mitigation is included in Table 2 below.

Table 2:
Summary of Impacts and Mitigation

Potential Impact	Mitigation	Responsible Party
Flood hazard	• Safety and Evacuation Plan for facility to be developed.	• PACMISRANFAC Base Engineer/Safety & Ordnance Branches
Flora and Fauna	• Site survey conducted. • No endangered flora or fauna present in project area. • Exterior lighting designed to minimize impact to Newell's Shearwater birds • Minimize or eliminate use of exterior lighting during Newell's Shearwater peak fledging season (October and November) • Institute plan for recovering disoriented birds. • Employees to search the area for downed Newell's Shearwater birds during fledging season.	• PACNAVFACENGCOM • Design contractor • PACMISRANFAC • PACMISRANFAC • PACMISRANFAC
Cultural Resources/Historic Properties	• Construction limited to previously disturbed area. • Archeological reconnaissance survey conducted. • Section 106 consultation with DLNR-SHPD concurrence with "no adverse effect" determination. • ACHP notified of project. • Archeological monitoring of ground-disturbing activities. • If human skeletal remains discovered during construction, stop work and consult with appropriate native Hawaiian organizations.	• PACMISRANFAC Base Engineer; Construction contractor • PACNAVFACENGCOM archaeologist • DLNR-SHPD • ACHP • Construction contractor • Construction contractor, PACNAVFACENGCOM archaeologist
Construction-period noise	• Construction limited to normal working hours.	• PACMISRANFAC Base Engineer; Construction contractor

Table 2 (continued)

Potential Impact	Mitigation	Responsible Party
Operational period noise due to increased aircraft operations	• Minimal increase in air operations (take-offs and landings); limited to week-long training exercises, 4-5 times per year. Maximum of 50 additional take-offs and landings per year. • No change to current aircraft flight patterns.	• PACMISRANFAC Air Ops • PACMISRANFAC Air Ops
Hazardous waste management/contaminated soil/fuel leaks, fuel flammability, etc.	• Fire protection provided in facility design. • Standard operating procedures for facility to be developed and followed. • Oil & Hazardous Substances Spill Contingency Plan updated to include AQM-37 hypergolic fuel.	• Design contractor • PACMISRANFAC Ordnance Dept. • PACMISRANFAC
Construction-period increase in dust and exhaust	• Use proper construction techniques to minimize dust and erosion.	• Construction contractor
Air quality impact due to increased aircraft operations	• Minimal increase in air operations (take-offs and landings); limited to training exercises, 4-5 times per year.	• PACMISRANFAC Air Ops
Explosives hazards	• 115-ft clearance from inhabited buildings and public roads to be maintained. • Follow standard operating procedures and safety protocol in handling targets. • Follow DOD and State DOT regulations for transporting ordnance. • Aircraft loading to be conducted in Red Label area. • Use of Kamokala Ridge magazine for long-term target storage.	• PACMISRANFAC Ordnance Branch • PACMISRANFAC Ordnance Branch • PACMISRANFAC Ordnance Branch • PACMISRANFAC Ordnance Branch • PACMISRANFAC Ordnance Branch

CHAPTER FIVE
LIST OF PREPARERS

This Environmental Assessment (EA) was prepared for the Pacific Missile Range Facility (PACMISRANFAC), Barking Sands, Kauai, by the Pacific Division Naval Facilities Engineering Command (PACNAVFACENGCOM) and Helber Hastert & Fee, Planners, Inc. The following identifies individuals who were involved in the preparation of the EA.

Pacific Division Naval Facilities Engineering Command:

Planner-in-Charge	Gerald Gibbons, P.E. (Code 231GG) M.S. Industrial Engineering

Helber Hastert & Fee, Planners:

Principal-in-Charge	Thomas A. Fee, AICP M.A. Urban Planning
Principal EA Author/Project Manager	Leslie Kurisaki M.A. Urban Planning
Graphic Artist	Lori T. Oumaye B.F.A. Design

CHAPTER SIX
LIST OF AGENCIES AND PERSONS CONSULTED

PACMISRANFAC Barking Sands

Robert Inouye, Environmental Engineer
Scott Zenger, Civil Engineer
Wally Ferreira, Ordnance Officer
CDR Gernand, Range Operations Officer

PACNAVFACENGCOM, Environmental Planning Division

Elizabeth Gordon, Code 233EG
Daniel D. Moriarty, Code 237

U.S. Fish and Wildlife Service

Marie Bruegmann

Office of State Planning, Coastal Zone Management

John Nakagawa

CHAPTER SEVEN
REFERENCES

First Hawaiian Bank Research Department. *Supplement to Economic Indicators, Kauai County Profiles*. November/December 1995.

Naval Surface Warfare Center, Dahlgren Division. *Hazards of Electromagnetic Radiation to Ordnance Assessment of Pacific Missile Range Facility, Barking Sands, Hawaii*. March 1996.

PACNAVFACENGCOM. *Archaeological Reconnaissance Survey for AQM-37 Facility*. July 1996.

_____. *Archaeological Reconnaissance Survey for AQM-37 Facility, Pacific Missile Range Facility, Barking Sands Kauai, Hawaii*. July 1996.

_____. *Scope of Work for Archaeological Monitoring of Trench Excavations Associated with Construction of the AQM-37 Facility, Pacific Missile Range Facility, Barking Sands Kauai, Hawaii*. 5 September 1996.

_____. *Biological Survey for Proposed AQM-37 Support Facility, Pacific Missile Range, Mana, Kauai*. (no date).

_____. *Environmental Baseline Study, Pacific Missile Range Facility. Second Working Copy*. Prepared by Belt Collins Hawaii. January 1996.

_____. *Master Plan, PACMISRANFAC HAWAREA Barking Sands, Kauai, Hawaii*. October 1990.

_____. *Pre-Final Report: Archaeological Reconnaissance Survey Pacific Missile Range Facility Hawaiian Area*. Prepared by Paul H. Rosendahl, Inc. July 1995.

State of Hawaii, Department of Business, Economic Development and Tourism. *State of Hawaii Data Book, 1992*. March 1993.

State of Hawaii, Department of Land and Natural Resources/U.S. Fish and Wildlife Service. *The Newell's Shearwater Light Attraction Problem: A Guide for Architects, Planners and Resort Managers*.

U.S. Department of the Navy. *OPNAVINST 5090.1B, Environmental and Natural Resources Manual.* 1 November 1994.

Zane, Alvin & Associates and VEI, Inc. *Final Executive Summary Report, FY97 BRAC Project P-297T, AQM Facility.* April 19, 1996.

Appendices

A.

Biological Survey & Section 7 Consultation Correspondence

BIOLOGICAL SURVEY

FOR PROPOSED

AQM-37 SUPPORT FACILITY

PACIFIC MISSILE RANGE

MANA, KAUAI

BACKGROUND: The following survey was conducted to document the flora and fauna which may be impacted by the proposed construction of a support facility to hold and service AQM- 37 missiles. The missiles are used as targets for training at the Pacific Missile Range Facility.

Methodology: On 20 June 1996 Natural Resources Management Specialist, Mr. Daniel Moriarty, conducted an on-foot survey of the subject parcel (Enclosure 1). Due to the small size of the parcel, 400 ft.x 400 ft., it was possible to cover the entire area in three hours. The survey coverage was 100%.

Birds and plants were noted as they were encountered.

Recent rains had provided enough moisture to cause several of the plants to flower, facilitating identification. The geotechnical contractor had cut several lines through the vegetation to obtain soil borings.

Flora- The area surveyed appears to have been previously disturbed, there is evidence of prior livestock grazing and land leveling associated with military construction, possibly during WW II.

The flora of the area is dominated by two species, the small tree "koa haole" Leucaena leucocephala, and a few scattered plants of "kiawe" Prosipis pallida. Both species were introduced to Hawaii to support livestock grazing. The introduced pasture grass Cenchurus ciliaris, commonly called buffel grass, is found within the trees and at the edge of the proposed project site. The grass is also introduced.

Only one native species was observed, the "ilima" Sida fallix.

Species observed during the survey include the following:

Abutilon incanum	hairy abutilon
Acacia farnesiana	klu
Cenchurus ciliaris	buffelgrass
Desmanthus virgatus	slender mimosa
Euphorbia hirta	garden spurge
Indigofera spicata	creeping indigo
Leucaena leucocephala	koa haole
Lycopersicon pimpinellifolium	currant tomato
Panicum maximum	Guinea grass
Prosipis pallida	kiawe
Sida falix	i'lima
Sida rhombifolia	no common name
Verbesina enceloides	golden crownsbeard
Waltheria indica	uha'loa

Fauna: species observed include the following:

common myna	Acridotheres tristis
zebra dove	Geophelia stricta
common dove	Streptopelia chinensis
house sparrow	Passer domesticus

The Pacific golden plover (Pluvalis fulva) and the Laysan Albatross (Diomedia imutabilis), both of which have been observed in the area during prior visits, were not seen at this time. The two species migrate to the North Pacific during the summer months. Both migratory species are protected under the

Migratory Bird Treaty Act.

The Newell's shearwater Puffinus newelli, a threatened species,is known to nest in the mountains several miles beyond PMRF. During the fall, fledglings attempting to fly to the open ocean, become confused by urban lighting the disoriented, and birds strike objects such as buildings, trees, and wires. Several birds are recovered at the installation each fall.

The State of Hawaii, Department of Land and Natural Resources, Division of Forestry and Wildlife, has developed guidelines for exterior lighting to prevent interactions between security lighting and these protected birds. If the building is to be equipt with exterior lighting an Endangered Species Act, Section 7 consultation with the U.S. Fish and Wildlife Service should be initiated.

In summary, the property has no resident endangered or threatened species. The two bird species protected under the Migratory Bird Treaty Act are found in the general area but will not be impacted by the proposed construction.

If lighting is to be installed, a Section 7 consultation should be initiated because of documented impacts to the threatened Newell's shearwater.

11015.4A8K
Ser 2324 2831
10 JUL 1996

Mr. Brooks Harper
Field Supervisor, Ecological Services
U.S. Fish and Wildlife Service
Pacific Islands Ecoregion
P.O. Box 50167
Honolulu, HI 96850

Dear Mr. Harper:

The Navy would like to enter into an Endangered Species Act, Section 7 consultation regarding a proposed construction project at Pacific Missile Range Facility (PACMISRANFAC), Mana, Kauai. The location of the proposed facility is forwarded as enclosure (1).

The project, Construction of the AQM-37 Support Facility, will involve developing a 2,196 square feet structure to service and prepare for launching, the AQM-37 missile. The AQM-37 is used as a target at the PACMISRANFAC. There are paving and utility improvements associated with the structure.

As missile service work will be conducted at night the building will require exterior lighting. The Navy is aware that exterior lighting often attracts young Newell's shearwaters Puffinus Newelli, during the fall when fledgling birds leave their mountain nests for the open ocean.

The Newell's shearwater is a listed threatened species. The Navy will design all lighting to conform with the State of Hawaii, Department of Land and Natural Resources/U.S Fish and Wildlife Service publication The Newell's Shearwater Light Attraction Problem a guide for Architects, Planners and Resort Managers. We trust that you will concur with our finding that the proposed actions will not impact listed species.

Should you have any questions regarding this project, please contact Mr. Daniel Moriarty, Natural Resources Management Specialist at 474-5922 or by facsimile transmission at 474-4890.

Sincerely,

FREDRICK J. MINATO
Director
Environmental Planning Division
Acting

Encl:
(1) Map of Proposed AQM-37 Support Facility

Copy to: (see next page)

11015.4A8K
Ser 232/ 2831

Copy to:
Commanding Officer
Pacific Missile Range Facility
P.O. Box 128
Kekaha, HI 96752-0128

W:\232DM\KOHL

United States Department of the Interior

FISH AND WILDLIFE SERVICE
PACIFIC ISLANDS ECOREGION
300 ALA MOANA BOULEVARD, ROOM 3108
BOX 50088
HONOLULU, HAWAII 96850
PHONE: (808) 541-3441 FAX: (808) 541-3470

Frederick J. Minato, Acting Director
Environmental Planning Division
Department of the Navy
Pacific Division
Naval Facilities Engineering Command
Pearl Harbor, HI 96860-7300

Subject: *Informal Section 7 Consultation for Construction of a Missile Support Facility at the Pacific Missile Range Facility, Barking Sands, Kauai*

Dear Mr. Minato:

The U.S. Fish and Wildlife Service (Service) received a letter from your office on July 11, 1996, requesting concurrence under section 7 of the U.S. Endangered Species Act (Act) with regard to the proposed construction of a missile support facility at the Pacific Missile Range Facility (PMRF), Barking Sands, Kauai. The proposed facility includes a 2,196 square feet structure that will be used to service and prepare AQM-37 missiles for launching. Paving, utility improvements and exterior lighting are associated with the structure. Your letter also states that exterior lighting will be installed in conformance with the State of Hawaii, Department of Land and Natural Resources/U.S. Fish and Wildlife Association publication, *The Newell's Shearwater Light Attraction Problem: A Guide for Architects, Planners and Resort Managers*.

Our records indicate that the following federally listed threatened and endangered species, protected under the Endangered Species Act (ESA), potentially occur on PMRF:

Newell's shearwater (*Puffinus newelli*)
Dark-rumped petrel (*Pterodroma phaeopygia sandwichensis*)
Hawaiian hoary bat (*Lasiurus cinereus semotus*)
Hawaiian duck (*Anas wyvilliana*)
Hawaiian coot (*Fulica alai*)
Hawaiian moorhen (*Gallinula chloropus sandvicensis*)
Hawaiian stilt (*Himantopus mexicanus knudseni*)
Green sea turtle (*Chelonia mydas*)
Hawaiian monk seal (*Monachus schauinslandi*)
'Ohai (*Sesbania tomentosa*)

In addition, several species of seabirds (including a colony of wedge-tailed shearwaters (*Puffinus pacificus*)), shorebirds, and waterbirds occur on PMRF and are protected under the Migratory

Bird Treaty Act (MBTA).

Two of the above species could potentially be affected by the proposed project: the Newell's shearwater (protected under the ESA) and the wedge-tailed shearwater (protected under the MBTA). Juveniles of both species leave their burrows in the late fall and, on their way out to sea, are often attracted to and disoriented by lights. Ensuing collisions can result in injury or death of the birds.

However, proper design and shielding of external lighting, as referenced in your letter, will minimize the possibility of adverse effects to these species. In addition, to ensure that no adverse effects occur, we request that you:

- Minimize or eliminate use of external lighting during peak fledging season in October and November;
- Institute a plan for recovering disoriented birds and taking them to the nearest "shearwater aid station," most likely a county fire station; and
- Insure that employees regularly search the area for downed birds during fledging season.

As long as these conditions are met, the proposed project is not likely to adversely affect any protected species.

In view of this, we believe that requirements of section 7 of the Act have been satisfied. Obligations under section 7 of the Act must be reconsidered if (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered, (2) this action is subsequently modified in a manner not previously considered, or (3) a new species is listed or a critical habitat determined that may be affected by the identified action.

We appreciate your concern for threatened and endangered species. If you have any questions, please contact Margo Stahl, Program Leader for interagency cooperation, or Chris Swenson, staff biologist, at (808) 541-3441.

Sincerely,

Brooks Harper

Brooks Harper
Field Supervisor
Ecological Services

B.

Archeological Reconnaissance Survey & Section 106 Consultation Correspondence

ARCHAEOLOGICAL RECONNAISSANCE SURVEY

FOR

AQM-37 FACILITY, PACIFIC MISSILE RANGE FACILITY, BARKING SANDS

KAUA'I, HAWAI'I

by

Elizabeth Gordon

PACNAVFACENGCOM Archaeologist (Code 233EG)

July 1996

INTRODUCTION

The Base Closure and Realignment Commission of 1993 requires the closure of Naval Air Station, Barbers Point (NAS Barbers Point), O'ahu. An operational decision by the Commander in Chief U.S. Pacific Fleet was made to realign military forces at NAS Barbers Point. The AQM-37 operations will be relocated to Pacific Missile Range Facility (PACMISRANFAC), Barking Sands, Land of Waimea, Waimea District, Island of Kaua'i (Figure (1)), as part os this realignment decision. The AQM-37 is an unmanned missile used as an aerial target to test the capabilities of the Navy's AEGIS weapons system on cruiser class surface ships.

On 20 June 1996, an archaeological reconnaissance survey was conducted by Pacific Division, Naval Facilities Engineering Command (PACNAVFACENGCOM) at the proposed site of the 270 square meters target missile assembly and work-up facility to support AQM-37 operations at PACMISRANFAC (Figures (2) and (3)). The archaeological survey was conducted in support of the Environmental Assessment that is currently being prepared by Helber Hastert & Fee for the Navy.

PREVIOUS ARCHAEOLOGICAL RESEARCH

Based on previous archaeological research, no known archaeological sites are located in the immediate project vicinity. The nearest site is over 183 meters southwest of the project area along the coast, where bones have been identified (Site 50-30-05-1831; State Historic Preservation Division files; cf. Drolet et al. 1995).

In 1995, Paul H. Rosendahl, Ph.D., Inc. (PHRI), conducted a Phase I archaeological reconnaissance survey in association with the preparation of a Cultural Resources Management Plan and Programmatic Agreement for PACMISRANFAC (Wulzen and Jensen 1995). The Phase I survey examined approximately 400 hectares of unimproved lands at Barking Sands and approximately 71 hectares at Makaha Ridge. The PHRI survey did not locate any additional archaeological sites in the project area.

METHODOLOGY

To determine whether archaeological sites were present within the project area and evaluate the impact of the project on historic properties, PACNAVFACENGCOM Archaeologist, Ms. Elizabeth Gordon (Code 233EG), conducted a review of the existing literature and reports, in addition to the field investigation. The pedestrian survey examined a parcel approximately 61 meters x 61 meters (0.37 hectares) (Figure (4)). Using the parking lot and Building 412, located on the right-hand side of the project area, as the baseline, spacing of the transects for the survey was between 5.0 and 10.0 meters. The survey coverage was 100 percent.

RESULTS AND CONCLUSIONS

No archaeological sites were encountered during the reconnaissance survey. The surface of the project area has been previously disturbed. Based on the results of the Biological Survey conducted by PACNAVFACENGCOM Natural Resources Management

Specialist, Mr. Daniel Moriarty, there is evidence of prior livestock grazing and land leveling associated with military construction; possibly during World War II.

The Draft Geotechnical Investigation conducted by Harding Lawson Associates (1996), indicates undisturbed sand below the surface of the site (Attachment (1)). Based on the information (i.e., natural stratigraphy) from this investigation, there is the potential for intact buried cultural deposits within the project area. Archaeological research has yet to be conducted to confirm the presence or absence of such subsurface cultural deposits. It is, therefore, recommended that monitoring of ground disturbing activities (e.g., excavation for water and sewer lines) associated with the construction phase of the project, be conducted by a qualified archaeologist to comply with the National Historic Preservation Act (NHPA) of 1966, as amended, and NHPA implementing regulation 36 CFR Part 800.

REFERENCES CITED

Drolet, Robert, Ann K. Yoklavich, and James Landrum

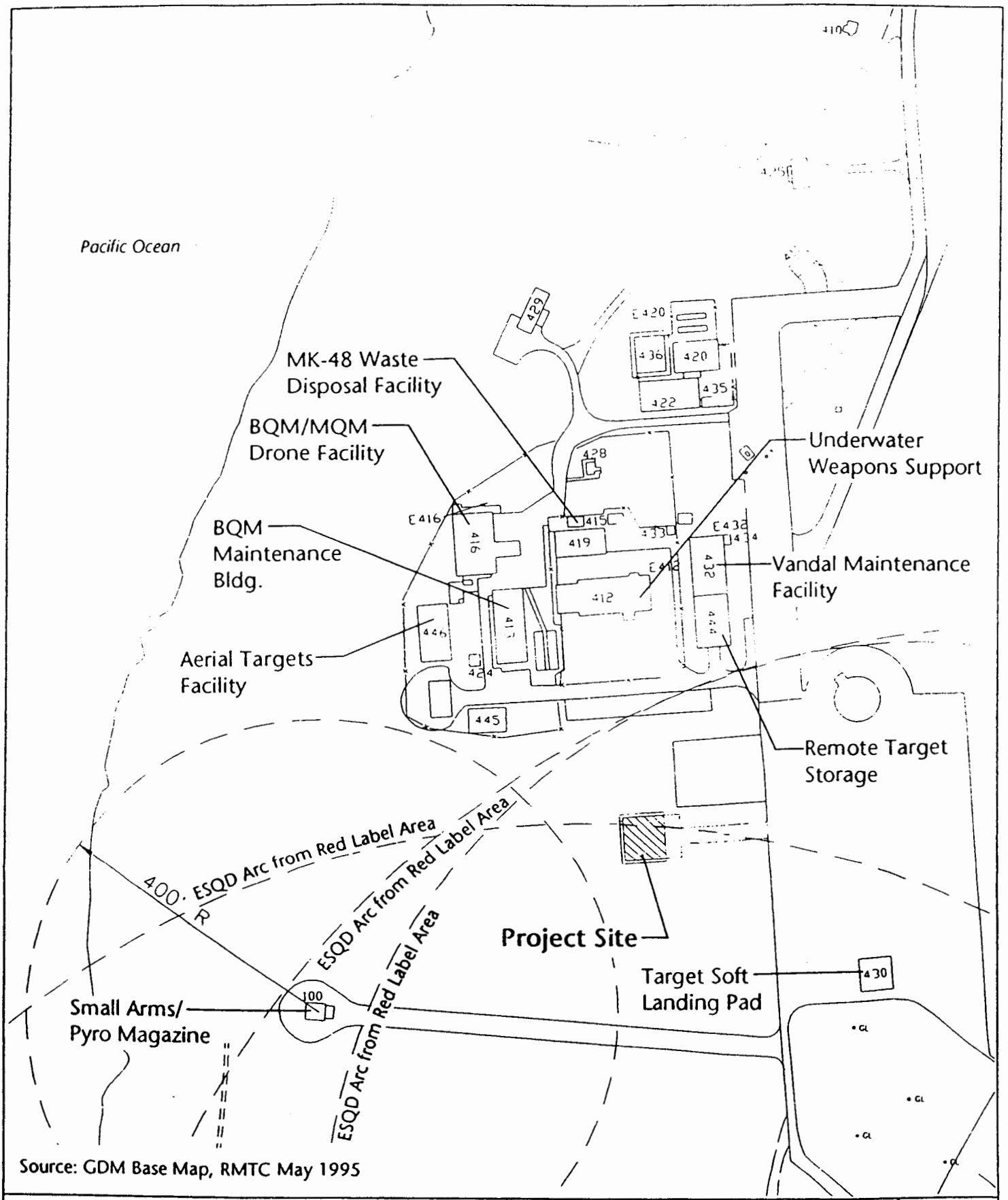
1995 "Prefinal Report: Cultural Resources Management Overview Survey, Pacific Missile Range Facility, Hawaiian Area, Kaua'i, Hawai'i." Prepared for Department of the Navy, Pacific Division, Naval Facilities Engineering Command, Pearl Harbor. Honolulu: Ogden Environmental and Energy Services Company, Inc.

Harding Lawson Associates

1996 "Draft Geotechnical Investigation, FY97 BRACON Project P-297T, AQM-37 Facility, Pacific Missile Range Facility, Barking Sands, Kauai, Hawaii." Prepared for Alvin Zane & Associates, Inc., Honolulu. Aiea: Harding Lawson Associates.

Wulzen, Warren, and Peter M. Jensen

1995 "Prefinal Report: Archaeological Reconnaissance Survey, Pacific Missile Range Facility, Hawaiian Area." Prepared for Department of the Navy, Pacific Division, Naval Facilities Engineering Command, Pearl Harbor. Hilo: Paul H. Rosendahl, Ph.D., Inc.



Source: GDM Base Map, RMTC May 1995

Project Vicinity

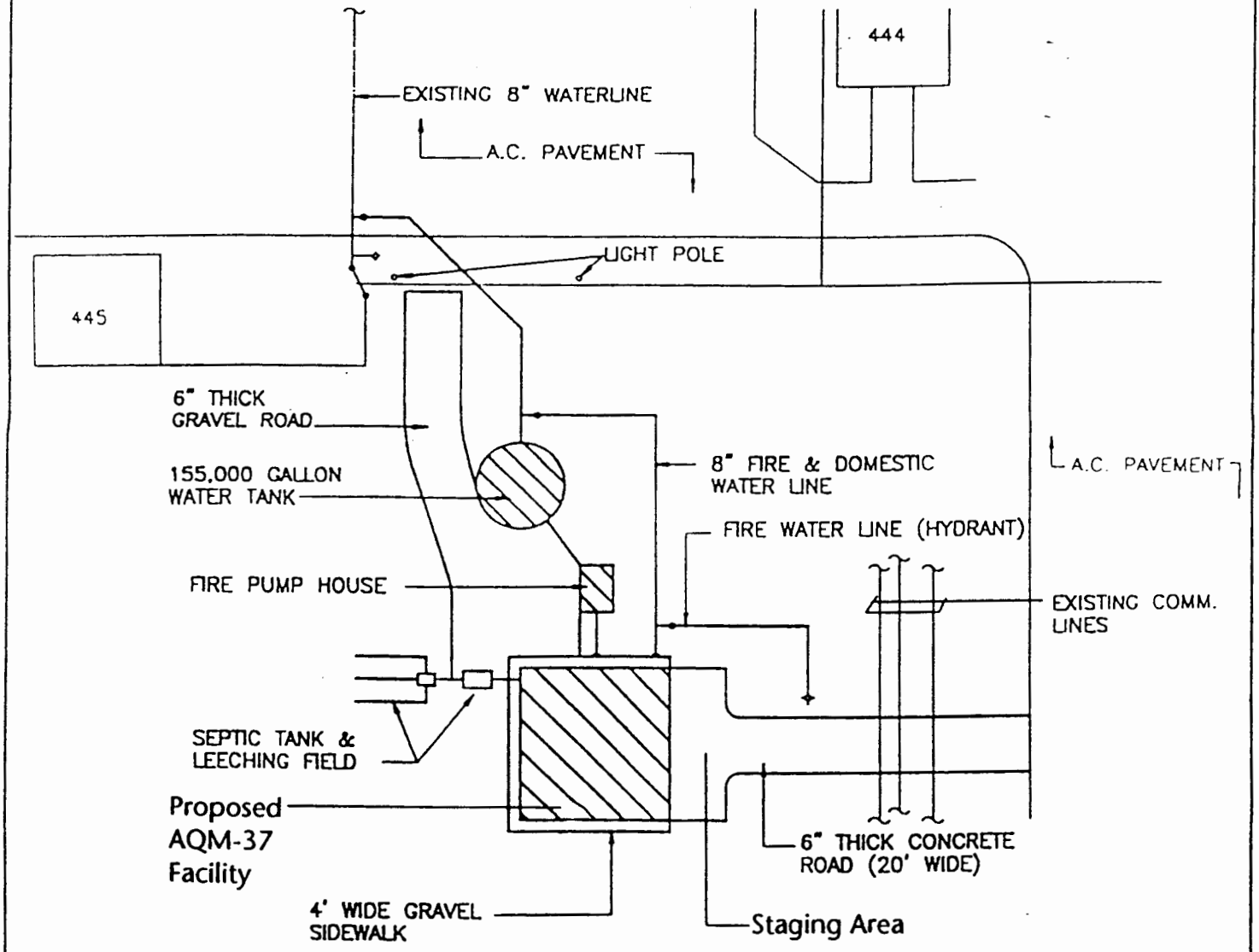
AQM-37 Facility

Pacific Missile Range Facility, Barking Sands, Kauai, Hawaii

0 Feet 180

0 Meters 55

Figure 2



Source: AQM Facility Final Executive Summary Report, April 19, 1996

Site Layout and Utility Plan

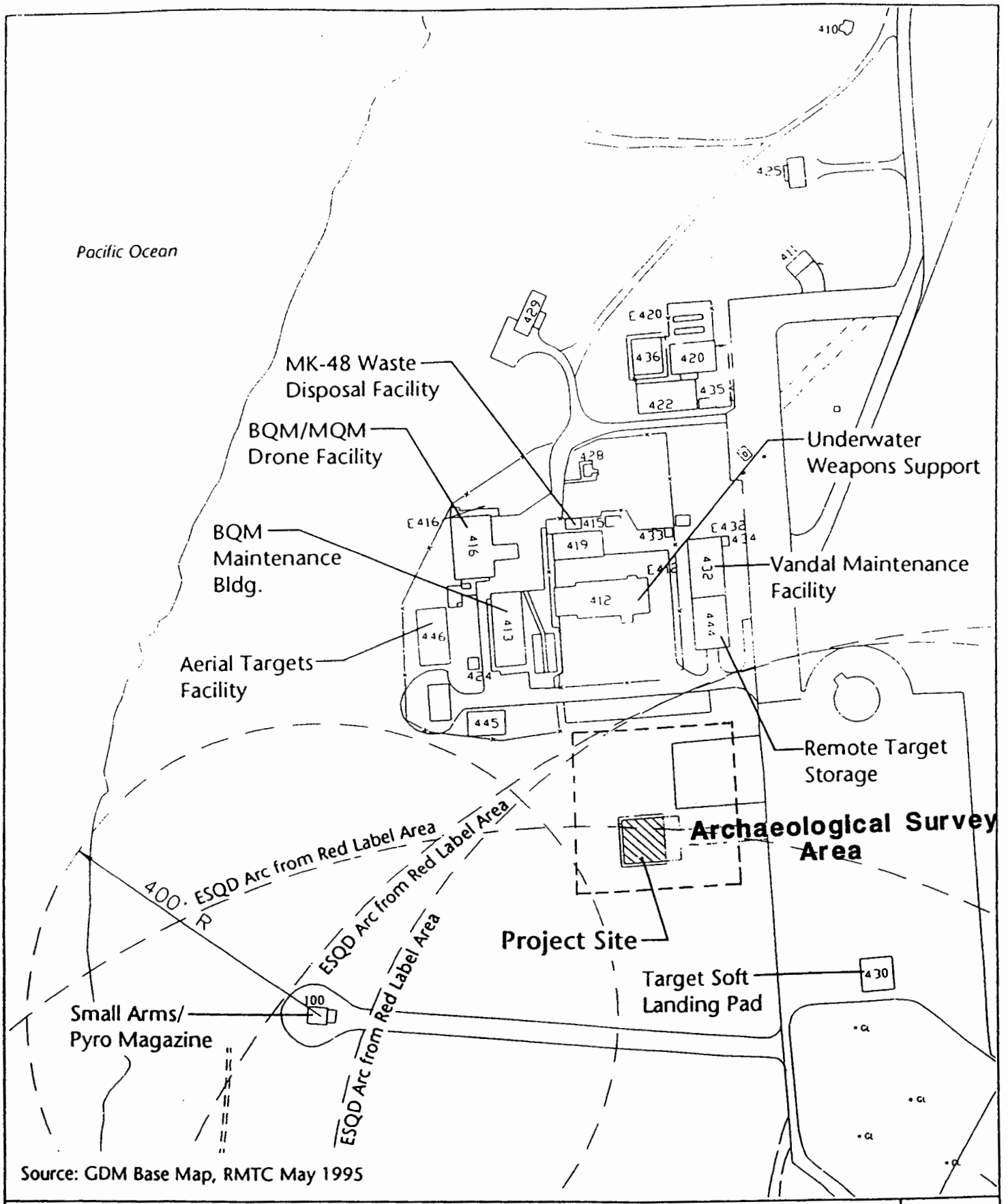
AQM-37 Facility

Pacific Missile Range Facility, Barking Sands, Kauai, Hawaii

0 Feet 60

0 Meters 20

Figure 3



Source: GDM Base Map, RMTC May 1995

Project Vicinity

AQM-37 Facility

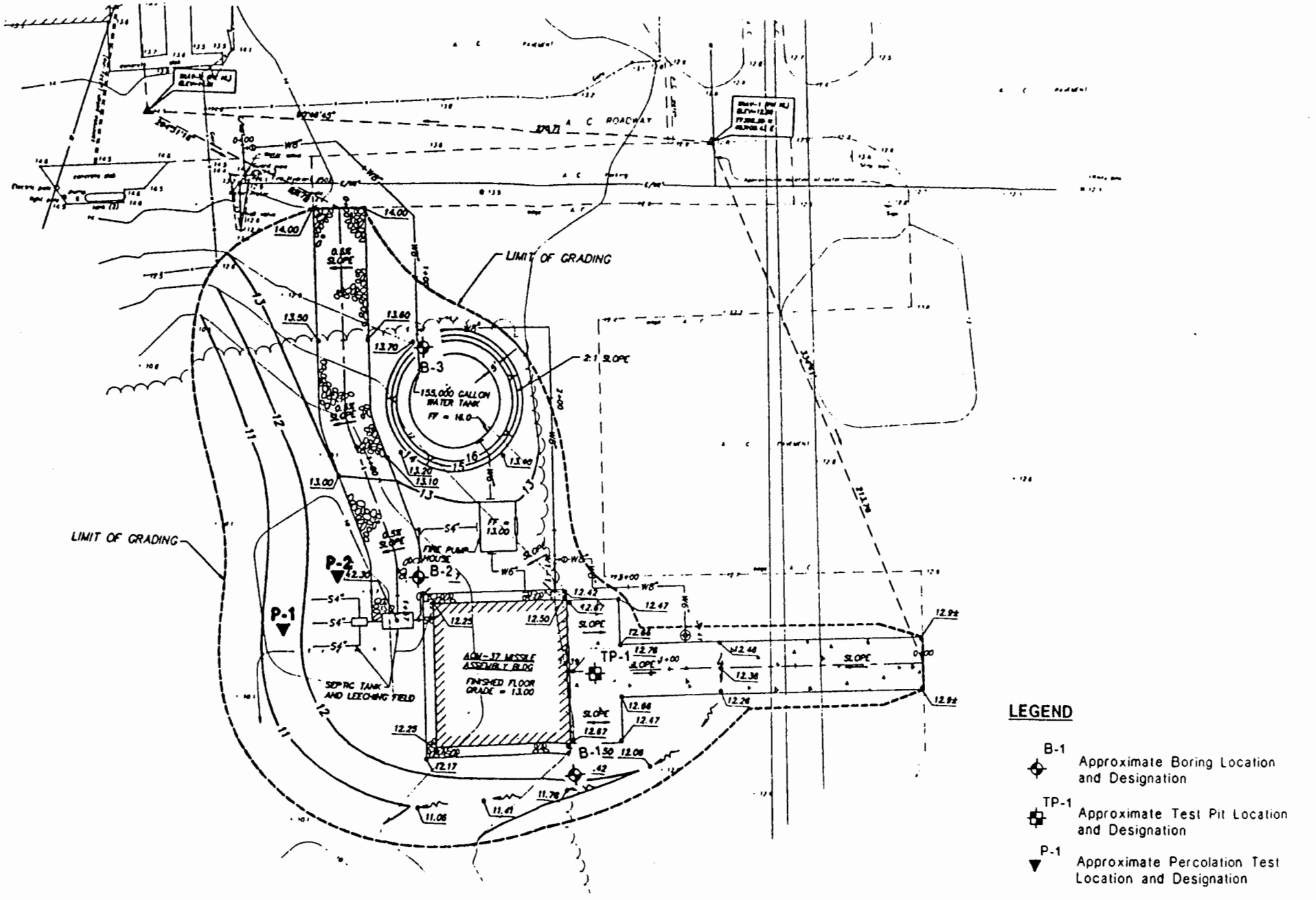
Pacific Missile Range Facility, Barking Sands, Kauai, Hawaii

0 Feet 180

0 Meters 55

Figure 4

Attachment 1



LEGEND

- B-1 — Approximate Boring Location and Designation
- TP-1 — Approximate Test Pit Location and Designation
- P-1 — Approximate Percolation Test Location and Designation

80 FT

Reference:

Updated Preliminary Grading and Drainage Plan, Sheet C-2, provided by Alvin Zane & Associates, Inc.

Harding Lawson Associates
Engineering and Environmental Services

Site Plan
P-297T AQM Facility
PMRF, Kauai, Hawaii

FIGURE 2

DRAWN	JOB NUMBER	APPROVED	FILE	DATE	REVISED DATE
jrl	34389.1	DRAFT		7/96	

Log of Boring B-1

Equipment MOBILE B-53

Elevation 12 ft** *Date* 05/29/96

Laboratory Tests	*Moisture Content (%)*	*Dry Density (pcf)*	*Blows/foot**	*Depth (ft)*	*Sample*	
SA (-200 = 8.1%)	4.8		15	0		LIGHT ORANGE-BROWN POORLY-GRADED SAND WITH SILT (SP-SM), medium dense, dry, coralline, fine-grained, with roots. Becomes white-light brown-gray, with coralline gravel, absence of roots.
	17.4		21	5		WHITE-LIGHT ORANGE-BROWN POORLY-GRADED SAND (SP), medium dense, moist, coralline, fine- to medium-grained.
-200 = 4.8%	15.0		22	10		Becomes white-light brown.
			22	15		Becomes medium-grained, saturated. Becomes white-light gray.
				20		End of boring at 16.5 feet. Boring collapsed to approximately 4 feet before stable water level observed.

**Elevation (datum unknown) estimated from undated, preliminary grading and drainage plan provided by Alvin Zane and Associates, Inc.

Log of Boring B-2

Equipment MOBILE B-53

Elevation 11 ft** *Date* 05/29/96

Laboratory Tests	*Moisture Content (%)*	*Dry Density (pcf)*	*Blows/foot**	*Depth (ft)*	*Sample*	
			27	0		LIGHT ORANGE-BROWN POORLY-GRADED SAND WITH SILT (SP-SM), medium dense, dry, coralline, fine-grained, with roots and silt lenses. Becomes white-light brown, absence of roots. Becomes light brown-gray.
	5.6	100	37	5		LIGHT BROWN-WHITE POORLY-GRADED SAND (SP), dense, dry, coralline, weakly cemented.
			30	10		Less cementation.
SA (-200 = 10%)	28.4		25	15		LIGHT GRAY AND LIGHT BROWN POORLY-GRADED SAND WITH SILT AND GRAVEL (SP-SM), medium dense, saturated, coralline.
				20		End of boring at 16.5 feet. Boring collapsed to approximately 11 feet before stable water level recorded.

*Blow counts converted to approximate SPT values.

Harding Lawson Associates
Engineering and Environmental Services

Logs of Borings B-1 and B-2
P-297T AQM Facility
PMRF, Kauai, Hawaii

FIGURE 3

DRAWN	JOB NUMBER	APPROVED	FILE	DATE	REVISED DATE
kkh	34389.1	DRAFT	AQM	6/96	

Equipment MOBILE B-53

Elevation 13 ft** Date 05/29/96

Laboratory Tests	Moisture Content (%)	Dry Density (pcf)	Blows/foot*	Depth (ft)	Sample	Description
				0		LIGHT BROWN POORLY-GRADED SAND WITH SILT (SP-SM), medium dense, dry, coralline, fine-grained, some coralline gravel and silt lenses.
	8.1		18			
				5		Becomes light brown-gray, weakly cemented.
	6.8	96	29			WHITE-LIGHT BROWN POORLY-GRADED SAND (SP), medium dense, moist, coralline.
						Becomes light gray-brown, weakly cemented, fine- to medium-grained.
			29	10		Becomes light brown-white, medium-grained.
					▽	Water level at 10:20, 5/30/96.
			11	15		WHITE-LIGHT GRAY SILTY SAND (SM), medium dense, saturated, coralline.
*Blow counts converted to approximate SPT values.			18	20		Some coralline gravel.
**Elevation (datum unknown) estimated from undated, preliminary grading and drainage plan provided by Alvin Zane and Associates, Inc.			13	25		
			20	30		Fine-grained.
			23	35		Some coralline gravel.
-200 = 20%	31.7		3	40		Very loose.
			30	45		Becomes gray, medium dense to dense, fine-grained, with coralline gravel.
			50/6.5"	50		WHITE AND GRAY SILTY GRAVEL WITH SAND (GM), very dense, saturated, coralline, with silt seams, some shells (weathered coralline limestone).
SA (-200 = 13%)			112/11"	55		End of boring at 55.9 feet.
				60		

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring B-3
P-297T AQM Facility
PMRF, Kauai, Hawaii

(Sheet 1 of 1)

FIGURE 4

DRAWN	JOB NUMBER	APPROVED	FILE	DATE	REVISED DATE
kkh	34389.1	DRAFT	AQM	6/96	

UNIFIED SOIL CLASSIFICATION – (ASTM D2487-85)

MAJOR DIVISIONS					GROUP NAMES
COARSE-GRAINED SOILS More than 50% retained on the No. 200 sieve	GRAVELS More than 50% of coarse fraction retained on No. 4 sieve	Clean gravels less than 5% fines	GW		WELL-GRADED GRAVEL, WELL-GRADED GRAVEL WITH SAND
			GP		POORLY-GRADED GRAVEL, POORLY-GRADED GRAVEL WITH SAND
		Gravels with more than 12% fines	GM		SILTY GRAVEL, SILTY GRAVEL WITH SAND
			GC		CLAYEY GRAVEL, CLAYEY GRAVEL WITH SAND
	SANDS 50% or more of coarse fraction passes No. 4 sieve	Clean sand less than 5% fines	SW		WELL-GRADED SAND, WELL-GRADED SAND WITH GRAVEL
			SP		POORLY-GRADED SAND, POORLY-GRADED SAND WITH GRAVEL
		Sands with more than 12% fines	SM		SILTY SAND, SILTY SAND WITH GRAVEL
			SC		CLAYEY SAND, CLAYEY SAND WITH GRAVEL
FINE-GRAINED SOILS 50% or more passes the No. 200 sieve	SILTS AND CLAYS Liquid limit less than 50%		ML		SILT, SILT WITH SAND OR GRAVEL, SANDY OR GRAVELLY SILT
			CL		LEAN CLAY, LEAN CLAY WITH SAND OR GRAVEL, SANDY OR GRAVELLY LEAN CLAY
			OL		ORGANIC SILT OR CLAY, ORGANIC SILT OR CLAY WITH SAND OR GRAVEL, SANDY OR GRAVELLY ORGANIC SILT OR CLAY
	SILTS AND CLAYS Liquid limit 50% or more		MH		ELASTIC SILT, ELASTIC SILT WITH SAND OR GRAVEL, SANDY OR GRAVELLY ELASTIC SILT
			CH		FAT CLAY, FAT CLAY WITH SAND OR GRAVEL, SANDY OR GRAVELLY FAT CLAY
			OH		ORGANIC SILT OR CLAY, ORGANIC SILT OR CLAY WITH SAND OR GRAVEL, SANDY OR GRAVELLY ORGANIC SILT OR CLAY
HIGHLY ORGANIC SOILS			Pt		PEAT

Refer to ASTM for borderline classifications GW-GM, GP-GM, SW-SM, and SP-SM.

KEY TO TEST DATA

Perm	—	Permeability
Consol	—	Consolidation
LL	—	Liquid Limit (%)
PI	—	Plasticity Index (%)
G_s	—	Specific Gravity
MA	—	Particle Size Analysis
-200	—	Percent Passing No. 200 Sieve
■	—	"Undisturbed" Sample
⊠	—	Bulk or Classification Sample
▥	—	Lost Sample
▯	—	PQ Core

Shear Strength (psf)	Confining Pressure	
TxUU	3200	(2600) — Unconsolidated – Undrained Triaxial Shear
TxCU	3200	(2600) — Consolidated – Undrained Triaxial Shear
TxCD	3200	(2600) — Consolidated – Drained Triaxial Shear
SSCU	3200	(2600) — Consolidated – Undrained Simple Shear
SSCD	3200	(2600) — Consolidated – Drained Simple Shear
DSCD	2700	(2000) — Consolidated – Drained Direct Shear
UC	470	— Unconfined Compression
LVS	700	— Laboratory Vane Shear
FV	300	— Field Vane Shear
TV	800	— Torvane Shear
PP	400	— Pocket Penetrometer (actual reading divided by 2)

Harding Lawson Associates
Engineering and Environmental Services

Soil Classification Chart and Key to Test Data
P-297T AQM Facility
PMRF, Kauai, Hawaii

FIGURE 5

DRAWN	JOB NUMBER	APPROVED	FILE	DATE	REVISED DATE
jrl	34389.1	DRAFT	F-5 1.0 19960710.1559	7/95	

5750.3P
Ser 233/ 3835

Mr. Michael Wilson
State Historic Preservation Officer
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, HI 96822

Dear Mr. Wilson:

The Navy plans to construct a target missile assembly and work-up facility to support AQM-37 operations at Pacific Missile Range Facility, Barking Sands, Kauai. The proposed work includes utility line trench excavations. Enclosure (1) is the Scope of Work (SOW) for archaeological monitoring for this project.

We believe in accordance with the National Historic Preservation Act of 1966, as amended, and 36 CFR Part 800.9(c), that the undertaking will have a "no adverse effect" on historic properties because the Navy will mitigate potential adverse effects by conducting archaeological monitoring.

We request your concurrence with the "no adverse effect" determination and would greatly appreciate your review of the SOW. The SOW is concurrently being sent to appropriate Native Hawaiian organizations for review. We are requesting that their comments be submitted to us within 30 days of receipt of the SOW.

Should you have any questions regarding this matter, the point of contact is Ms. Elizabeth Gordon, Archaeologist (Code 233EG) at 471-9338 or by facsimile transmission at 474-4890.

Sincerely,

GARY S. KASAOKA
Director
Environmental Planning Division
Acting

Encl:
(1) SOW

Blind copy to:
231GG

SCOPE OF WORK FOR ARCHAEOLOGICAL MONITORING OF TRENCH EXCAVATIONS ASSOCIATED WITH CONSTRUCTION OF THE AQM-37 FACILITY PACIFIC MISSILE RANGE FACILITY, BARKING SANDS, KAUAI, HAWAII

5 September 1996
PACNAVFACENGCOM

1. Introduction

1.1 In conformance with the base statement of historic preservation services, this Scope of Work (SOW) is effectuated to direct the Contractor to conduct archaeological monitoring of trench excavations associated with the construction of the 270 square meter target missile assembly and work-up facility to support AQM-37 operations at Pacific Missile Range Facility (PACMISRANFAC), Barking Sands, Kauai (attachments 1 and 2).

1.2 In compliance with the National Historic Preservation Act of 1966 (NHPA), as amended, and NHPA implementing regulations, 36 CFR Part 800, the archaeological monitoring will mitigate any adverse effect trench excavations may have on historic properties.

2. Background

2.1 Based on previous archaeological research, no known archaeological sites are located in the immediate project vicinity. The nearest site is over 183 meters southwest of the project area along the coast, where bones have been identified (Site 50-30-05-1831; cf. Drolet et al. 1995).

2.2 On 20 June 1996, an archaeological reconnaissance survey was conducted by Pacific Division, Naval Facilities Engineering Command of the project area (attachment 3). No archaeological sites were encountered during the reconnaissance survey, and there was evidence that the project area had been previously disturbed by prior livestock grazing and land leveling associated with military construction.

2.3 A geotechnical investigation conducted by Harding Lawson Associates, indicated undisturbed sand below the surface of the project area. Based on the information from this investigation, there is potential for intact buried cultural deposits within the project area. Archaeological research has yet to be conducted to confirm the presence or absence of such subsurface cultural deposits.

3. Specific Tasks

3.1 The Contractor will conduct archaeological monitoring of all trench excavations. The purpose of the archaeological monitoring is twofold: 1) to gather information about the presence/absence of subsurface cultural deposits within the project area; and 2) if subsurface cultural deposits are encountered, to appropriately address them.

3.2 Archaeological monitoring consists of identification, evaluation, collection, recording, analysis and reporting of cultural remains during ground disturbing activities.

3.3 A total of 1 day is set aside for Emergency Data Recovery. Emergency Data Recovery will consist of collection, recording, analysis, and reporting of archaeological materials affected by ground disturbing activities.

ENCLOSURE(1)

3.4 The following types and numbers of analyses can be used during Emergency Data Recovery:

Carbonized Wood Species Identification	3 samples
Radiocarbon Extended Counting Time or Bulk Analysis	1 sample
Radiocarbon Accelerator Analysis	1 sample
General Macrobotanical Identification	3 samples
Faunal Analyst	4 hours
Osteologist	8 hours

4. Stipulations

4.1 The Contractor will attend the Preconstruction Conference to confer with those in charge of the construction, to ensure that all supervisors and members of the construction crew are aware of the purpose and procedures of the archaeological monitoring.

4.2 In the event human skeletal remains are encountered during the course archaeological monitoring, work must cease at that location and the Resident Officer in Charge of Construction and PACNAVFACENGCOM Archaeologists (ph. (808) 471-9338) shall be immediately notified. Subsequent procedure will be determined by the PACNAVFACENGCOM Archaeologists and Contracting Officer in compliance with the Native American Graves Protection and Repatriation Act of 1966 (NAGPRA), and consultation with Native Hawaiian organizations.

4.3 The Contracting Officer must approve all persons assigned to perform archaeological services under this SOW.

4.4 The Contractor shall ensure that all persons involved in the project read this SOW.

4.5 Should field conditions or other factors require a deviation from procedures discussed in this SOW, the Contractor must discuss such deviation with the Contracting Officer.

4.6 The Contracting Officer shall be kept informed of the progress and problems encountered by the Contractor for this SOW via telephone or memorandum.

4.7 The Contractor's Quality Control efforts shall ensure that the Draft and Final Reports are complete documents which have been reviewed for academic excellence, professional and copy quality, and technical accuracy. Reports not displaying such efforts will not be accepted.

4.8 The information developed, gathered and assembled in fulfillment of the requirements of this SOW and the base contract, shall not be released by the Contractor, his/her associates, or his/her subcontractors or their associates without prior approval from the Contracting Officer.

4.9 The distribution of any material, data, or reports collected and prepared in the execution of this SOW and the base contract is limited to U.S. Government agencies, and Contractors under contract to the U.S. Government. Other requests for any material, data, or reports shall be referred to the Commander, Naval Base, Pearl Harbor.

5. Submittal

5.1 The deliverables in terms of scheduling:

(1) The Contractor shall submit a Field Summary Report to the Contracting Officer within seven (7) calendar days of completion of fieldwork.

(2) The Draft Report shall be submitted to the Contracting Officer within 60 calendar days of completion of fieldwork. The Contractor shall submit one (1) unbound original and three (3) bound copies of the Draft Report.

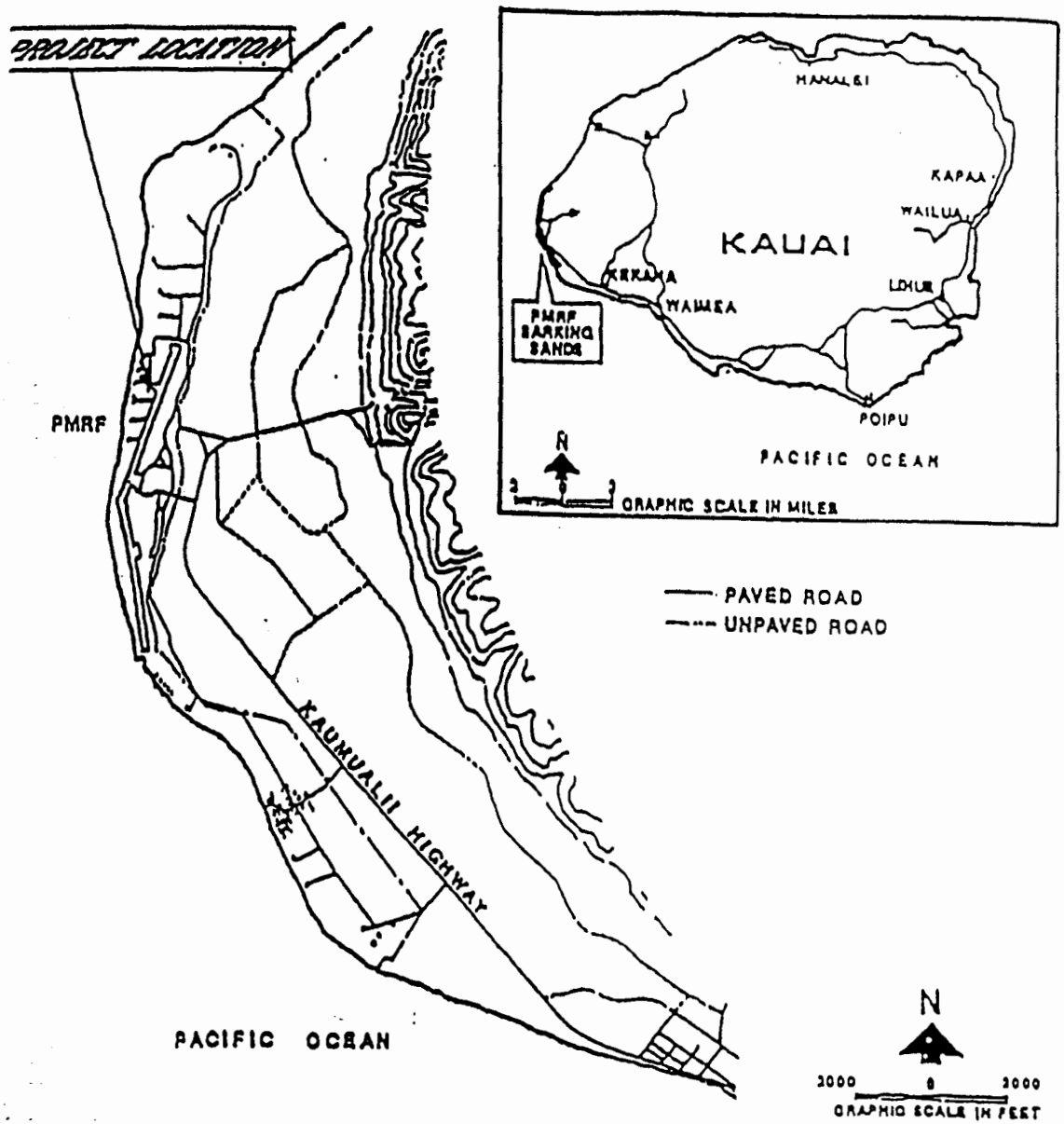
(3) The Final Report shall be submitted to the Contracting Officer within 30 calendar days after receipt of the Government review comments. The Contractor shall submit one (1) camera-ready text and graphics copy and six (6) bound copies of the Final Report. The Final Report must incorporate the Government review comments for the Draft Report to be considered acceptable.

6. Authority

6.1 Work conducted under this SOW shall be in compliance with the Antiquities Act of 1906, Archaeological Resources Protection Act of 1979 (ARPA), ARPA implementing regulations (32 CFR Part 229), NAGPRA, and NAGPRA implementing regulations (43 CFR Part 10). Accordingly, this SOW is considered to be the equivalent of a federal permit as described in these statutes and regulations.

7. References Cited

7.1 Drolet, Robert, Ann K. Yoklavich, and James Landrum
1995 "Prefinal Report: Cultural Resources Management Overview Survey, Pacific Missile Range Facility, Hawaiian Area, Kaua'i, Hawai'i." Prepared for Department of Navy, Pacific Division Naval Facilities Engineering Command, Pearl Harbor. Honolulu: Ogden Environmental and Energy Services Company, Inc.



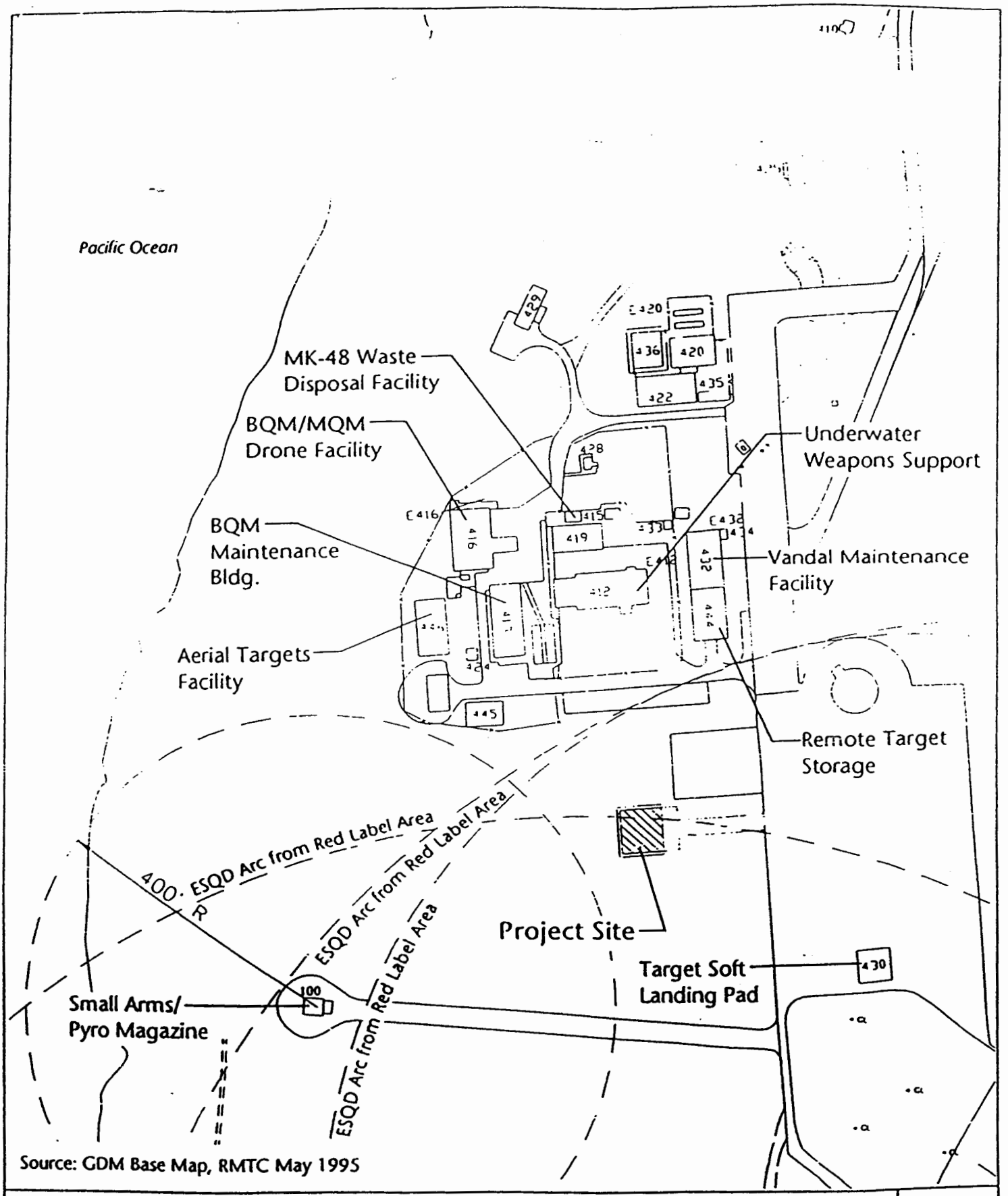
FY97 BRAC Project 2071
AQM-37 FACILITIES
PMRF Barking Sands Kauai HI

Vicinity Map

VICINITY MAP

Attachment 1

Figure 1



Project Vicinity

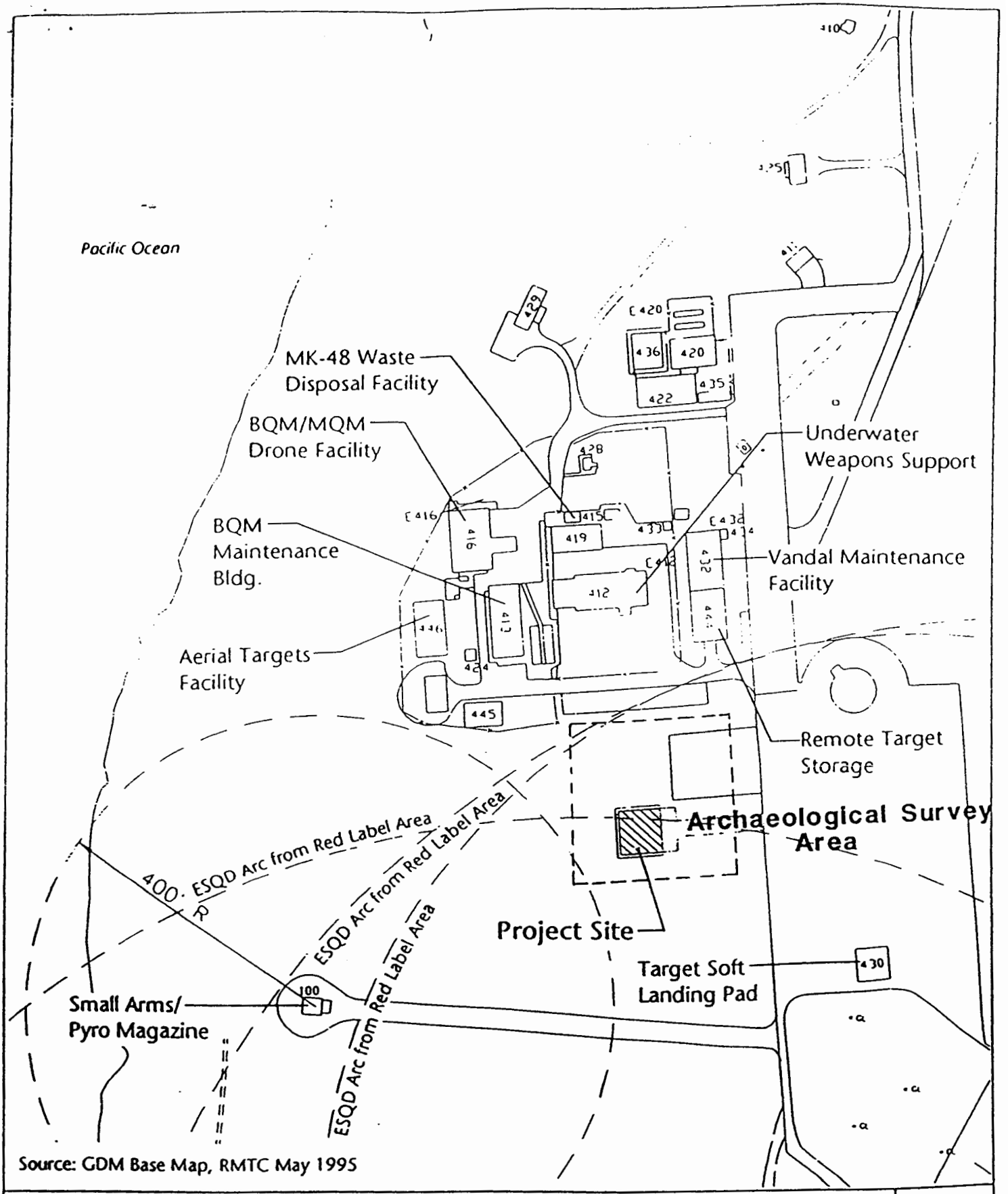
AQM-37 Facility

Pacific Missile Range Facility, Barking Sands, Kauai, Hawaii

0 Feet 180

0 Meters 55

Figure .2



Source: GDM Base Map, RMTC May 1995

Project Vicinity

AQM-37 Facility

Pacific Missile Range Facility, Barking Sands, Kauai, Hawaii

0 Feet 180

0 Meters 55

Figure 4

Attachment 3

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

MICHAEL D. WILSON, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES

GILBERT COLOMA-AGARAN

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION DIVISION
LAND DIVISION
STATE PARKS
WATER AND LAND DEVELOPMENT

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 6TH FLOOR
HONOLULU, HAWAII 96813

REF:HP-AMK

JAN - 8 1997

Mr. Melvin Kaku, Director
Environmental Planning Division
Department of the Navy/Pacific Division
Naval Facilities Engineering Command
Pearl Harbor, Hawaii 96869-7300

LOG NO: 5314
DOC NO: 9612NM07

Dear Mr. Kaku:

SUBJECT: **National Historic Preservation Act Review,**
Section 106 Compliance - Revised Archaeological Monitoring Scope of Work (SOW) for Target Missile Assembly and Workup Facility
at Pacific Missile Range Facility (PMRF)
Barking Sands, Waimea, Kauai

Thank you for submitting the revised SOW. The revised SOW now addresses our comments regarding research questions, procedures for inadvertent burial discoveries and the repository for cultural material collected during this work. We concur with your determination on the effect of this project, since the monitoring plan now ensures that this project has "no adverse effect" on significant historic sites.

If you have any questions, please call Nancy McMahon 742-7033.

Aloha,

Gilbert S. Coloma-Agaran

MICHAEL D. WILSON, Chairperson and
State Historic Preservation Officer

c. Advisory Council, Western Region

5750.3P
Ser 2337 278
27 JAN 1997

Ms. Cornelia Keatinge
Historic Preservation Specialist
Office of Planning and Review
Advisory Council on Historic Preservation
12136 West Bayaud Avenue, Suite 330
Lakewood, CO 80226

Dear Ms. Keatinge:

The Navy plans to construct a target missile assembly and work-up facility to support AQM-37 operations at Pacific Missile Range Facility, Barking Sands, Kauai. The proposed work includes utility line trench excavations. Enclosure (1) is the Scope of Work (SOW) for archaeological monitoring for this project.

We believe in accordance with the National Historic Preservation Act of 1966, as amended, and 36 CFR Part 800.9(c), that the undertaking will have a "no adverse effect" on historic properties because the Navy will mitigate potential adverse effects by conducting archaeological monitoring.

The State Historic Preservation Officer (SHPO) has concurred with our "no adverse effect" determination in a January 8, 1997 letter (enclosure (2)). The SOW was also sent to appropriate Native Hawaiian organizations for review. We did not, however, receive any comments from them.

We request your comments concerning the SOW and would appreciate your review of the project. Should you have any questions regarding this matter, the point of contact is Ms. Elizabeth Gordon, Archaeologist at (808) 471-9338 or by facsimile transmission at (808) 474-5909.

Sincerely,

MELVIN N. KAKU
Director
Environmental Planning Division

Encl:
(1) SOW
(2) SHPO ltr of January 8, 1997

Blind copy to:
231GG

PACNAVFACENGCOM letter to ACHP was sent on 27 January 1997.
No response was received within the 30-day comment period.