DEPARTMENT OF THE NAVY
PACIFIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
(MAKALAPA. HI)
PEARL HARBOR, HAWAII 96860-7300

11010
Ser 23/5536
27 Aug 1992

From: Commander, Pacific Division, Naval Facilities Engineering Command
To: Commanding Officer, Pacific Missile Range Facility

Subj: FORWARDING OF ERRATA SHEETS FOR ENVIRONMENTAL ASSESSMENT FOR THE CONSTRUCTION OF A HAWAII AIR NATIONAL GUARD (HIANG) 154 TACTICAL CONTROL SQUADRON FORWARD AIR CONTROL POST (TCS FACP) AT PACIFIC MISSILE RANGE FACILITY (PACMISRANFAC), BARKING SANDS, **KAUAI**

Ref: (a) PACNAVFACENGCOM ltr **11010** Ser 23/4366 of 7 Jul 92

Encl: (1) Errata Sheets (3 copies)

1. Reference **(a)** forwarded the subject EA for final evaluation and review. During the review, several revisions were recommended and the respective narrative descriptions have been revised.

2. Request page for page replacements with enclosure (1). Regret any inconvenience as a result of this administrative action.

3. Point of contact is the undersigned at DSN (315) 471-9338, commercial (808) 471-9338 or by facsimile transmission at (808) 474-4890.

MELVIN N. KAKU
By direction

copy to:
CNO (N44E(OP-44E)) (4 copies)
COMNAVFACENGCOM (Code 20YTP)
CINCPACFLT (Code 04E)
ANGRC (CEVP) (2 copies)
HIANG 154 (TCS/CC) (3 copies)
HIANG (CC) (5 copies)
State of Hawaii
Department of Defense
Office of Adjutant General
3949 Diamond Head Road
Honolulu, HI 96816-4455

ENVIRONMENTAL ASSESSMENT FOR THE CONSTRUCTION OF A HAWAII AIR NATIONAL GUARD (HIANG) 154 TACTICAL CONTROL SQUADRON FORWARD AIR CONTROL POST (TCS FACP) AT THE PACIFIC MISSILE RANGE FACILITY, BARKING SANDS. KAUAI, HAWAII

Lead Agency: Pacific Missile Range Facility, Barking Sands, Kauai, Hawaii

Coordinating Agency: Pacific Division, Naval Facilities Engineering Command
Pearl Harbor, 96860-7300

Prepared by: Belt Collins & Associates
680 Ala Moana Boulevard, Suite 200
Honolulu. Hawaii 96813

Contact: Melvin Kaku, Planner In Charge, Code 23
Environmental Planning Division
Pacific Division, Naval Facilities Engineering Command
Pearl Harbor, Hawaii 96860-730
Telephone (808) 471-9338

Abstract: Hawaii *Air* National Guard (HIANG) proposes to build a training, maintenance, and storage facility for its Forward Air Control Post (FACP) unit on approximately six acres at the Pacific Missile Range Facility (PACMISRANFAC), Barking Sands, Kauai, Hawaii. The purpose of the facilities is to support operations of the 154 Tactical Control Squadron and vehicle maintenance and storage elements of the 298th **Air** Traffic Control Flight. The site would be cleared and leveled for construction of a reserve forces administration, communication, and electronics training building, a combined vehicle maintenance and aerospace ground equipment shop, a base supply and equipment warehouse, a covered storage building, a 15-foot-high mound upon which to place an AN/TPS-75 Radar and AN/TSC-94A satellite ground station, ancillary parking, access roads, infrastructure, security fencing, security lighting, and landscaping.

The proposed project would occur on land licensed to the Hawaii Air National Guard. The project will house **29** full-time technicians during the week and 105 during monthly weekend exercises. Approximately $8.5 million has been proposed to be included **in** the FY 1993 Military Construction Project budget for the project.

The site was investigated for potential impacts to flora, fauna, archaeology, adjacent land uses, and infrastructure. No significant adverse environmental impacts were identified from the project. Short-term construction related impacts will be mitigated through the use of accepted construction techniques **as** outlined by County of Kauai and State of Hawaii regulations. Operational and activity impacts will be mitigated through radar transmission sector cut-outs, the use of landscape barriers, establishment and marking of radiation hazard zones, and through coordination between HIANG and PACMISRANFAC concerning air space management.

The project has been determined by the appropriate State of Hawaii and Federal agencies to be consistent with Stare of Hawaii Coastal Zone Management policies and to have no effect upon archaeological resources or the candidare endangered plant *Ophioglossum concinnum.*

CHAPTER ONE
SUMMARY AND INTRODUCTION

1.1 IDENTIFICATION OF DOCUMENT

This document is an Environmental Assessment for an administrative action.

1.2 TITLE OF ACTION

Construction of a Hawaii Air National Guard (HIANG) 154 Tactical Control Squadron Forward Air Control Post (TCS FACP) at the Pacific Missile Range Facility (PACMISRANFAC), Barking Sands, Kauai, Hawaii.

1.3 BRIEF DESCRIPTION OF ACTION

Hawaii Air National Guard proposes to build a training and maintenance facility for its Forward Air Control Post (FACP) on approximately six acres at PACMISRANFAC, Barking Sands, Kauai, Hawaii. The FACP facility would be to support operations of the 154 Tactical Control Squadron and also vehicle maintenance and aerospace ground equipment elements of the 298th ATCF. The site would be cleared and leveled for construction of the following facilities:

- a reserve forces administration, communication, and electronics training building (10,000 SF)
- a combined vehicle maintenance and aerospace ground equipment shop (11,000 SF)
- a base supply and equipment warehouse (5,000 SF)
- a covered storage building (4,000 SF)
- a 15-foot-high mound upon which to place the AN/TPS-75 Mobile Radar and the AN/TSC-94A satellite earth station
- necessary parking, access roads, infrastructure, security fencing, security lighting, and landscaping

In addition, a variety of microwave transmitters and radar units will be operated from the site, including air surveillance radar and surface microwave links.

The facilities would be utilized for training of Hawaii Air National Guard personnel and for the storage and maintenance of equipment used in both training and mobilization operations. There will also be a 200-300 square-foot kitchen and small-scale bathroom/shower facilities for both women and men to utilize during training exercises.

1.4 SUMMARY OF ADVERSE IMPACTS AND MITIGATION ACTIONS

- Approximately 50 to 60 feet of landscape buffers utilizing the present dense vegetation shall be maintained to reduce disturbances to fauna in the adjacent wildlife refuge. This buffer shall be established between the existing drainage ditch and the 30-foot security clear zone along the perimeter of the HIANG facility to also avoid impacts to the ditch. Light shields will be utilized on night security lighting to avoid disorientation of Shearwaters.

- To mitigate potential wetlands wildlife impacts, the facility will be designed to direct runoff from the proposed HIANG site to the southern and western edge of the project site adjacent to the road. Here, the runoff would be expected to percolate quickly into the ground due to the high porosity of the soil. In addition, the distance of the site from the drainage ditch and the wildlife refuge would prevent infiltration into groundwater sources for these two areas. Runoff from vehicle and equipment maintenance areas shall pass through EPA approved oil-water separators to prevent potential degradation to the area groundwater.

- One candidate endangered plant species, the ***Ophioglossum*** *concinnum*, has known habitat near the site and was searched for but not found. The Pacific Division Naval Facilities Engineering Command initiated an informal Section 7 consultation with the **U.S.** Fish and Wildlife **(USFWS)** in December 1991 regarding all current biological information on the Ophioglossum as it relates to the project site. The **USFWS** concluded that the HIANG project will not affect the plant. However, under standard construction procedures for PACMISRANFAC, in the event the Ophioglossum is discovered, an informal Section 7 consultation with the **USFWS** will be necessary in order to mitigate potential impacts to the plant colony. Mitigative measures may include transplanting, project modification, or provisions for an "incidental take" permit.

- **A** monitoring program, as recommended by the State Historic Preservation Office, will be incorporated during construction activities that will cause sub-surface disturbance. This will involve the presence on-site of an archaeologist during such ground disturbing activities as grading and foundation excavation. Should any cultural or archaeological remains be discovered, all work will stop in the immediate vicinity of the find, and no further disturbance will take place until the situation has been assessed. Consultation with all pertinent parties will occur to determine the appropriate form of mitigation. A Section 106 finding of "no effect" has been granted from the State Historic Preservation Office, Department of Land and Natural Resources.

- Wastewater disposal design will include the construction of a pump station and approximately 3,000 feet of pipe. Following the construction of 34 units of proposed housing, wastewater levels at the oxidation and leaching ponds will be close to capacity during HIANG training exercises. At that time, HIANG will need to assess the holding potential of the ponds before training exercises. Should there not be sufficient excess capacity, arrangements should be made for the setting up of portable toilets within the HIANG compound. No sewage capacity or flow problems are anticipated until such time as the entire **34** units of proposed housing are completed. Planning should commence to increase the capacity of the oxidation and leaching ponds before additional future projects are approved in the area.

- The AN/TPS-75 radar antenna will be installed on a mound at least 15 feet high to ensure that the main beam impacts are above potential ground level conflict points. The antenna will not operate at an angle less than 0.5 degrees to the horizon.

- The AN/TSC-94A earth station shall also be installed on this mound so that the lower edge of the antenna is at least 13 feet AGL to minimize any impacts from radiation on personnel.

- Following testing and measuring of the radar equipment, written operation procedures outlining hazard areas will be distributed to personnel. In addition, flashing lights near the earth station will warn personnel when radars are transmitting. Radiation hazard

CHAPTER TWO
PURPOSE AND NEED

2.1 BACKGROUND

2.1.1 Hawaii Air National Guard (HIANG)

The Hawaii Air National Guard (HIANG) is made up of over 2,000 officers and airmen located throughout the Hawaiian Island chain. The primary mission of HIANG is to provide trained units with qualified personnel suitable for active duty in the Air Force in time of war or national emergency, and at such other times as the national security may require. The combined efforts of the various units are to be able to provide fighter forces for air defense and air superiority in accordance with applicable directives of the 6010 Aerospace Defense Group and the Pacific Air Force.

HIANG operations on the Island of Kauai are carried out by the 298 Air Traffic Control Flight (ATCF), the 150 Aircraft Control and Warning Squadron (ACWS), and the 154 Tactical Control Squadron (TCS). The 154 TCS is made up of 90 military personnel, which includes 25 full-time air technicians. Their mission is to provide a forward extension of the tactical air control system by providing control of offensive and defensive air operations, early warning, and gap filler radar capability within their assigned area. As such, the 154th TCS Forward Air Control Post can perform one or a combination of the following functions:

- control counter-air and special missions
- monitor interdiction and reconnaissance missions
- vector close air support and refueling mission rendezvous
- direct and disseminate tactical warning information
- coordinate control and surveillance activities with the Control Reporting Post
- serve in a limited manual backup role for the Control Reporting Center
- provide airspace management service if directed

In addition to the 154 TCS, the mission of the 68-member 150 ACWS at Kokee Air Force Station is to provide operations and maintenance of the Air Defense Direction Center and associated sensor sites. The 150 ACWS collects, displays, and evaluates information on air activities within its surveillance capabilities and directs fighter interceptor aircraft engaged in intercept missions.

The 298 ATCF, also located at PACMISRANFAC, Barking Sands, is manned by 74 personnel and provides air traffic control services for the U.S. Air Force Wartime and Contingency Requirements. Approximately four full-time technicians would be relocated from the existing 298 ATCF facility to the proposed facilities. This number would increase to 15 during drills.

2.1.2 Pacific Missile Range Facility (PACMISRANFAC)

Pacific Missile Range Facility (PACMISRANFAC) was established in 1958 as a mid-Pacific detachment of the Pacific Missile Test Center, Point Mugu, California, for the purpose of supporting missile programs in the Hawaiian Area. The facility provides major range services for training; tactics development, testing, and evaluation of air, surface, and sub-surface weapons systems by Pacific Fleet users, other Department of Defense agencies, and foreign military forces.

PACMISRANFAC consists of several separate areas located on the Islands of Kauai, Niihau, Oahu, and the Midway Islands. The primary range support facilities are located on the Island of Kauai at Barking Sands. Barking Sands occupies a narrow strip of land on the west coast of Kauai. Several miles to the north of Barking Sands is a secondary facility located at Makaha Ridge. East of Barking Sands is the magazine area at the base of Kamokala Ridge. The facilities at Port Allen, approximately 16 miles southeast of Barking Sands, include a warehouse and a surface craft support area. The satellite stations include a frequency monitoring facility at Mauna Kapu on the Island of Oahu and a Missile Impact Location Station on the Midway Islands. Radar facilities also exist at Niihau and at Kokee Tracking Station, a few miles east of Makaha Ridge.

PACMISRANFAC, Barking Sands, is a long narrow facility, consisting of approximately 2,046 acres of land area, bordered on the west by the Pacific Ocean, on the east by agricultural lands, on the south by a county sanitary landfill, and on the north by state parkland. Operational control, safety, display, and data recording facilities are located at this site. Other facilities include two tracking radars, one surveillance radar, H.F. transmitters and receivers, a launch complex for targets and missiles, a calibration laboratory, a Post Operational Data Analysis and Display Facility, and a 6,000-foot airfield runway with associated support facilities. Housing quarters, personnel and community support facilities are situated in the southern end of Barking Sands near Kokole Point.

2.2 PURPOSE AND NEED

The current HIANG operations at the Kekaha Armory have been constrained due to the limited space available at the structure. Additional vehicles and radar equipment will require more space than is eurrently available. The site also lacks maintenance and storage capacity. Radar and electronic training must be done off-site due to the constraints imposed by the surrounding land uses, which include commercial and residential structures, and an elementary school immediately across the street.

With the transference of personnel from the 150 ACWS to the newly formed 154 TCS , and the addition of new radar equipment, additional space for training, maintenance, and storage is needed to improve the operational effectiveness and efficiency required of the Hawaii Air National Guard operations on Kauai. The project also offers the opportunity to consolidate similar HIANG activities at PACMISRANFAC, specifically vehicle maintenance and aerospace ground equipment, freeing space in current 298 ATCF facilities for other uses. The purpose of the proposed project is to address the operational deficiencies experienced by continued use of the Kekaha Armory site and the present 298th facilities, thus improving the effectiveness and efficiency of the overall HIANG operations. A by-product of improved effectiveness and efficiency would be the improved morale of the HIANG members and improved recruiting potential on Kauai.

Criteria for a fully operational FACP and TCS on Kauai are:

- adequate land to consolidate training, maintenance, and storage facilities
- access and proximity to field training opportunities
- access to adequately-sized deployment points to meet time critical mobilization criteria

These criteria are not met at the current Kekaha Armory site.

CHAPTER 3
ALTERNATIVES

3.1 INTRODUCTION

Detailed descriptions of the proposed action and reasonable alternatives are presented below. Some of the alternatives that were considered include no-action, siting the facility at another location, and transfering some existing operations to Oahu in order to use existing HIANG space at PACMISRANFAC, Barking Sands.

When evaluating the various alternatives, the criteria listed in Section 2.2 were utilized. Some of the specific elements of those criteria included:

- the availability of adequately sized parcels
- the cost and ease of land acquisition
- the topography of the site
- the ability to provide security
- the availability of adequate existing infrastructure to the site
- the ability to provide adequate radar horizons
- the compatibility of surrounding land uses with radar and training operations
- the proximity and ease of conducting field training and joint training with the Air Force from the site
- the proximity of an adequately sized and equipped airstrip to meet time sensitive mobilization standards

3.2 DESCRIPTION OF THE PROPOSED ACTION

Hawaii Air National Guard proposes to build a training and maintenance facility for its Forward Air Control Post (FACP) on approximately six acres at PACMISRANFAC, Barking Sands, Kauai, Hawaii. The FACP facility would be to support operations of the 154 Tactical Control Squadron and vehicle maintenance and aerospace ground equipment elements of the 298th ATCF. The site would be cleared for construction of the following facilities:

- a reserve forces administration, communication, and electronics training building (10,000 SF)
- a combined vehicle maintenance and aerospace ground equipment shop (11,000 SF)
- a base supply and equipment warehouse (5,000 SF)
- a covered storage building (4,000 SF)
- a 15-foot-high mound upon which to place the AN/TPS-75 Radar and AN/TSC-94A satellite earth station
- necessary parking, access roads, infrastructure, security fencing, lighting, and landscaping

In addition, a variety of microwave transmitters and radar units will be operated from the site, including air surveillance radar and surface microwave links. There will also be a 200-300 square-foot kitchen and small-scale bathroodshower facilities for both women and men to utilize during training exercises,

The proposed project would occur on land licensed to the Hawaii Air National Guard. Agreements between the U.S. Navy and the Air National Guard would be required to allow for the the use of the site. The Forward Air Control Post is a forward deployed tactical mobile radar unit of the Tactical Air Control System (TACS) which would provide training services and tactical mobilization support for approximately 25 full-time technicians and a 90-person unit from the 154th and 4 full-time technicians and 11 drill status personnel. Approximately $8.5 million has been proposed to be included in the FY 1993 Military Construction Project budget for the project. Figures 1, 2, and 3 show the location and conceptual site plan for the proposed project. Figures 4 and 5 show the elements and site layout of the AN/TPS-75 radar units.

3.3 DESCRIPTION OF ALTERNATIVES

3.3.1 Locate the 298 Air Traffic Control Flight (ATCF) to NAS Barbers Point, Oahu

This alternative would consist of moving the 298 ATCF to NAS Barbers Point, Oahu and relocating the Forward Air Control Post (FACP) from Kekaha Armory to the existing 298 ATCF facility at PACMISRANFAC, Barking Sands, Kauai.

The relocation of the 298 ATCF was rejected as it would require several years to bring the unit back up to its current mission-ready status. The Hawaii Air National Guard's 298 ATCF **is** made up of volunteer reservists with homes, jobs, and families on Kauai. **As** such, they would not be willing to relocate should their unit be moved to a neighbor island. Recruiting and training new personnel to replace the current membership would take time and lower unit effectiveness. In addition, adequate facilities at NAS Barbers Point are not available to handle an additional ATCF unit and the HIANG has no air control tower or radar installed on Oahu. This means they would need to train in facilities belonging to the Navy, Army, and Marines. These facilities give training priority to their own controllers, which would severely limit the time available to the HIANG.

The location of the FACP to the existing 298 ATCF facility at PACMISRANFAC was also not considered to be a viable alternative. The available land area at the existing facility is only 2.4 acres, which was not considered sufficient to provide adequate storage and maintenance facilities. In addition, the location of the radar unit in the northern section of PACMISRANFAC would not have provided an adequate radar horizon and would have severely impacted existing electronic transmitters. Also, noise and radiation emissions would have caused an adverse environmental impact upon adjacent buildings and personnel.

3.3.2 Locate the FACP at Kekaha Armory

This alternative would establish the Forward Air Control Post at the existing HIANG facilities located at Kekaha Armory. The Armory is an existing 10,000 square foot facility belonging to the State of Hawaii Department of Defense on approximately 1.5 acres of land. It is located approximately seven minutes from PACMISRANFAC, Barking Sands. However, the size of the Armory site does not allow for the development of adequate storage and maintenance facilities. In order to achieve the needed space, additional land would need to be acquired from surrounding landowners. Also, surrounding land uses, most notably an elementary school, prevent the operation of the mobile radar equipment and support trailers at Kekaha due to the potential radiation hazards and the many obstructions to the radar beam. Therefore, these support facilities would have to be located elsewhere. Further limitations to this site include the necessity to upgrade infrastructure and the significant noise impacts on the adjacent school from use of the generators.

Locating radar training, maintenance, and aerospace ground equipment storage facilities separately from the main HIANG operations fails to meet siting criteria, resulting in a lowering of the

CHAPTER FIVE
ENVIRONMENTAL IMPACTS

5.1 CONSTRUCTION IMPACTS

Construction of the Hawaii Air National Guard (HIANG) facility will involve the removal of vegetation, grading, and building of a training complex which would include a communications-electronics facility, a vehicle maintenance and storage facility, and the construction of a radar pad atop a 15-foot berm. Construction impacts would involve the creation of fugitive dust and noise. During construction of the proposed facilities, necessary mitigation measures will be employed to reduce the effects of noise and dust on adjacent facilities. Mufflers will be used on all heavy earthmoving equipment and the equipment will be operated only during normal working hours. Dust will be controlled by dust screens and watering of bare or exposed ground. Erosion and sedimentation controls will be employed as necessary. The closest potential receptors of construction related impacts include the drainage ditch along the north boundary of PACMISRANFAC, which is a minor wetlands habitat, and the base housing area, which is located approximately 3,400 feet to the south of the project site. Maintenance of a 50-foot vegetative buffer between the site's clear zone and the drainage ditch would remove potential construction impacts to the ditch. The proposed State Kawaiele Wildlife Sanctuary will still be under construction during the construction phase of the proposed HIANG project and would not be impacted.

5.2 CHANGES IN TOPOGRAPHY

Grading will alter the current topography of the site. Presently the site is relatively level with few depressions. Construction plans call for the area to be made essentially level with the addition of a 15-foot berm.

5.3 HYDROLOGY/DRAINAGE IMPACTS

Soil at the site is classified as Jaucus loamy fine sand, which is highly permeable. However, there are slight low areas on the site that appear to experience standing water following long and heavy rainfall. This is mainly due to soil saturation. Grading and leveling of the site would remove these natural low areas. If the resulting grading level were to remain too low, standing water would be expected to continue to seep from higher areas during periods of sustained heavy rainfall. This could be a problem on the facility site were the water to collect around foundations. However, this can be mitigated by grading the area to decrease the opportunities for standing water accumulation on the site.

Asphalt over the parking area and atop the berm would lead to an increase in runoff for the area. Any excessive runoff, especially from maintenance areas, could serve to degrade the wetlands potential of the nearby drainage ditch, which exists near the northern boundary of PACMISRANFAC near the proposed site, and the groundwater sources for the proposed Kawaiele Wildlife Sanctuary. Inasmuch as endangered fauna have been observed within the drainage ditch, precautions must be taken to direct runoff away from it, both during and after construction. Surface runoff from the proposed HIANG site will be directed to the southern and western edge of the project site adjacent to the road. Here, the runoff would be expected to percolate quickly into the ground due to the high porosity of the soil. In addition, the distance of the site from the drainage ditch and the wildlife refuge would prevent infiltration into groundwater sources for these two areas. Runoff from vehicle and equipment maintenance areas will pass

through **EPA** approved oil-water separators to prevent potential degradation to the area groundwater.

5.4 FLORA IMPACTS

None of the species found on the project site are listed as, or candidates for, endangered or threatened status. Given the abundant and generally exotic nature of the flora types present, and the relative small area of the site, removal of the vegetation would not constitute a significant adverse impact.

One species, the ***Ophioglossum concinnum,*** a small perennial fern which is a candidate endangered species, has been found near the site. This species is difficult to detect as it appears only after significant rainfall. During *dry* times it lies dormant underground. Recently, Ophioglossum has been found in many new areas on PACMISRANFAC, suggesting that the community is spreading. A thorough search was performed, and the habitat and plant communities associated with the Ophioglossum were not discovered on the proposed project site.

The Pacific Division Naval Facilities Engineering Command initiated an informal Section 7 consultation with the U.S. Fish and Wildlife **(USFWS)** in December **1991** regarding all current biological information on the Ophioglossum as it relates to the project site (see Appendix F). The USFWS concluded that the HIANG project will not affect the plant. However, under standard construction procedures for PACMISRANFAC, should the Ophioglossum be discovered, an informal Section 7 consultation with the USFWS would be necessary in order to mitigate potential impacts to the plant colony. Mitigative measures may include transplanting, project modification, or provisions for an "incidental take" permit.

5.5 FAIJNA IMPACTS

The native birds recorded during the field study were those species which would be expected for the habitat available. The irrigation ditch forming the northern border of PACMISRANFAC near the site provides some measure of a wetlands habitat for water birds, and the forthcoming State of Hawaii Kawaiele Wildlife Sanctuary, located directly north of the property and approximately 120 feet from the proposed site, will provide a stable habitat for water birds and shorebirds.

The change in habitat from a second growth coastal forest to a built environment will alter the local populations of fauna found at this site. Species which prefer cover (such as the deer) may move from the site, while those which are better adapted to an urban habitat (such as the Golden Plover) could increase in number. Activity associated with operation of the facility, especially during training periods, has the potential to be disturbing to nesting birds within the neighboring sanctuary. In addition, any security lighting used at the facility has the potential to impact Shearwaters, which are often drawn to lights and subsequently can become disoriented. Radiation emitted from the antennas will have no effect upon passing birds or small mammals due to their short length of exposure and the inefficient absorption characteristics of their bodies.

To mitigate potential impacts of the HIANG facility on the area's fauna a buffer of trees and brush between the development drainage ditch and the Kawaiele Wildlife Sanctuary will be established. This buffer will be dense enough (50 to 60 feet) to mask visual disturbances to the Sanctuary (see Figure 10). Also, any security lighting will be equipped with shields that will deflect the light towards the ground. Finally, a drainage scheme will be designed that will avoid runoff contamination of the adjacent drainage ditch and the groundwater utilized by the Kawaiele Wildlife Sanctuary. With the establishment of the 50-foot vegetative buffer between the ditch and the 30-foot security clear zone to be set up along the outside perimeter of the HIANG facility, drainage

that portion of demand associated with new uses for Kekaha Armory represents growth in energy use.

5.21.5 Irreversible and Irretrievable Resource Commitments

The proposed project would involve the irretrievable loss of fiscal resources, as well as labor and materials expended during construction.

5.21.6 Short-Term Use Versus Long-Term Productivity

The site of the proposed HIANG project is currently unused second growth coastal forest. As such, it is productive only in its capacity as a habitat for fauna found in the area and as open space. Construction of the project will cause the site to cease its ability to serve in these capacities.

Short-term gains would include the increased employment opportunities for construction labor associated with the project, and the resulting economic gain these increased opportunities would bring the surrounding communities. Short-term losses would include the construction disruption to the environment surrounding the site.

Long-term impacts would include greater operational effectiveness and efficiency for the 154 Tactical Control Squadron. Mobilization time would be greatly enhanced by the consolidation of resources in close proximity to the airfields at PACMISRANFAC.

5.21.7 Urban Quality, Historic and Cultural Resources, and the Design of the Built Environment

Construction of the proposed project would result in the clearing of all natural vegetation on the site and its replacement with maintenance and storage buildings, a training facility, and a 15-foot-high berm. No historic or cultural resources were identified during surveys of the site. The proposed HIANG facility is consistent with other operational and training facilities at PACMISRANFAC, Barking Sands in both design and function. The State Historic Preservation Office has determined that the project would have "no effect" upon historic and cultural resources.

5.21.8 Cumulative Impacts

The proposed construction of the HIANG facility causes no significant adverse impacts. The *Ophioglossum concinnurn* has not been found upon the site. However, should it be discovered, the USFWS would be consulted. No archaeological artifacts have been identified on the site; however, a monitoring program will be implemented during construction activities that cause sub-surface disturbance. This will involve the presence on-site of an archaeologist during such ground disturbing activities as grading and foundation excavation, Should any cultural or archaeological remains be discovered, all work will stop in the immediate vicinity of the find, and no further disturbance will take place until the situation has been assessed. Consultation with all pertinent parties will occur to determine the appropriate form of mitigation.

Adjacent to the site is a proposed State Kawaiele Wildlife Sanctuary. Urban runoff from parking lots, noise, and activity from the proposed facility have the potential to disturb wildlife which may use the area. Proper siting, including sufficient space for landscape buffers, will be included in the facility design to mitigate these areas of concern.

Cumulative wastewater effects from this project, as well as from the construction of 34 additional housing units in the area, will create near capacity conditions at the oxidation and leaching ponds. Capacity assessment prior to HIANG exercises should be conducted to determine if alternative

sewage disposal systems must be utilized. Planning should commence to increase the capacity of these ponds before additional future projects are approved.

The addition of more high and medium energy transmitters at PACMISRANFAC adds to an already complicated electromagnetic interference environment.

5.21.9 Means of Mitigating Potentially Adverse Effects

No potentially significant adverse effects as a result of this proposed project were identified. Construction impacts will be mitigated through the use of proper and approved construction techniques. Should the Ophioglossum be discovered it could be moved and replanted in another compatible area or an "incidental take" permit could be granted from the **US** Fish and Wildlife Service. Should historic or culturally important finds be identified during the construction phase, work will stop until such finds can be thoroughly examined and their significance determined. Specific mitigation measures recommended include:

- Approximately 50 to 60 feet of landscape buffers utilizing the present dense vegetation shall be maintained to reduce disturbances to fauna in the adjacent wildlife refuge. This buffer shall be established between the existing drainage ditch and the 30-foot security clear zone along the perimeter of the HIANG facility to also avoid impacts to the ditch. Light shields will be utilized on night security lighting to avoid disorientation of Shearwaters.

- To mitigate potential wetlands wildlife impacts, the facility will be designed to direct runoff from the proposed HIANG site to the southern and western edge of the project site adjacent to the road. Here, the runoff would be expected to percolate quickly into the ground due to the high porosity **of** the soil. In addition, the distance of the site from the drainage ditch and the wildlife refuge would prevent infiltration into groundwater sources for these two areas. Runoff from vehicle and equipment maintenance areas shall pass through EPA approved oil-water separators to prevent potential degradation to the area groundwater.

- One candidate endangered plant species, the *Ophioglossum concinnum*, has known habitat near the site and was searched for but not found. The Pacific Division Naval Facilities Engineering Command initiated an informal Section 7 consultation with the **U.S.** Fish and Wildlife **(USFWS)** in December 1991 regarding all current biological information on the Ophioglossum as it relates to the project site. The **USFWS** concluded that the HIANG project will not affect the plant. However, under standard construction procedures for **PACMISRANFAC,** in the event the Ophioglossum is discovered, an informal Section 7 consultation with the **USFWS** will be necessary in order to mitigate potential impacts to the plant colony. Mitigative measures may include transplanting, project modification, or provisions for **an** "incidental take" permit.

- A monitoring program, as recommended by the State Historic Preservation Office, will be incorporated during construction activities that will cause sub-surface disturbance. This will involve the presence on-site of an archaeologist during such ground disturbing activities as grading and foundation excavation. Should any cultural or archaeological remains be discovered, all work will stop in the immediate vicinity of the find, and no further disturbance will take place until the situation has been assessed. Consultation with all pertinent parties will occur to determine the appropriate form of mitigation. **A** Section 106 finding of "no effect" has been granted from the State Historic Preservation Office, Department of Land and Natural Resources.

CHAPTER SEVEN
REFERENCES

Bruner, Phillip. 1991. *Field Survey of the Avifauna and Feral Mammals for a Proposed Air National Guard Project Site at the Pacific Missile Range Facility, Barking Sands, Kauui.* Prepared for Belt Collins & Associates, Honolulu, Hawaii.

Department of Health. October, 1990. *Pacific Missile Range Facility, Barking Sands Wastewater Treatment Ponds Operation and Maintenance Inspection Report.* State of Hawaii, Honolulu, Hawaii. Unpublished.

Department of the Navy. 1991. *Housing Market Analysis, Pacific Missile Range Facility (PMRF), Kekaha, Kauai.* Prepared by **SMS** Research. Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii.

___. 1991. *Master Plan for the Pacific Missile Range Facility, Hawaiian, Area, Barking Sands, Kauai, Hawaii.* Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii.

___. 199I. *Hazards of Electromagnetic Radiation to Ordnance (HERO) Analysis of Hawaii Air National Guard (HANG) Forward Air Control Post (FACP) Facility Pacific Missile Range Facility (PMRF), Kauai, Hawaii.* Prepared by Naval Surface Warfare Center, Systems EM Effects Branch, Dahlgren, Virginia.

___. 1991. *Radiation Hazard and Electromagnetic Compatibility Analysis for the Hawaii Air National Guard Forward Air Command Post at Pacific Missile Range Facility, Barking Sand, Kauai.* **E3** Program No. E9**1137-HO24.** Prepared for Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii.

___. 1988. *Utility Systems Assessment of the Potable Water and Wastewater Systems at Pacific Missile Range Facility, Hawaiian Area.* Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii.

___. 1988. *Natural Resources Management Plan, Pacific Missile Range Facility Barking Sands.* Prepared by The Traverse **Group,** Inc. Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii.

___. 1985, *Flora, Fauna and Water Resources Report of the Pacific Missile Range Facility, Hawaiian Area.* Prepared by Botanical Consultants. Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii.

Environmental Protection Agency. 1977. *Compilation of Air Pollutant Emission Factors, 3rd Edition,* Research Triangle Park, North Carolina.

Funk, Evangeline. 1991. *Botanical Survey Report for the Air National Guard Project Site at Pacific Missile Range, Kauai.* Prepared for Belt Collins & Associates, Honolulu, Hawaii.

International Archaeological Research Institute, Inc. 1991. *Archaeological Survey and Subsurface Testing for Tactical Control Squadron Forward Air Control Post Project Air National Guard Project, Pacific Missile Range Facility, Barking Sands, Kauai, Hawaii.* Prepared for Belt Collins & Associates, Honolulu, Hawaii.

ENVIRONMENTAL ASSESSMENT
FOR THE CONSTRUCTIOK OF A HAWAII AIR NATIONAL GUARD (HIANG) 154 TACTICAL CONTROL SQUADRON FORWARD AIR CONTROL POST (TCS FACP) AT THE PACIFIC MISSILE RANGE FACILITY, BARKISG SANDS, KAUAI. HAWAII

Lead Agency: Pacific Missile Range Facility. Barking Sands, Kauai, Hawaii

Coordinating Agency: Pacific Division, Saval Facilities Engineering Command
Pearl Harbor, 96860-7300

Prepared by: Belt Collins & Associates
680 Ala Moana Boulevard, Suits 200
Honolulu. Hawaii 96813

Contact: Melvin Kaku, Planner In Charge, Code 23
Environmental Planning Division
Pacific Division, Naval Facilities Engineering Command
Pearl Harbor, Hawaii 96860-7300
Telephone (808) 47 1-9338

Abstract: Hawaii *Air* National Guard (HIANG) proposes to build a training, maintenance, and storage facility for its Forward *Air* Control Post (FACP) unit on approximately six acres at the Pacific Missile Range Facility **(PACMISRANFAC),** Barking Sands, Kauai, Hawaii. The purpose of the facilities is to support operations of the 154 Tactical Control Squadron and vehicle maintenance and storage elements of the 298th ***Air*** Traffic Control Flight. The site would be cleared and leveled for construction of a reserve forces adminisnation, communication, and electronics training building, a combined vehicle maintenance and aerospace ground equipment shop, a base supply and equipment warehouse, a covered storage building, a 15-foot-high mound upon which to place an AN/TPS-75 Radar and AN/TSC-94A satellite ground station, ancillary parking. access roads, infrastructure, security fencing, security lighting, and landscaping.

The proposed project would occur on land licensed to the Hawaii Air Sational Guard. The project will house 29 full-time technicians during the week and 105 during monthly weekend exercises. Approximately $8.5 million has been proposed to be included in the FY 1993 Military Con-action Project budget for the project.

The site was investigated for potential impacts to flora, fauna, archaeology, adjacent land uses, and infrastructure. No significant adverse environmental impacts were identified from the project. Short-term construction related impacts will be mitigated through the use of accepted construction techniques as outlined by County of Kauai and State of Hawaii regulations. Operational and activity impacts will be mitigated through radar transmission sector cut-outs, the use of landscape barriers, establishment and marking of radiation hazard zones, and through coordination between HIANG and PACMISRANFAC concerning air space management-

The project has been determined by the appropriate State of Hawaii and Federal agencies to be consistent with State of Hawaii Coastal Zone Management policies and to have no effect upon archaeological resources or the candidate endangered plant *Ophioglossum concinnum.*

CHAPTER ONE
SUMMARY AND INTRODUCTION

1.1 IDENTIFICATION OF DOCUMENT

This document is an Environmental Assessment for an administrative action.

1.2 TITLE OF ACTION

Construction of a Hawaii Air National Guard (HIANG) 154 Tactical Control Squadron Forward Air Control Post (TCS FACP) at the Pacific Missile Range Facility (PACMISRANFAC), Barking Sands, Kauai, Hawaii.

1.3 BRIEF DESCRIPTION OF ACTION

Hawaii Air National Guard proposes to build a training and maintenance facility for its Forward Air Control Post (FACP) on approximately six acres at PACMISRANFAC, Barking Sands, Kauai, Hawaii. The FACP facility would be *to* support operations of the 154 Tactical Control Squadron and also vehicle maintenance and aerospace ground equipment elements of the 298th ATCF. The site would be cleared and leveled for construction of the following facilities:

- a reserve forces administration, communication, and electronics training building (10,000 SF)
- a combined vehicle maintenance and aerospace ground equipment shop (11,000 SF)
- a base supply and equipment warehouse (5,000 SF)
- a covered storage building (4,000 SF)
- a 15-foot-high mound upon which to place the AN/TPS-75 Mobile Radar and the AN/TSC-94A satellite earth station
- necessary parking, access roads, infrastructure, security fencing, security lighting, and landscaping

In addition, a variety of microwave transmitters and radar units will be operated from the site, including air surveillance radar and surface microwave links.

The facilities would be utilized for training of Hawaii Air National Guard personnel and for the storage and maintenance of equipment used in both training and mobilization operations. There will also be a 200-300 square-foot kitchen and small-scale bathroom/shower facilities for both women and men to utilize during training exercises.

1.4 SUMMARY OF ADVERSE IMPACTS AND MITIGATION ACTIONS

- Approximately 50 to 60 feet of landscape buffers utilizing the present dense vegetation shall be maintained *to* reduce disturbances to fauna in the adjacent wildlife refuge. This buffer shall be established between the existing drainage ditch and the 30-foot security clear zone along the perimeter of the HIANG facility to also avoid impacts to the ditch. Light shields will be utilized on night security lighting to avoid disorientation of Shearwaters.

- To mitigate potential wetlands wildlife impacts, the facility will be designed to direct runoff from the proposed HIANG site to the southern and western edge of the project site adjacent to the road. Here, the runoff would be expected to percolate quickly into the ground due to the high porosity of the soil. In addition, the distance of the site from the drainage ditch and the wildlife refuge would prevent infiltration into groundwater sources for these two areas. Runoff from vehicle and equipment maintenance areas shall pass through EPA approved oil-water separators to prevent potential degradation to the area groundwater.

- One candidate endangered plant species, the ***Ophioglossum*** *concinnum,* has known habitat near the site and was searched for but not found. The Pacific Division Naval Facilities Engineering Command initiated an informal Section 7 consultation with the **U.S.** Fish and Wildlife **(USFWS)** in December **1991** regarding all current biological information on the Ophioglossum as it relates to the project site. The **USFWS** concluded that the HIANG project will not affect the plant. However, under standard construction procedures for PACMISRANFAC, in the event the Ophioglossum is discovered, an informal Section 7 consultation with the **USFWS** will be necessary in order to mitigate potential impacts to the plant colony. Mitigative measures may include transplanting, project modification, or provisions for an "incidental take" permit.

- A monitoring program, as recommended by the State Historic Preservation Office, will be incorporated during construction activities that will cause sub-surface disturbance. This will involve the presence on-site of an archaeologist during such ground disturbing activities as grading and foundation excavation. Should any cultural or archaeological remains be discovered, all work will stop in the immediate vicinity of the find, and no further disturbance will take place until the situation has been assessed. Consultation with all pertinent parties will occur to determine the appropriate form of mitigation. A Section 106 finding of "no effect" has been granted from the State Historic Preservation Office, Department of Land and Natural Resources.

- Wastewater disposal design will include the construction of a pump station and approximately 3,000 feet of pipe. Following the construction of **34** units of proposed housing, wastewater levels at the oxidation and leaching ponds will be close to capacity during HIANG training exercises. At that time, HIANG will need to assess the holding potential of the ponds before training exercises. Should there not be sufficient excess capacity, arrangements should be made for the setting up of portable toilets within the HIANG compound. No sewage capacity or flow problems are anticipated until such time as the entire 34 units of proposed housing are completed. Planning should commence to increase the capacity of the oxidation **and** leaching ponds before additional future projects are approved in the area.

- The AN/TPS-75 radar antenna will be installed on a mound at least **15** feet high to ensure that the main beam impacts are above potential ground level conflict points. The antenna will not operate at an angle less than 0.5 degrees to the horizon.

- The AN/TSC-94A earth station shall also be installed on this mound so that the lower edge of the antenna is at least 13 feet AGL to minimize any impacts from radiation on personnel.

- Following testing and measuring of the radar equipment, written operation procedures outlining hazard areas will be distributed to personnel. In addition, flashing lights near the earth station will warn personnel when radars are transmitting. Radiation hazard

CHAPTER TWO
PURPOSE AND NEED

2.1 BACKGROUND

2.1.1 Hawaii Air National Guard (HIANG)

The Hawaii Air National Guard (HIANG) is made up of over 2,000 officers and airmen located throughout the Hawaiian Island chain. The primary mission of HIANG is to provide trained units with qualified personnel suitable for active duty in the Air Force in time of war or national emergency, and at such other times as the national security may require. The combined efforts of the various units are to be able to provide fighter forces for air defense and air superiority in accordance with applicable directives of the 6010 Aerospace Defense Group and the Pacific Air Force.

HIANG operations on the Island of Kauai are carried out by the 298 Air Traffic Control Flight (ATCF), the 150 Aircraft Control and Warning Squadron (ACWS), and the 154 Tactical Control Squadron (TCS). The 154 TCS is made up of 90 military personnel, which includes 25 full-time air technicians. Their mission is to provide a forward extension of the tactical air control system by providing control of offensive and defensive air operations, early warning, and gap filler radar capability within their assigned area. As such, the 154th TCS Forward Air Control Post can perform one or a combination of the following functions:

- control counter-air and special missions
- monitor interdiction and reconnaissance missions
- vector close air support and refueling mission rendezvous
- direct and disseminate tactical warning information
- coordinate control and surveillance activities with the Control Reporting Post
- serve in a limited manual backup role for the Control Reporting Center
- provide airspace management service if directed

In addition to the 154 TCS, the mission of the 68-member 150 ACWS at Kokee Air Force Station is to provide operations and maintenance of the Air Defense Direction Center and associated sensor sites. The 150 ACWS collects, displays, and evaluates information on air activities within its surveillance capabilities and directs fighter interceptor aircraft engaged in intercept missions.

The 298 ATCF, also located at PACMISRANFAC, Barking Sands, is manned by 74 personnel and provides air traffic control services for the U.S. Air Force Wartime and Contingency Requirements. Approximately four full-time technicians would be relocated from the existing 298 ATCF facility to the proposed facilities. This number would increase to 15 during drills.

2.1.2 Pacific Missile Range Facility (PACMISRANFAC)

Pacific Missile Range Facility (PACMISRANFAC) was established in 1958 as a mid-Pacific detachment of the Pacific Missile Test Center, Point Mugu, California, for the purpose of supporting missile programs in the Hawaiian Area. The facility provides major range services for training; tactics development, testing, and evaluation of air, surface, and sub-surface weapons systems by Pacific Fleet users, other Department of Defense agencies, and foreign military forces.

PACMISRANFAC consists of several separate areas located on the Islands of Kauai, Niihau, Oahu, and the Midway Islands. The primary range support facilities are located on the Island of Kauai at Barking Sands. Barking Sands occupies a narrow smp of land on the west coast of Kauai. Several miles to the north of Barking Sands is a secondary facility located at Makaha Ridge. East of Barking Sands is the magazine area at the base of Kamokala Ridge. The facilities at Port Allen, approximately 16 miles southeast of Barking Sands, include a warehouse and a surface craft support area. The satellite stations include a frequency monitoring facility at Mauna Kapu on the Island of Oahu and a Missile Impact Location Station on the Midway Islands. Radar facilities also exist at Niihau and at Kokee Tracking Station, a few miles east of Makaha Ridge.

PACMISRANFAC, Barking Sands, is a long narrow facility, consisting of approximately 2,046 acres of land area, bordered on the west by the Pacific Ocean, on the east by agricultural lands, on the south by a county sanitary landfill, and on the north by state parkland. Operational control, safety, display, and data recording facilities are located at this site. Other facilities include two tracking radars, one surveillance radar, H.F. transmitters and receivers, a launch complex for targets and missiles, a calibration laboratory, a Post Operational Data Analysis and Display Facility, and a 6,000-foot airfield runway with associated support facilities. Housing quarters, personnel and community support facilities are situated in the southern end of Barking Sands near Kokole Point.

2.2 PURPOSE AND NEED

The current **HIANG** operations at the Kekaha Armory have been constrained due to the limited space available at the structure. Additional vehicles and radar equipment will require more space than is currently available. The site also lacks maintenance and storage capacity. Radar and electronic training must be done off-site due to the constraints imposed by the.surrounding land uses, which include commercial and residential structures, and an elementary school immediately across the street.

With the transference of personnel from the 150 ACWS to the newly formed 154 TCS , and the addition of new radar equipment, additional space for training, maintenance, and storage is needed to improve the operational effectiveness and efficiency required of the Hawaii **Air** National Guard operations on Kauai. The project also offers the opportunity to consolidate similar HIANG activities at PACMISRANFAC, specifically vehicle maintenance and aerospace ground equipment, freeing space in current 298 ATCF facilities for other uses. The purpose of the proposed project is to address the operational deficiencies experienced by continued use of the Kekaha Armory site and the present 298th facilities, thus improving the effectiveness and efficiency of the overall HIANG operations. A by-product of improved effectiveness and efficiency would be the improved morale of the HIANG members and improved recruiting potential on Kauai.

Criteria for a fully operational FACP and TCS on Kauai are:

- adequate land to consolidate training, maintenance, and storage facilities
- access and proximity to field training opportunities
- access to adequately-sized deployment points to meet time critical mobilization criteria

These criteria are not met at the current Kekaha Armory site.

CHAPTER 3
ALTERNATIVES

3.1 INTRODUCTION

Detailed descriptions of the proposed action and reasonable alternatives are presented below. Some of the alternatives that were considered include no-action, siting the facility at another location, and transfering some existing operations to Oahu in order to use existing HIANG space at PACMISRANFAC, Barking Sands.

When evaluating the various alternatives, the criteria listed in Section 2.2 were utilized. Some of the specific elements of those criteria included:

- the availability of adequately sized parcels
- the cost and ease of land acquisition
- the topography of the site
- the ability to provide *security*
- the availability of adequate existing infrastructure to the site
- the ability to provide adequate radar horizons
- the compatibility of surrounding land uses with radar and training operations
- the proximity and ease of conducting field training and joint mining with the Air Force from the site
- the proximity **of** an adequately sized and equipped airstrip to meet time sensitive mobilization standards

3.2 DESCRIPTION OF THE PROPOSED ACTION

Hawaii Air National Guard proposes to build a training and maintenance facility for its Forward Air Control Post (FACP) on approximately six acres at PACMISRANFAC, Barking Sands, Kauai, Hawaii. The FACP facility would be to support operations of the 154 Tactical Control Squadron and vehicle maintenance and aerospace ground equipment elements of the 298th ATCF. The site would be cleared for construction of the following facilities:

- a reserve forces administration, communication, and electronics training building (10,000 SF)
- a combined vehicle maintenance and aerospace ground equipment shop (11,000 **SF)**
- a base supply and equipment warehouse (5,000 SF)
- a covered storage building (4,000 SF)
- a 15-foot-high mound upon which to place the AN/TPS-75 Radar and AN/TSC-94A satellite earth station
- necessary parking, access roads, infrastructure, security fencing, lighting, and landscaping

In addition, a variety of microwave transmitters and radar units will be operated from the site, including air surveillance radar and surface microwave links. There will also be a 200-300 square-foot kitchen and small-scale bathroodshower facilities for both women and men to utilize during training exercises.

The proposed project would occur on land licensed to the Hawaii Air National Guard. Agreements between the U.S. Navy and the Air National Guard would be required to allow for the the use of the site. The Forward Air Control Post is a forward deployed tactical mobile radar unit of the Tactical Air Control System (TACS) which would provide training services and tactical mobilization support for approximately 25 full-time technicians and a 90-person unit from the 154th and **4** full-time technicians and 11 drill status personnel. Approximately $8.5 million has been proposed to be included in the FY 1993 Military Construction Project budget for the project. Figures 1, 2, and **3** show the location and conceptual site plan for the proposed project. Figures 4 and 5 show the elements and site layout of the AN/TPS-75 radar units.

3.3 DESCRIPTION OF ALTERNATIVES

3.3.1 Locate the 298 Air Traffic Control Flight (ATCF) to NAS Barbers Point, Oahu

This alternative would consist of moving the 298 ATCF to NAS Barbers Point, Oahu and relocating the Forward Air Control Post (FACP) from Kekaha Armory to the existing 298 ATCF facility at PACMISRANFAC, Barking Sands, Kauai.

The relocation of the 298 ATCF was rejected as it would require several years to bring the unit back up to its current mission-ready status. The Hawaii Air National Guard's 298 ATCF is made up of volunteer reservists with homes, jobs, and families on Kauai. As such, they would not be willing to relocate should their unit be moved to a neighbor island. Recruiting and training new personnel to replace the current membership would take time and lower unit effectiveness. In addition, adequate facilities at NAS Barbers Point are not available to handle an additional ATCF unit and the HIANG has no air control tower or radar installed on Oahu. This means they would need to train in facilities belonging to the Navy, Army, and Marines. These facilities give training priority to their own controllers, which would severely limit the time available to the HIANG.

The location of the FACP to the existing 298 ATCF facility at PACMISRANFAC was also not considered to be a viable alternative. The available land area at the existing facility is only **2.4** acres, which was not considered sufficient to provide adequate storage and maintenance facilities. In addition, the location of the radar unit in the northern section of PACMISRANFAC would not have provided an adequate radar horizon and would have severely impacted existing electronic transmitters. Also, noise and radiation emissions would have caused an adverse environmental impact upon adjacent buildings and personnel.

3.3.2 Locate the FACP at Kekaha Armory

This alternative would establish the Forward Air Control Post at the existing **HIANG** facilities located at Kekaha Armory. The Armory is an existing 10,000 square foot facility belonging to the State of Hawaii Department of Defense on approximately 1.5 acres of land. It is located approximately seven minutes from PACMISRANFAC, Barking Sands. However, the size of the Armory site does not allow for the development of adequate storage and maintenance facilities. In order to achieve the needed space, additional land would need to be acquired from surrounding landowners. Also, surrounding land uses, most notably an elementary school, prevent the operation of the mobile radar equipment and support trailers at Kekaha due to the potential radiation hazards and the many obstructions to the radar beam. Therefore, these support facilities would have to be located elsewhere. Further limitations to this site include the necessity to upgrade infrastructure and the significant noise impacts on the adjacent school from use of the generators.

Locating radar training, maintenance, and aerospace ground equipment storage facilities separately from the main HIANG operations fails to meet siting criteria, resulting in a lowering of the

CHAPTER FIVE
ENVIRONMENTAL IMPACTS

5.1 CONSTRUCTION IMPACTS

Construction of the Hawaii Air National Guard **(HIANG)** facility will involve the removal of vegetation, grading, and building of a training complex which would include a communications-electronics facility, a vehicle maintenance and storage facility, and the construction of a radar pad atop a 15-foot berm. Construction impacts would involve the creation of fugitive dust and noise. During construction of the proposed facilities, necessary mitigation measures will be employed to reduce the effects of noise and dust on adjacent facilities. Mufflers will be used on all heavy earthmoving equipment and the equipment will be operated only during normal working hours. Dust will be controlled by dust screens and watering of bare or exposed ground. Erosion and sedimentation controls will be employed as necessary. The closest potential receptors of construction related impacts include the drainage ditch along the north boundary of PACMISRANFAC, which is a minor wetlands habitat, and the base housing area, which is located approximately **3,400** feet to the south of the project site. Maintenance of a 50-foot vegetative buffer between the site's clear zone and the drainage ditch would remove potential construction impacts to the ditch. The proposed State Kawaiele Wildlife Sanctuary will still be under construction during the construction phase of the proposed HIANG project and would not be impacted.

5.2 CHANGES IN TOPOGRAPHY

Grading will alter the current topography of the site. Presently the site is relatively level with few depressions. Construction plans call for the area to be made essentially level with the addition of a 15-foot berm.

5.3 HYDROLOGY/DRAINAGE IMPACTS

Soil at the site is classified as Jaucus loamy fine sand, which is highly permeable. However, there are slight low areas on the site that appear to experience standing water following long and heavy rainfall. This is mainly due to soil saturation. Grading and leveling of the site would remove these natural low areas. If the resulting grading level were to remain too low, standing water would be expected to continue to seep from higher areas during periods of sustained heavy rainfall. This could be a problem on the facility site were the water to collect around foundations. However, this can be mitigated by grading the area to decrease the opportunities for standing water accumulation on the site.

Asphalt over the parking area and atop the berm would lead to an increase in runoff for the area. Any excessive runoff, especially from maintenance areas, could serve to degrade the wetlands potential of the nearby drainage ditch, which exists near the northern boundary of PACMISRANFAC near the proposed site, and the groundwater sources for the proposed Kawaiele Wildlife Sanctuary. Inasmuch as endangered fauna have been observed within the drainage ditch, precautions must be taken to direct runoff away from it, both during and after construction. Surface runoff from the proposed HIANG site will be directed to the southern and western edge of the project site adjacent to the road. Here, the runoff would be expected to percolate quickly into the ground due to the high porosity of the soil. In addition, the distance of the site from the drainage ditch and the wildlife refuge would prevent infiltration into groundwater sources for these two areas. Runoff from vehicle and equipment maintenance areas will pass

through EPA approved oil-water separators to prevent potential degradation to the area groundwater.

5.4 FLORA IMPACTS

None of the species found on the project site are listed as, or candidates for, endangered or threatened status. Given the abundant and generally exotic nature of the flora types present, and the relative small area of the site, removal of the vegetation would not constitute a significant adverse impact.

One species, the *Ophioglossum concinnum,* a small perennial fern which is a candidate endangered species, has been found near the site. This species is difficult to detect as it appears only after significant rainfall. During dry times it lies dormant underground. Recently, Ophioglossum has been found in many new areas on PACMISRANFAC, suggesting that the community is spreading. A thorough search was performed, and the habitat and plant communities associated with the Ophioglossum were not discovered on the proposed project site.

The Pacific Division Naval Facilities Engineering Command initiated an informal Section 7 consultation with the **U.S.** Fish and Wildlife **(USFWS)** in December 1991 regarding all current biological information on the Ophioglossum as it relates to the project site (see Appendix F). The USFWS concluded that the HIANG project will not affect the plant. However, under standard construction procedures for PACMISRANFAC, should the Ophioglossum be discovered, an informal Section 7 consultation with the USFWS would be necessary in order to mitigate potential impacts to the plant colony. Mitigative measures may include transplanting, project modification, or provisions for an "incidental take" permit.

5.5 FAUNA IMPACTS

The native birds recorded during the field study were those species which would be expected for the habitat available. The irrigation ditch forming the northern border of PACMISRANFAC near the site provides some measure of a wetlands habitat for water birds, and the forthcoming State of Hawaii Kawaiele Wildlife Sanctuary, located directly north of the property and approximately 120 feet from the proposed site, will provide a stable habitat for water birds and shorebirds.

The change in habitat from a second growth coastal forest to a built environment will alter the local populations of fauna found at this site. Species which prefer cover (such as the deer) may move from the site, while those which are better adapted to an urban habitat (such as the Golden Plover) could increase in number. Activity associated with operation of the facility, especially during training periods, has the potential to be disturbing to nesting birds within the neighboring sanctuary. In addition, any security lighting used at the facility has the potential to impact Shearwaters, which are often drawn to lights and subsequently can become disoriented. Radiation emitted from the antennas will have no effect upon passing birds or small mammals due to their short length of exposure and the inefficient absorption characteristics of their bodies.

To mitigate potential impacts of the HIANG facility on the area's fauna a buffer of trees and brush between the development drainage ditch and the Kawaiele Wildlife Sanctuary will be established. This buffer will be dense enough (50 to 60 feet) to mask visual disturbances to the Sanctuary (see Figure 10). Also, any security lighting will be equipped with shields that will deflect the light towards the ground. Finally, a drainage scheme will be designed that will avoid runoff contamination of the adjacent drainage ditch and the groundwater utilized by the Kawaiele Wildlife Sanctuary. With the establishment of the 50-foot vegetative buffer between the ditch and the **30-**foot security clear zone to be set up along the outside perimeter of the HIANG facility, drainage

that portion of demand associated with new uses for Kekaha Armory represents growth in energy use.

5.21.5 Irreversible and Irretrievable Resource Commitments

The proposed project would involve the irretrievable loss of fiscal resources, as well as labor and materials expended during construction.

5.21.6 Short-Term Use Versus Long-Term Productivity

The site of the proposed HIANG project is currently unused second growth coastal forest. As such, it is productive only in its capacity as a habitat for fauna found in the area and as open space. Construction of the project will cause the site to cease its ability to serve in these capacities.

Short-term gains would include the increased employment opportunities for construction labor associated with the project, and the resulting economic gain these increased opportunities would bring the surrounding communities. Short-term losses would include the construction disruption to the environment surrounding the site.

Long-term impacts would include greater operational effectiveness and efficiency for the 154 Tactical Control Squadron. Mobilization time would be greatly enhanced by the consolidation of resources in close proximity to the airfields at PACMISRANFAC.

5.21.7 Urban Quality, Historic and Cultural Resources, and the Design of the Built Environment

Construction of the proposed project would result in the clearing of all natural vegetation on the site and its replacement with maintenance and storage buildings, a training facility, and a 15-foot-high berm. No historic or cultural resources were identified during surveys of the site. The proposed HIANG facility is consistent with other operational and training facilities at PACMISRANFAC, Barking Sands in both design and function. The State Historic Preservation Office has determined that the project would have "no effect" upon historic and cultural resources.

5.21.8 Cumulative Impacts

The proposed construction of the HIANG facility causes no significant adverse impacts. The *Ophioglossum concinnurn* has not been found upon the site. However, should it be discovered, the USFWS would be consulted. No archaeological artifacts have been identified on the site; however, a monitoring program will be implemented during construction activities that cause sub-surface disturbance. This will involve the presence on-site of an archaeologist during such ground disturbing activities as grading and foundation excavation. Should any cultural or archaeological remains be discovered, all work will stop in the immediate vicinity of the find, and no further disturbance will take place until the situation has been assessed. Consultation with all pertinent parties will occur to determine the appropriate form of mitigation.

Adjacent to the site is a proposed State Kawaiele Wildlife Sanctuary. Urban runoff from parking lots, noise, and activity from the proposed facility have the potential to disturb wildlife which may use the area. Proper siting, including sufficient space for landscape buffers, will be included in the facility design to mitigate these areas of concern.

Cumulative wastewater effects from this project, as well as from the construction of 34 additional housing units in the area, will create near capacity conditions at the oxidation and leaching ponds. Capacity assessment prior to HIANG exercises should be conducted to determine if alternative

sewage disposal systems must be utilized. Planning should commence to increase the capacity of these ponds before additional future projects are approved.

The addition of more high and medium energy transmitters at PACMISRANFAC adds to an already complicated electromagnetic interference environment.

5.21.9 Means of Mitigating Potentially Adverse Effects

No potentially significant adverse effects as a result of this proposed project were identified. Construction impacts will be mitigated through the use of proper and approved construction techniques. Should the Ophioglossum be discovered it could be moved and replanted in another compatible area or an "incidental take" permit could be granted from the **US** Fish and Wildlife Service. Should historic or culturally important finds be identified during the construction phase, work will stop until such finds can be thoroughly examined and their significance determined. Specific mitigation measures recommended include:

- Approximately 50 to ***60*** feet of landscape buffers utilizing the present dense vegetation shall be maintained to reduce disturbances to fauna in the adjacent wildlife refuge. This buffer shall be established between the existing drainage ditch and the 30-foot security clear zone along the perimeter of the HIANG facility to also avoid impacts to the ditch. Light shields will be utilized on night security lighting to avoid disorientation of Shearwaters.

- To mitigate potential wetlands wildlife impacts, the facility will be designed to direct runoff from the proposed HIANG site to the southern and western edge of the project site adjacent to the road. Here, the runoff would be expected to percolate quickly into the ground due to the high porosity of the soil. In addition, the distance of the site from the drainage ditch and the wildlife refuge would prevent infiltration into groundwater sources for these two areas. Runoff from vehicle and equipment maintenance areas shall pass through EPA approved oil-water separators to prevent potential degradation to the area groundwater.

- One candidate endangered plant species, the ***Ophioglossum*** *concinnum,* has known habitat near the site and was searched for but not found. The Pacific Division Naval Facilities Engineering Command initiated an informal Section 7 consultation with the **U.S.** Fish and Wildlife **(USFWS)** in December 1991 regarding all current biological information on the Ophioglossum as it relates to the project site. The **USFWS** concluded that the HIANG project will not affect the plant. However, under standard construction procedures for PACMISRANFAC, in the event the Ophioglossum is discovered, an informal Section 7 consultation with the **USFWS** will be necessary in order to mitigate potential impacts to the plant colony. Mitigative measures may include transplanting, project modification, or provisions for an "incidental take" permit.

- A monitoring program, as recommended by the State Historic Preservation Office, will be incorporated during construction activities that will cause sub-surface disturbance. This will involve the presence on-site of an archaeologist during such ground disturbing activities as grading and foundation excavation. Should any cultural or archaeological remains be discovered, all work will stop in the immediate vicinity of the find, and no further disturbance will take place until the situation has been assessed. Consultation with all pertinent parties will occur to determine the appropriate form of mitigation. **A** Section 106 finding of "no effect" has been granted from the State Historic Preservation Office, Department of Land and Natural Resources.

CHAPTER SEVEN
REFERENCES

Bruner, Phillip. 1991. *Field Survey of the Avifauna and Feral Mammals for a Proposed Air National Guard Project Site at the Pacific Missile Range Facility, Barking Sands, Kauai.* Prepared for Belt Collins & Associates, Honolulu, Hawaii.

Department of Health. October, 1990. *Pacific Missile Range Facility, Barking Sands Wastewater Treatment Ponds Operation and Maintenance Inspection Report.* State of Hawaii, Honolulu, Hawaii. Unpublished.

Department of the Navy. 1991. *Housing Market Analysis, Pacific Missile Range Facility (PMRF), Kekaha, Kauai.* Prepared by SMS Research. Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii.

___. 1991. *Master Plan for the Pacific Missile Range Facility, Hawaiian, Area, Barking Sands, Kauai, Hawaii.* Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii.

___. 1991. *Hazards of Electromagnetic Radiation to Ordnance (HERO) Analysis of Hawaii Air National Guard (HANG) Forward Air Control Post (FACP) Facility Pacific Missile Range Facility (PMRF), Kauai, Hawaii.* Prepared by Naval Surface Warfare Center, Systems EM Effects Branch, Dahlgren, Virginia.

___. 1991. *Radiation Hazard and Electromagnetic Compatibility Analysis for the Hawaii Air National Guard Forward Air Command Post at Pacific Missile Range Facility, Barking Sand, Kauai.* E3 Program No. E91137-H024. Prepared for Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii.

___. 1988. *Utility Systems Assessment of the Potable Water and Wastewater Systems at Pacific Missile Range Facility, Hawaiian Area.* Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii.

___. 1988. *Natural Resources Management Plan, Pacific Missile Range Facility Barking Sands.* Prepared by The Traverse Group, Inc. Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii.

___. 1985. *Flora, Fauna and Water Resources Report of the Pacific Missile Range Facility, Hawaiian Area.* Prepared by Botanical Consultants. Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii.

Environmental Protection Agency. *1977. Compilation of Air Pollutant Emission Factors, 3rd Edition,* Research Triangle Park, North Carolina.

Funk, Evangeline. 1991. *Botanical Survey Report for the Air National Guard Project Site at Pacific Missile Range, Kauai.* Prepared for Belt Collins & Associates, Honolulu, Hawaii.

International Archaeological Research Institute, Inc. 1991. *Archaeological Survey and Subsurface Testing for Tactical Control Squadron Forward Air Control Post Project Air National Guard Project, Pacific Missile Range Facility, Barking Sands, Kauai, Hawaii.* Prepared for Belt Collins & Associates, Honolulu, Hawaii.

ENVIRONMENTAL ASSESSMENT
FOR THE CONSTRUCTION OF A HAWAII AIR NATIONAL GUARD (HIANG) 154 TACTICAL CONTROL SQUADRON FORWARD AIR CONTROL POST (TCS FACP) AT THE PACIFIC MISSILE RANGE FACILITY, BARKING SANDS, KAUAI. HAWAII

Lead Agency: Pacific Missile Range Facility, Barking Sands, Kauai, Hawaii

Coordinating Agency: Pacific Division, Naval Facilities Engineering Command Pearl Harbor, 96860-7300

Prepared by: Belt Collins & Associates
680 Ala Moana Boulevard, Suite 200
Honolulu. Hawaii 96813

Contact: Melvin Kaku, Planner In Charge. Code 23
Environmental Planning Division
Pacific Division, Naval Facilities Engineering Command
Pearl Harbor, Hawaii 96860-7300
Telephone (808) 471-9338

Abstract: Hawaii Air National Guard (HIANG) proposes to build a training, maintenance, and storage facility for its Forward Air Control Post (FACP) unit on approximately six acres at the Pacific Missile Range Facility (PACMISRANFAC), Barking Sands, Kauai, Hawaii. The purpose of the facilities is to support operations of the 154 Tactical Control Squadron and vehicle maintenance and storage elements of the 298th *Air* Traffic Control Flight. The site would be cleared and leveled for construction of a reserve forces administration, communication, and electronics training building, a combined vehicle maintenance and aerospace ground equipment shop, a base supply and equipment warehouse, a covered storage building, a 15-foot-high mound upon which to place an AN/TPS-75 Radar and AN/TSC-94A satellite ground station, ancillary parking, access roads, infrastructure, security fencing, security lighting, and landscaping.

The proposed project would occur on land licensed to the Hawaii Air National Guard. The project will house 29 full-time technicians during the week and 105 **during** monthly weekend exercises. Approximately $8.5 million has been proposed to be included in the FY 1993 **Military** Construction Project budget for the project.

The site was investigated for potential impacts to flora, fauna, archaeology, adjacent land uses, and infrastructure. No significant adverse environmental impacts were identified from the project. Short-term construction related impacts will be mitigated through the use of accepted construction techniques as outlined by County of Kauai and State of Hawaii regulations. Operational and activity impacts will be mitigated through radar transmission sector cut-outs, the use of landscape barriers, establishment and marking of radiation hazard zones, and through coordination between HIANG **and** PACMISRANFAC concerning air space management.

The project has been determined by the appropriate State of Hawaii and Federal agencies to be consistent with State of Hawaii Coastal Zone Management policies and to have no effect upon archaeological resources or the candidate endangered plant *Ophioglossum concinnum.*

CHAPTER ONE
SUMMARY AND INTRODUCTION

1.1 IDENTIFICATION OF DOCUMENT

This document is an Environmental Assessment for an administrative action.

1.2 TITLE OF ACTION

Construction of a Hawaii Air National Guard (HIANG) 154 Tactical Control Squadron Forward **Air** Control Post (TCS FACP) at the Pacific Missile Range Facility (PACMISRANFAC), Barking Sands, Kauai, Hawaii.

1.3 BRIEF DESCRIPTION OF ACTION

Hawaii Air National Guard proposes to build a training and maintenance facility for its Forward **Air** Control Post (FACP) on approximately six acres at PACMISRANFAC, Barking Sands, Kauai, Hawaii. The FACP facility would be to support operations of the 154 Tactical Control Squadron and also vehicle maintenance and aerospace ground equipment elements of the 298th ATCF. The site would be cleared and leveled for construction of the following facilities:

- a reserve forces administration, communication, and electronics **training** building (10,000 SF)
- a combined vehicle maintenance and aerospace ground equipment shop (11,000 SF)
- a base supply and equipment warehouse (5,000 **SF)**
- a covered storage building (4,000 SF)
- a 15-foot-high mound upon which to place the AN/TPS-75 Mobile Radar and the AN/TSC-94A satellite earth station
- necessary parking, access roads, infrastructure, security fencing, security lighting, and landscaping

In addition, a variety of microwave transmitters and radar units will be operated from the site, including air surveillance radar and surface microwave links.

The facilities would be utilized for training of Hawaii Air National Guard personnel and for the storage and maintenance of equipment used in both training and mobilization operations. There will also be a 200-300 square-foot kitchen and small-scale bathroom/shower facilities for both women and men to utilize during training exercises.

1.4 SUMMARY OF ADVERSE IMPACTS AND MITIGATION ACTIONS

- Approximately 50 to 60 feet of landscape buffers utilizing the present dense vegetation shall be maintained to reduce disturbances to fauna in the adjacent wildlife refuge. This buffer shall be established between the existing drainage ditch and the 30-foot security clear zone along the perimeter of the HIANG facility to also avoid impacts to the ditch. Light shields will be utilized on night security lighting to avoid disorientation of Shearwaters.

- To mitigate potential wetlands wildlife impacts, the facility will be designed to direct runoff from the proposed HIANG site to the southern and western edge of the project site adjacent to the road. Here, the runoff would be expected to percolate quickly into the ground due to the high porosity of the soil. In addition, the distance of the site from the drainage ditch and the wildlife refuge would prevent infiltration into groundwater sources for these two areas. Runoff from vehicle and equipment maintenance areas shall pass through EPA approved oil-water separators to prevent potential degradation to the area groundwater.

- One candidate endangered plant species, the ***Ophioglossum*** *concinnum*, has known habitat near the site and was searched for but not found, The Pacific Division Naval Facilities Engineering Command initiated an informal Section 7 consultation with the **U.S.** Fish and Wildlife **(USFWS)** in December 1991 regarding all current biological information on the Ophioglossum as it relates to the project site. The **USFWS** concluded that the HIANG project will not affect the plant. However, under standard construction procedures for PACMISRANFAC, in the event the Ophioglossum is discovered, an informal Section 7 consultation with the **USFWS** will be necessary in order to mitigate potential impacts to the plant colony. Mitigative measures may include transplanting, project modification, or provisions for an "incidental take" permit.

- A monitoring program, as recommended by the State Historic Preservation Office, will be incorporated during construction activities that will cause sub-surface disturbance. This will involve the presence on-site of an archaeologist during such ground disturbing activities as grading and foundation excavation. Should any cultural or archaeological remains be discovered, all work will stop in the immediate vicinity of the find, and no further disturbance will take place until the situation has been assessed. Consultation with all pertinent parties will occur to determine the appropriate form of mitigation. A Section 106 finding of "no effect" has been granted from the State Historic Preservation Office, Department of Land and Natural Resources.

- Wastewater disposal design will include the construction of a pump station and approximately 3,000 feet of pipe. Following the construction of 34 units of proposed housing, wastewater levels at the oxidation and leaching ponds will be close to capacity during HIANG training exercises. At that time, HIANG will need to assess the holding potential of the ponds before training exercises. Should there not be sufficient excess capacity, arrangements should be made for the setting up of portable toilets within the HIANG compound. No sewage capacity or flow problems are anticipated until such time as the entire 34 units of proposed housing are completed. Planning should commence to increase the capacity of the oxidation and leaching ponds before additional future projects are approved in the area.

- The AN/TPS-75 radar antenna will be installed on a mound at least 15 feet high to ensure that the main **beam** impacts are above potential ground level conflict points. The antenna will not operate at **an** angle less than 0.5 degrees to the horizon.

- The AN/TSC-94A earth station shall also be installed on this mound so that the lower edge of the antenna is at least 13 feet AGL to minimize any impacts from radiation on personnel.

- Following testing and measuring of the radar equipment, written operation procedures outlining hazard areas will be distributed to personnel. In addition, flashing lights near the earth station will warn personnel when radars are transmitting. Radiation hazard

CHAPTER TWO
PURPOSE AND NEED

2.1 BACKGROUND

2.1.1 Hawaii Air National Guard (HIANG)

The Hawaii Air National Guard (HIANG) is made up of over 2,000 officers and airmen located throughout the Hawaiian Island chain. The primary mission of HIANG is to provide trained units with qualified personnel suitable for active duty in the Air Force in time of **war** or national emergency, and at such other times as the national security may require. The combined efforts of the various units are to be able to provide fighter forces for air defense and air superiority in accordance with applicable directives of the 6010 Aerospace Defense Group and the Pacific Air Force.

HIANG operations on the Island of Kauai are carried out by the 298 Air Traffic Control Flight (ATCF), the 150 Aircraft Control and Warning Squadron (ACWS), and the 154 Tactical Control Squadron (TCS). The 154 TCS **is** made up of 90 military personnel, which includes 25 full-time air technicians. Their mission is to provide a forward extension of the tactical air control system by providing control of offensive and defensive air operations, early warning, and gap filler radar capability within their assigned area. As such, the 154th TCS Forward Air Control Post can perform one or a combination of the following functions:

- control counter-air and special missions
- monitor interdiction and reconnaissance missions
- vector close air support and refueling mission rendezvous
- direct and disseminate tactical warning information
- coordinate control and surveillance activities with the Control Reporting Post
- serve in a limited manual backup role for the Control Reporting Center
- provide airspace management service if directed

In addition to the 154 TCS, the mission of the 68-member 150 ACWS at Kokee **Air** Force Station is to provide operations and maintenance of the Air Defense Direction Center and associated sensor sites. The 150 ACWS collects, displays, and evaluates information on air activities within its surveillance capabilities and directs fighter interceptor aircraft engaged in intercept missions.

The 298 ATCF, also located at PACMISRANFAC, Barking Sands, is manned by 74 personnel and provides air traffic control services for the U.S. Air Force Wartime and Contingency Requirements. Approximately four full-time technicians would be relocated from the existing 298 ATCF facility to the proposed facilities. This number would increase to 15 during drills.

2.1.2 Pacific Missile Range Facility (PACMISRANFAC)

Pacific Missile Range Facility (PACMISRANFAC) was established in 1958 as **a** mid-Pacific detachment of the Pacific Missile Test Center, Point Mugu, California, for the purpose of supporting missile programs in the Hawaiian Area. The facility provides major range services for training, tactics development, testing, and evaluation of air, surface, and sub-surface weapons systems by Pacific Fleet users, other Department of Defense agencies, and foreign military forces.

PACMISRANFAC consists of several separate areas located on the Islands of Kauai, Niihau, Oahu, and the Midway Islands. The **primary** range support facilities are located on the Island of Kauai at Barking Sands. Barking Sands occupies a narrow strip of land on the west coast of Kauai. Several miles to the north of Barking Sands is a secondary facility located at Makaha Ridge. East of Barking Sands is the magazine area at the base of Kamokala Ridge. The facilities at Port Allen, approximately 16 miles southeast of Barking Sands, include a warehouse and a surface craft support area. The satellite stations include a frequency monitoring facility at Mauna Kapu on the Island of Oahu and a Missile Impact Location Station on the Midway Islands. Radar facilities also exist at Niihau and at Kokee Tracking Station, a few miles east of Makaha Ridge.

PACMISRANFAC, Barking Sands, is a long narrow facility, consisting of approximately 2,046 acres of land area, bordered on the west by the Pacific Ocean, on the east by agricultural lands, on the south by a county sanitary landfill, and on the north by state parkland. Operational control, safety, display, and data recording facilities are located at this site. Other facilities include two tracking radars, one surveillance radar, H.F. transmitters and receivers, a launch complex for targets and missiles, a calibration laboratory, a Post Operational Data Analysis and Display Facility, and a 6,000-foot airfield runway with associated support facilities. Housing quarters, personnel and community support facilities are situated in the southern end of Barking Sands near Kokole Point.

2.2 PURPOSE AND NEED

The current HIANG operations at the Kekaha Armory have been constrained due to the limited space available at the structure. Additional vehicles and radar equipment will require more space than is currently available. The site also lacks maintenance and storage capacity. Radar and electronic training must be done off-site due to the constraints imposed by the surrounding land uses, which include commercial and residential structures, and an elementary school immediately across the street.

With the transference of personnel from the 150 ACWS to the newly formed 154 TCS , and the addition of new radar equipment, additional space for training, maintenance, and storage is needed to improve the operational effectiveness and efficiency required of the Hawaii Air National Guard operations on Kauai. The project also offers the opportunity to consolidate similar HIANG activities at PACMISRANFAC, specifically vehicle maintenance and aerospace ground equipment, freeing space in current 298 ATCF facilities for other uses. The purpose of the proposed project is to address the operational deficiencies experienced by continued use of the Kekaha *Armory* site and the present 298th facilities, thus improving the effectiveness and efficiency of the overall HIANG operations. A by-product of improved effectiveness and efficiency would be the improved morale of the HIANG members and improved recruiting potential on Kauai.

Criteria for a fully operational FACP and TCS on Kauai are:

- adequate land to consolidate training, maintenance, and storage facilities
- access and proximity to field training opportunities
- access to adequately-sized deployment points to meet time critical mobilization criteria

These criteria are not met at the current Kekaha *Armory* site.

CHAPTER 3
ALTERNATIVES

3.1 INTRODUCTION

Detailed descriptions of the proposed action and reasonable alternatives are presented below. Some of the alternatives that were considered include no-action, siting the facility at another location, and transfering some existing operations to Oahu in order to use existing HIANG space at PACMISRANFAC, Barking Sands.

When evaluating the various alternatives, the criteria listed in Section 2.2 were utilized. Some of the specific elements of those criteria included:

- the availability of adequately sized parcels
- the cost and ease of land acquisition
- the topography of the site
- the ability to provide security
- the availability of adequate existing infrastructure to the site
- the ability to provide adequate radar horizons
- the compatibility of surrounding land uses with radar and training operations
- the proximity and ease of conducting field training and joint training with the Air Force fi-om the site
- the proximity of an adequately sized and equipped airstrip to meet time sensitive mobilization standards

3.2 DESCRIPTION OF THE PROPOSED ACTION

Hawaii Air National Guard proposes to build a training and maintenance facility for its Forward Air Control Post (FACP) on approximately six acres at PACMISRANFAC, Barking Sands, Kauai, Hawaii. The FACP facility would be to support operations of the 154 Tactical Control Squadron and vehicle maintenance and aerospace ground equipment elements of the 298th ATCF. The site would be cleared for construction of the following facilities:

- a reserve forces administration, communication, and electronics training building (10,000 SF)
- a combined vehicle maintenance and aerospace ground equipment shop (11,000 SF)
- a base supply and equipment warehouse (5,000 SF)
- a covered storage building (4,000 SF)
- a 15-foot-high mound upon which to place the AN/TPS-75 Radar and AN/TSC-94A satellite earth station
- necessary parking, access roads, infrastructure, security fencing, lighting, and landscaping

In addition, a variety of microwave transmitters and radar units will be operated from the site, including air surveillance radar and surface microwave links. There will also be a 200-300 square-foot kitchen and small-scale bathroodshower facilities for both women and men to utilize during training exercises.

The proposed project would occur on land licensed to the Hawaii Air National Guard. Agreements between the **U.S.** Navy and the Air National Guard would be required to allow for the the use of the site. The Forward Air Control Post is a forward deployed tactical mobile radar unit of the Tactical Air Control System (TACS) which would provide training services and tactical mobilization support for approximately 25 full-time technicians and a 90-person unit from the 154th and **4** full-time technicians and 11 drill status personnel. Approximately $8.5 million has been proposed to be included in the FY 1993 Military Construction Project budget for the project. Figures 1, 2, and 3 show the location and conceptual site plan for the proposed project. Figures 4 and 5 show the elements and site layout of the AN/TPS-75 radar units.

3.3 DESCRIPTION OF ALTERNATIVES

3.3.1 Locate the 298 Air Traffic Control Flight (ATCF) to NAS Barbers Point, Oahu

This alternative would consist of moving the **298** ATCF to **NAS** Barbers Point, Oahu and relocating the Forward Air Control Post (FACP) from Kekaha Armory to the existing 298 ATCF facility at PACMISRANFAC, Barking Sands, Kauai.

The relocation of the 298 ATCF was rejected as it would require several years to bring the unit back up to its current mission-ready status. The Hawaii Air National Guard's 298 ATCF is made up of volunteer reservists with homes, jobs, and families on Kauai. As such, they would not be willing to relocate should their unit be moved to a neighbor island. Recruiting and training new personnel to replace the current membership would take time and lower unit effectiveness. In addition, adequate facilities at **NAS** Barbers Point are not available to handle an additional ATCF unit and the HIANG has no air control tower or radar installed on **Oahu.** This means they would need to train in facilities belonging to the Navy, Army, and Marines. These facilities give training priority to their own controllers, which would severely limit the time available to the HIANG.

The location of the FACP to the existing **298** ATCF facility at PACMISRANFAC was also not considered to be **a** viable alternative. The available land area at the existing facility is only 2.4 acres, which was not considered sufficient to provide adequate storage and maintenance facilities. In addition, the location of the radar unit in the northern section of PACMISRANFAC would not have provided an adequate radar horizon and would have severely impacted existing electronic transmitters. Also, noise and radiation emissions would have caused an adverse environmental impact upon adjacent buildings and personnel.

3.3.2 Locate the FACP at Kekaha Armory

This alternative would establish the Forward Air Control Post at the existing HIANG facilities located at Kekaha Armory. The Armory is an existing 10,000 square foot facility belonging to the State of Hawaii Department of Defense on approximately 1.5 acres of land. It is located approximately seven minutes from PACMISRANFAC, Barking Sands. However, the size of the Armory site does not allow for the development of adequate storage and maintenance facilities. In order to achieve the needed space, additional land would need to be acquired from surrounding landowners. Also, surrounding land uses, most notably an elementary school, prevent the operation of the mobile radar equipment and support trailers at Kekaha due to the potential radiation hazards and the many obstructions to the radar beam. Therefore, these support facilities would have to be located elsewhere. Further limitations to this site include the necessity to upgrade infrastructure and the significant noise impacts on the adjacent school from use of the generators.

Locating radar training, maintenance, and aerospace ground equipment storage facilities separately from the main HIANG operations fails to meet siting criteria, resulting in a lowering of the

CHAPTER FIVE
ENVIRONMENTAL IMPACTS

5.1 CONSTRUCTION IMPACTS

Construction of the Hawaii Air National Guard (HIANG) facility will involve the removal of vegetation, grading, and building of a training complex which would include a communications-electronics facility, a vehicle maintenance and storage facility, and the construction of a radar pad atop a 15-foot berm. Construction impacts would involve the creation of fugitive dust and noise. During construction of the proposed facilities, necessary mitigation measures will be employed to reduce the effects of noise and dust on adjacent facilities. Mufflers will be used on all heavy earthmoving equipment and the equipment will be operated only during normal working hours. Dust will be controlled by dust screens and watering of bare or exposed ground. Erosion and sedimentation controls will be employed as necessary. The closest potential receptors of construction related impacts include the drainage ditch along the north boundary of PACMISRANFAC, which is a minor wetlands habitat, and the base housing area, which is located approximately 3,400 feet to the south of the project site. Maintenance of a 50-foot vegetative buffer between the site's clear zone and the drainage ditch would remove potential construction impacts to the ditch. The proposed State Kawaiele Wildlife Sanctuary will still be under construction during the construction phase of the proposed HIANG project and would not be impacted.

5.2 CHANGES IN TOPOGRAPHY

Grading will alter the current topography of the site. Presently the site is relatively level with few depressions. Construction plans call for the area to be made essentially level with the addition of a 15-foot berm.

5.3 HYDROLOGY/DRAINAGE IMPACTS

Soil at the site is classified as Jaucus loamy fine sand, which is highly permeable. However, there are slight low areas on the site that appear to experience standing water following long and heavy rainfall. This is mainly due to soil saturation. Grading and leveling of the site would remove these natural low areas. If the resulting grading level were to remain too low, standing water would be expected to continue to seep from higher areas during periods of sustained heavy rainfall. This could be a problem on the facility site were the water to collect around foundations. However, this can be mitigated by grading the area to decrease the opportunities for standing water accumulation on the site.

Asphalt over the parking area and atop the berm would lead to an increase in runoff for the area. Any excessive runoff, especially from maintenance areas, could serve to degrade the wetlands potential of the nearby drainage ditch, which exists near the northern boundary of PACMISRANFAC near the proposed site, and the groundwater sources for the proposed Kawaiele Wildlife Sanctuary. Inasmuch as endangered fauna have been observed within the drainage ditch, precautions must be taken to direct runoff away from it, both during and after construction. Surface runoff from the proposed HIANG site will be directed to the southern and western edge of the project site adjacent to the road. Here, the runoff would be expected to percolate quickly into the ground due to the high porosity of the soil. In addition, the distance of the site from the drainage ditch and the wildlife refuge would prevent infiltration into groundwater sources for these two areas. Runoff from vehicle and equipment maintenance areas will pass

through EPA approved oil-water separators to prevent potential degradation to the area groundwater.

5.4 FLORA IMPACTS

None of the species found on the project site are listed as, or candidates for, endangered or threatened status. Given the abundant and generally exotic nature of the flora types present, and the relative small area of the site, removal of the vegetation would not constitute a significant adverse impact.

One species, the *Ophioglossum concinnum,* **a** small perennial fern which is a candidate endangered species, has been found near the site. This species is difficult to detect as it appears only after significant rainfall. During *dry* times it lies dormant underground. Recently, Ophioglossum has been found in many new areas on PACMISRANFAC, suggesting that the community is spreading. A thorough search was performed, and the habitat and plant communities associated with the Ophioglossum were not discovered on the proposed project site.

The Pacific Division Naval Facilities Engineering Command initiated an informal Section 7 consultation with the **U.S.** Fish and Wildlife **(USFWS)** in December 1991 regarding all current biological information on the Ophioglossum as it relates to the project site (see Appendix F). The USFWS concluded that the HIANG project will not affect the plant. However, under standard construction procedures for PACMISRANFAC, should the Ophioglossum be discovered, an informal Section 7 consultation with the **USFWS** would be necessary in order to mitigate potential impacts to the plant colony. Mitigative measures may include transplanting, project modification, or provisions for an "incidental take" permit.

5.5 FAUNA IMPACTS

The native birds recorded during the field study were those species which would be expected for the habitat available. The irrigation ditch forming the northern border of PACMISRANFAC near the site provides some measure of a wetlands habitat for water birds, and the forthcoming State of Hawaii Kawaiele Wildlife Sanctuary, located directly north of the property and approximately 120 feet from the proposed site, will provide a stable habitat for water birds and shorebirds.

The change in habitat from a second growth coastal forest to a built environment will alter the local populations of fauna found at this site. Species which prefer cover (such as the deer) may move from the site, while those which are better adapted to an urban habitat (such as the Golden Plover) could increase in number. Activity associated with operation of the facility, especially during training periods, has the potential to be disturbing to nesting birds within the neighboring sanctuary. In addition, any security lighting used at the facility has the potential to impact Shearwaters, which are often drawn to lights and subsequently can become disoriented. Radiation emitted from the antennas will have no effect upon passing birds or small mammals due to their short length of exposure and the inefficient absorption characteristics of their bodies.

To mitigate potential impacts of the HIANG facility on the area's fauna a buffer of trees and brush between the development drainage ditch and the Kawaiele Wildlife Sanctuary will be established. This buffer will be dense enough (50 to 60 feet) to mask visual disturbances to the Sanctuary (see Figure 10). Also, any security lighting will be equipped with shields that will deflect the light towards the ground. Finally, a drainage scheme will be designed that will avoid runoff contamination of the adjacent drainage ditch and the groundwater utilized by the Kawaiele Wildlife Sanctuary. With the establishment of the 50-foot vegetative buffer between the ditch and the 30-foot security clear zone to be set up along the outside perimeter of the HIANG facility, drainage

that portion of demand associated with new uses for Kekaha **Armory** represents growth in energy use.

5.21.5 Irreversible and Irretrievable Resource Commitments

The proposed project would involve the irretrievable loss of fiscal resources, as well as labor and materials expended during construction.

5.21.6 Short-Term Use Versus Long-Term Productivity

The site of the proposed **HIANG** project is currently unused second growth coastal forest. **As** such, it is productive only in its capacity as a habitat for fauna found in the area and as open space. Construction of the project will cause the site to cease its ability to serve in these capacities.

Short-term gains would include the increased employment opportunities for construction labor associated with the project, and the resulting economic gain these increased opportunities would bring the surrounding communities. Short-term losses would include the construction disruption to the environment surrounding the site.

.Long-term impacts would include greater operational effectiveness and efficiency for the 154 Tactical Control Squadron. Mobilization time would be greatly enhanced by the consolidation of resources in close proximity to the airfields at PACMISRANFAC.

5.21.7 Urban Quality, Historic and Cultural Resources, and the Design of the Built Environment

Construction of the proposed project would result in the clearing of all natural vegetation on the site and its replacement with maintenance and storage buildings, a training facility, and a 15-foot-high berm. No historic or cultural resources were identified during surveys of the site. The proposed HIANG facility is consistent with other operational and training facilities at **PACMISRANFAC,** Barking Sands in both design and function. The State Historic Preservation Office has determined that the project would have "no effect" upon historic and cultural resources.

5.21.8 Cumulative Impacts

The proposed construction of the HIANG facility causes no significant adverse impacts. The *Ophioglossum concinnum* has not been found upon the site. However, should it be discovered, the **USFWS** would be consulted. No archaeological artifacts have been identified on the site; however, a monitoring program will be implemented during construction activities that cause sub-surface disturbance. This will involve the presence on-site of an archaeologist during such ground disturbing activities as grading and foundation excavation. Should any cultural or archaeological remains be discovered, all work will stop in the immediate vicinity of the find, and no further disturbance will take place until the situation has been assessed. Consultation with all pertinent parties will occur to determine the appropriate form of mitigation.

Adjacent to the site is a proposed State Kawaiele Wildlife Sanctuary. Urban runoff from parking lots, noise, and activity from the proposed facility have the potential to disturb wildlife which may use the area. Proper siting, including sufficient space for landscape buffers, will be included in the facility design to mitigate these areas of concern.

Cumulative wastewater effects from this project, as well as from the construction of **34** additional housing units in the area, will create near capacity conditions at the oxidation and leaching **ponds.** Capacity assessment prior to **HIANG** exercises should be conducted to determine if alternative

sewage disposal systems must be utilized. Planning should commence to increase the capacity of these ponds before additional future projects are approved.

The addition of more high and medium energy transmitters at PACMISRANFAC adds to an already complicated electromagnetic interference environment.

5.21.9 Means of Mitigating Potentially Adverse Effects

No potentially significant adverse effects as a result of this proposed project were identified. Construction impacts will be mitigated through the use of proper and approved construction techniques. Should the Ophioglossum be discovered it could be moved and replanted in another compatible area or an "incidental take" permit could be granted from the **US** Fish and Wildlife Service. Should historic or culturally important finds be identified during the construction phase, work will stop until such finds can be thoroughly examined and their significance determined. Specific mitigation measures recommended include:

- Approximately 50 to 60 feet of landscape buffers utilizing the present dense vegetation shall be maintained to reduce disturbances to fauna in the adjacent wildlife refuge. This buffer shall be established between the existing drainage ditch and the 30-foot security clear zone along the perimeter of the HIANG facility to also avoid impacts to the ditch. Light shields will be utilized on night security lighting to avoid disorientation of Shearwaters.

- To mitigate potential wetlands wildlife impacts, the facility will be designed to direct runoff from the proposed HIANG site to the southern and western edge of the project site adjacent to the road. Here, the runoff would be expected to percolate quickly into the ground due to the high porosity of the soil. In addition, the distance of the site from the drainage ditch and the wildlife refuge would prevent infiltration into groundwater sources for these two areas. Runoff from vehicle and equipment maintenance areas shall pass through **EPA** approved oil-water separators to prevent potential degradation to the area groundwater.

- One candidate endangered plant species, the *Ophioglossum concinnum,* has known habitat near the site and was searched for but not found. The Pacific Division Naval Facilities Engineering Command initiated an informal Section 7 consultation with the **U.S.** Fish and Wildlife **(USFWS)** in December **1991** regarding all current biological information on the Ophioglossum as it relates to the project site. The **USFWS** concluded that the HIANG project will not affect the plant. However, under standard construction procedures for PACMISRANFAC, in the event the Ophioglossum is discovered, an informal Section 7 consultation with the **USFWS** will be necessary in order to mitigate potential impacts to the plant colony. Mitigative measures may include transplanting, project modification, or provisions for an "incidental take" permit.

- **A** monitoring program, as recommended by the State Historic Preservation Office, will be incorporated during construction activities that will cause sub-surface disturbance. This will involve the presence on-site of an archaeologist during such ground disturbing activities as grading and foundation excavation. Should any cultural or archaeological remains be discovered, all work will stop in the immediate vicinity of the find, and no further disturbance will take place until the situation has been assessed. Consultation with all pertinent parties will occur to determine the appropriate form of mitigation. **A** Section 106 finding of "no effect" has been granted from the State Historic Preservation Office, Department of Land and Natural Resources.

CHAPTER SEVEN
REFERENCES

Bruner, Phillip. 1991. *Field Survey of the Avifauna and Feral Mammals for a Proposed Air National Guard Project Site at the Pacific Missile Range Facility, Barking Sands, Kauai.* Prepared for Belt Collins & Associates, Honolulu, Hawaii.

Department of Health. October, 1990. *Pacific Missile Range Facility, Barking Sands Wastewater Treatment Ponds Operation and Maintenance Inspection Report.* State of Hawaii, Honolulu, Hawaii. Unpublished.

Department of the Navy. 1991. *Housing Market Analysis, Pacific Missile Range Facility (PMRF), Kekaha, Kauai.* Prepared by SMS Research. Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii.

___. 1991. *Master Plan for the Pacific Missile Range Facility, Hawaiian, Area, Barking Sands, Kauai, Hawaii.* Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii.

___. 1991. *Hazards of Electromagnetic Radiation to Ordnance (HERO) Analysis of Hawaii Air National Guard (HANG) Forward Air Control Post (FACP) Facility Pacific Missile Range Facility (PMRF), Kauai, Hawaii.* Prepared by Naval Surface Warfare Center, Systems EM Effects Branch, Dahlgren, Virginia.

___. 1991. *Radiation Hazard and Electromagnetic Compatibility Analysis for the Hawaii Air National Guard Forward Air Command Post at Pacific Missile Range Facility, Barking Sand, Kauai.* E3 Program No. E91137-H024. Prepared for Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii.

___. 1988. *Utility Systems Assessment of the Potable Water and Wastewater Systems at Pacific Missile Range Faciliry, Hawaiian Area.* Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii.

___. 1988. *Natural Resources Management Plan, Pacific Missile Range Facility Barking Sands.* Prepared by The Traverse Group, Inc. Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii.

___. 1985, *Flora, Fauna and Water Resources Report of the Pacific Missile Range Facility, Hawaiian Area.* Prepared by Botanical Consultants. Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii.

Environmental Protection Agency. 1977. *Compilation of Air Pollutant Emission Factors, 3rd Edition,* Research Triangle Park, North Carolina.

Funk, Evangeline. 1991. *Botanical Survey Report for the Air National Guard Project Site at Pacific Missile Range, Kauai.* Prepared for Belt Collins & Associates, Honolulu, Hawaii.

International Archaeological Research Institute, Inc. **1991.** *Archaeological Survey and Subsurface Testing for Tactical Control Squadron Forward Air Control Post Project Air National Guard Project, Pacijic Missile Range Facility, Barking Sands, Kauai, Hawaii.* Prepared for Belt Collins & Associates, Honolulu, Hawaii.

ENVIROSMENTAL ASSESSMENT FOR THE CONSTRUCTION OF A HAWAII AIR NATIONAL GUARD (HIANG) 154 TACTICAL CONTROL SQUADRON FORWARD AIR CONTROL POST (TCS FACP) AT THE PACIFIC MISSILE RANGE FACILITY, BARKING SANDS. KAUAI, HAWAII

Lead Agency: Pacific Missile Range Faciliry, Barking Sands, Kauai, Hawaii

Coordinating Agency: Pacific Division, Naval Facilities Engineering Command
Pearl Harbor, 96860-7300

Prepared by: Belt Collins & Associates
680 Ala Moana Boulevard. Suite 200
Honolulu, Hawaii 96813

Contact: Melvin Kaku, Planner In Charge, Code 23
Environmental Planning Division
Pacific Division, Naval Facilities Engineering Command
Pearl Harbor, Hawaii 96860-7300
Telephone (808) 471-9338

Abstract: Hawaii Air National Guard (HIANG) proposes to build a training, maintenance, and storage facility for its Forward Air Control Post (FACP) unit on approximately six acres at the Pacific Missile Range Facility (PACMISRANFAC), Barking Sands, Kauai, Hawaii. The purpose of the facilities is to support operations of the 154 Tactical Control Squadron and vehicle maintenance and storage elements of the 298th Air Traffic Control Flight. The site would be cleared and leveled for construction of a reserve forces administration, communication, and electronics mining building, a combined vehicle maintenance and aerospace ground equipment shop, a base supply and equipment warehouse, a covered storage building, a 15-foot-high mound upon which to place an AN/TPS-75 Radar and AN/TSC-94A satellite ground station, ancillary parking, access roads, infrastructure, security fencing, security lighting, and landscaping.

The proposed project would occur on land licensed to the Hawaii Air National Guard. The project will house 29 full-time technicians during the week and 105 during monthly weekend exercises. Approximately $8.5 million has been proposed to be included in the FY 1993Military Construction Project budget for the project.

The site was investigated for potential impacts to flora, fauna, archaeology, adjacent land uses, and infrastructure. No significant adverse environmental impacts were identified from the project. Short-term construction related impacts will be mitigated through the use of accepted construction techniques as outlined by County of Kauai and State of Hawaii regulations. Operational and activity impacts will be mitigated through radar transmission sector cut-outs, the use of landscape barriers, establishment and marking of radiation hazard zones, and through coordination between HIANG and PACMISRANFAC concerning air space management.

The project has been determined by the appropriate State of Hawaii and Federal agencies to be consistent with State of Hawaii Coastal Zone Management policies and to have no effect upon archaeological resources or the candidate endangered plant *Ophioglossum concinnum*.

CHAPTER ONE
SUMMARY AND INTRODUCTION

1.1 IDENTIFICATION OF DOCUMENT

This document is an Environmental Assessment for an administrative action.

1.2 TITLE OF ACTION

Construction of a Hawaii Air National Guard (HIANG) 154 Tactical Control Squadron Forward Air Control Post (TCS FACP) at the Pacific Missile Range Facility (PACMISRANFAC), Barking Sands, Kauai, Hawaii.

1.3 BRIEF DESCRIPTION OF ACTION

Hawaii Air National Guard proposes to build a training and maintenance facility for its Forward Air Control Post (FACP) on approximately six acres at PACMISRANFAC, Barking Sands, Kauai, Hawaii. The FACP facility would be to support operations of the 154 Tactical Control Squadron and also vehicle maintenance and aerospace ground equipment elements of the 298th ATCF. The site would be cleared and leveled for construction of the following facilities:

- a reserve forces administration, communication, and electronics training building (10,000 SF)
- a combined vehicle maintenance and aerospace ground equipment shop (11,000 SF)
- a base supply and equipment warehouse (5,000 SF)
- a covered storage building (4,000 SF)
- a 15-foot-high mound upon which to place the AN/TPS-75 Mobile Radar and the AN/TSC-94A satellite earth station
- necessary parking, access roads, infrastructure, security fencing, security lighting, and landscaping

In addition, a variety of microwave transmitters and radar units will be operated from the site, including air surveillance radar and surface microwave links.

The facilities would be utilized for training of Hawaii Air National Guard personnel and for the storage and maintenance of equipment used in both training and mobilization operations. There will also be a 200-300 square-foot kitchen and small-scale bathroom/shower facilities for both women and men to utilize during training exercises.

1.4 SUMMARY OF ADVERSE IMPACTS AND MITIGATION ACTIONS

- Approximately 50 to 60 feet of landscape buffers utilizing the present dense vegetation shall be maintained to reduce disturbances to fauna in the adjacent wildlife refuge. This buffer shall be established between the existing drainage ditch and the 30-foot security clear zone along the perimeter of the HIANG facility to also avoid impacts to the ditch. Light shields will be utilized on night security lighting to avoid disorientation of Shearwaters.

- To mitigate potential wetlands wildlife impacts, the facility will be designed to direct runoff from the proposed HIANG site to the southern and western edge of the project site adjacent to the road. Here, the runoff would be expected to percolate quickly into the ground due to the high porosity of the soil. In addition, the distance of the site from the drainage ditch and the wildlife refuge would prevent infiltration into groundwater sources for these two areas. Runoff from vehicle and equipment maintenance areas shall pass through EPA approved oil-water separators to prevent potential degradation to the area groundwater.

- One candidate endangered plant species, the ***Ophioglossum concinnum,*** has known habitat near the site and was searched for but not found. The Pacific Division Naval Facilities Engineering Command initiated an informal Section 7 consultation with the **U.S.** Fish and Wildlife **(USFWS)** in December 1991 regarding all current biological information on the Ophioglossum as it relates to the project site. The **USFWS** concluded that the **HIANG** project will not affect the plant. However, under standard construction procedures for PACMISRANFAC, in the event the Ophioglossum is discovered, an informal Section 7 consultation with the **USFWS** will be necessary in order to mitigate potential impacts to the plant colony. Mitigative measures may include transplanting, project modification, or provisions for an "incidental take" permit.

- **A** monitoring program, as recommended by the State Historic Preservation Office, will be incorporated during construction activities that will cause sub-surface disturbance. This will involve the presence on-site of an archaeologist during such ground disturbing activities as grading and foundation excavation. Should any cultural or archaeological remains be discovered, all work will stop in the immediate vicinity of the find, and no further disturbance will take place until the situation has been assessed. Consultation with all pertinent parties will occur to determine the appropriate form of mitigation. A Section 106 finding of "no effect" has been granted from the State Historic Preservation Office, Department of Land and Natural Resources.

- Wastewater disposal design will include the construction of a pump station and approximately 3,000 feet of pipe. Following the construction of 34 units of proposed housing, wastewater levels at the oxidation and leaching ponds will be close to capacity during HIANG training exercises. At that time, **HIANG** will need to assess the holding potential of the ponds before training exercises. Should there not be sufficient excess capacity, arrangements should be made for the setting up of portable toilets within the HIANG compound. No sewage capacity or flow problems are anticipated until such time as the entire 34 units of proposed housing are completed. Planning should commence to increase the capacity of the oxidation and leaching ponds before additional future projects are approved in the area.

- The AN/TPS-75 radar antenna will be installed on a mound at least 15 feet high to ensure that the main beam impacts are above potential ground level conflict points. The antenna will not operate at an angle less than 0.5 degrees to the horizon.

- The AN/TSC-94A earth station shall also be installed on this mound so that the lower edge of the antenna is at least 13 feet AGL to minimize any impacts from radiation on personnel.

- Following testing and measuring of the radar equipment, written operation procedures outlining hazard areas will be distributed to personnel. In addition, flashing lights near the earth station will warn personnel when radars are transmitting. Radiation hazard

CHAPTER TWO
PURPOSE AND NEED

2.1 BACKGROUND

2.1.1 Hawaii Air National Guard (HIANG)

The Hawaii Air National Guard (HIANG) is made up of over 2,000 officers and airmen located throughout the Hawaiian Island chain. The primary mission of HIANG is to provide trained units with qualified personnel suitable for active duty in the Air Force in time of war or national emergency, and at such other times as the national security may require. The combined efforts of the various units are to be able to provide fighter forces for air defense and air superiority in accordance with applicable directives of the 6010 Aerospace Defense Group and the Pacific Air Force.

HIANG operations on the Island of Kauai are carried out by the 298 Air Traffic Control Flight (ATCF), the 150 Aircraft Control and Warning Squadron (ACWS), and the 154 Tactical Control Squadron (TCS). The 154 TCS is made up of 90 military personnel, which includes 25 full-time air technicians. Their mission is to provide a forward extension of the tactical air control system by providing control of offensive and defensive air operations, early warning, and gap filler radar capability within their assigned area. As such, the 154th TCS Forward Air Control Post can perform one or a combination of the following functions:

- control counter-air and special missions
- monitor interdiction and reconnaissance missions
- vector close air support and refueling mission rendezvous
- direct and disseminate tactical warning information
- coordinate control and surveillance activities with the Control Reporting Post
- serve in a limited manual backup role for the Control Reporting Center
- provide airspace management service if directed

In addition to the 154 TCS, the mission of the 68-member 150 ACWS at Kokee Air Force Station is to provide operations and maintenance of the Air Defense Direction Center and associated sensor sites. The 150 ACWS collects, displays, and evaluates information on air activities within its surveillance capabilities and directs fighter interceptor aircraft engaged in intercept missions.

The 298 ATCF, also located at PACMISRANFAC, Barking Sands, is manned by 74 personnel and provides air traffic control services for the U.S. Air Force Wartime and Contingency Requirements. Approximately four full-time technicians would be relocated from the existing 298 ATCF facility to the proposed facilities. This number would increase to 15 during drills.

2.1.2 Pacific Missile Range Facility (PACMISRANFAC)

Pacific Missile Range Facility (PACMISRANFAC) was established in 1958 as a mid-Pacific detachment of the Pacific Missile Test Center, Point Mugu, California, for the purpose of supporting missile programs in the Hawaiian Area. The facility provides major range services for training, tactics development, testing, and evaluation of air, surface, and sub-surface weapons systems by Pacific Fleet users, other Department of Defense agencies, and foreign military forces.

PACMISRANFAC consists of several separate areas located on the Islands of Kauai, Niihau, Oahu, and the Midway Islands. The primary range support facilities are located on the Island of Kauai at Barking Sands. Barking Sands occupies a narrow strip of land on the west coast of Kauai. Several miles to the north of Barking Sands is a secondary facility located at Makaha Ridge. East of Barking Sands is the magazine area at the base of Kamokala Ridge. The facilities at Port Allen, approximately 16 miles southeast of Barking Sands, include a warehouse and a surface craft support area. The satellite stations include a frequency monitoring facility at Mauna Kapu on the Island of Oahu and a Missile Impact Location Station on the Midway Islands. Radar facilities also exist at Niihau and at Kokee Tracking Station, a few miles east of Makaha Ridge.

PACMISRANFAC, Barking Sands, is a long narrow facility, consisting of approximately 2,046 acres of land area, bordered on the west by the Pacific Ocean, on the east by agricultural lands, on the south by a county sanitary landfill, and on the north by state parkland. Operational control, safety, display, and data recording facilities are located at this site. Other facilities include two tracking radars, one surveillance radar, H.F. transmitters and receivers, a launch complex for targets and missiles, a calibration laboratory, a Post Operational Data Analysis and Display Facility, and a 6,000-foot airfield runway with associated support facilities. Housing quarters, personnel and community support facilities are situated in the southern end of Barking Sands near Kokole Point.

2.2 PURPOSE AND NEED

The current HIANG operations at the Kekaha Armory have been constrained due to the limited space available at the structure. Additional vehicles and radar equipment will require more space than is currently available. The site also lacks maintenance and storage capacity. Radar and electronic training must be done off-site due to the constraints imposed by the surrounding land uses, which include commercial and residential structures, and an elementary school immediately across the street.

With the transference of personnel from the 150 ACWS to the newly formed 154 TCS , and the addition of new radar equipment, additional space for training, maintenance, and storage is needed to improve the operational effectiveness and efficiency required of the Hawaii Air National Guard operations on Kauai. The project also offers the opportunity to consolidate similar HIANG activities at PACMISRANFAC, specifically vehicle maintenance and aerospace ground equipment, freeing space in current 298 ATCF facilities for other uses. The purpose of the proposed project is to address the operational deficiencies experienced by continued use of the Kekaha Armory site and the present 298th facilities, thus improving the effectiveness and efficiency of the overall HLANG operations. A by-product of improved effectiveness and efficiency would be the improved morale of the HIANG members and improved recruiting potential on Kauai.

Criteria for a fully operational FACP and TCS on Kauai are:

- adequate land to consolidate training, maintenance, and storage facilities
- access and proximity to field training opportunities
- access to adequately-sized deployment points to meet time critical mobilization criteria

These criteria are not met at the current Kekaha Armory site.

CHAPTER 3
ALTERNATIVES

3.1 INTRODUCTION

Detailed descriptions of the proposed action and reasonable alternatives are presented below. Some of the alternatives that were considered include no-action, siting the facility at another location, and transfering some existing operations to Oahu in order to use existing HIANG space at **PACMISRANFAC,** Barking Sands.

When evaluating the various alternatives, the criteria listed in Section *2.2* were utilized. Some of the specific elements of those criteria included:

- the availability of adequately sized parcels
- the cost and ease of land acquisition
- the topography of the site
- the ability to provide security
- the availability of adequate existing infrastructure to the site
- the ability to provide adequate radar horizons
- the compatibility of surrounding land uses with radar and training operations
- the proximity and ease of conducting field training and joint training with the **Air** Force from the site
- the proximity of an adequately sized and equipped airstrip to meet time sensitive mobilization standards

3.2 DESCRIPTION OF THE PROPOSED ACTION

Hawaii Air National Guard proposes to build a training and maintenance facility for its Forward **Air** Control Post (FACP) on approximately six acres at PACMISRANFAC, **Barking** Sands, Kauai, Hawaii. The FACP facility would be to support operations of the 154 Tactical Control Squadron and vehicle maintenance and aerospace ground equipment elements of the 298th ATCF. The site would be cleared for construction of the following facilities:

- a reserve forces administration, communication, and electronics training building (10,000 **SF)**
- a combined vehicle maintenance and aerospace ground equipment shop (11,000 SF)
- a base supply and equipment warehouse (5,000 SF)
- a covered storage building (4,000 SF)
- a 15-foot-high mound upon which to place the AN/TPS-75 Radar and AN/TSC-94A satellite earth station
- necessary parking, access roads, infrastructure, security fencing, lighting, and landscaping

In addition, a variety of microwave transmitters and radar units will be operated from the site, including air surveillance radar and surface microwave links. There will also be a 200-300 square-foot kitchen and small-scale bathroom/shower facilities for both women and men to utilize during training exercises.

The proposed project would occur on land licensed to the Hawaii Air National Guard. Agreements between the **U.S.** Navy and the Air National Guard would be required to allow for the the use of the site. The Forward Air Control Post is a forward deployed tactical mobile radar unit of the Tactical Air Control System (TACS) which would provide training services and tactical mobilization support for approximately 25 full-time technicians and a 90-person unit from the 154th and **4** full-time technicians and 11 drill status personnel. Approximately $8.5 million has been proposed to be included in the FY 1993 Military Construction Project budget for the project. Figures 1, 2, and **3** show the location and conceptual site plan for the proposed project. Figures **4** and 5 show the elements and site layout of the AN/TPS-75 radar units.

3.3 DESCRIPTION OF ALTERNATIVES

3.3.1 Locate the 298 Air Traffic Control Flight (ATCF) to NAS Barbers Point, Oahu

This alternative would consist of moving the 298 ATCF to NAS Barbers Point, Oahu and relocating the Forward Air Control Post (FACP) from Kekaha Armory to the existing 298 ATCF facility at PACMISRANFAC, Barking Sands, Kauai.

The relocation of the 298 ATCF was rejected as it would require several years to bring the unit back up to its current mission-ready status. The Hawaii Air National Guard's 298 ATCF is made up of volunteer reservists with homes, jobs, and families on Kauai. As such, they would not be willing to relocate should their unit be moved to a neighbor island. Recruiting and training new personnel to replace the current membership would take time and lower unit effectiveness. In addition, adequate facilities at NAS Barbers Point are not available to handle an additional ATCF unit and the HIANG has no air control tower or radar installed on Oahu. This means they would need to train in facilities belonging to **the** Navy, Army, and Marines. These facilities give training priority to their own controllers, which would severely limit the time available to the HIANG.

The location of the FACP to the existing 298 ATCF facility at PACMISRANFAC was also not considered to be a viable alternative. The available land area at the existing facility is only **2.4** acres, which was not considered sufficient to provide adequate storage and maintenance facilities. In addition, the location of the radar unit in the northern section of PACMISRANFAC would not have provided an adequate radar horizon and would have severely impacted existing electronic transmitters. Also, noise and radiation emissions would have caused an adverse environmental impact upon adjacent buildings and personnel.

3.3.2 Locate the FACP at Kekaha Armory

This alternative would establish the Forward Air Control Post at the existing HIANG facilities located at Kekaha Armory. The **Armory** is an existing 10,000 square foot facility belonging to the State of Hawaii Department of Defense on approximately 1.5 acres of land. It is located approximately seven minutes from PACMISRANFAC, Barking Sands. However, the size of the Armory site does not allow for the development of adequate storage and maintenance facilities. In order to achieve the needed space, additional land would need to be acquired from surrounding landowners. Also, surrounding land uses, most notably an elementary school, prevent the operation of the mobile radar equipment and support trailers at Kekaha due to the potential radiation hazards and the many obstructions to the radar beam. Therefore, these support facilities would have to be located elsewhere. Further limitations to this site include the necessity to upgrade infrastructure and the significant noise impacts on the adjacent school from use of the generators.

Locating radar training, maintenance, and aerospace ground equipment storage facilities separately from the main HIANG operations fails to meet siting criteria, resulting in a lowering of the

CHAPTER FIVE
ENVIRONMENTAL IMPACTS

5.1 CONSTRUCTION IMPACTS

Construction of the Hawaii Air National Guard (HIANG) facility will involve the removal of vegetation, grading, and building of a training complex which would include a communications-electronics facility, a vehicle maintenance and storage facility, and the construction of a radar pad atop a 15-foot berm. Construction impacts would involve the creation of fugitive dust and noise. During construction of the proposed facilities, necessary mitigation measures will be employed to reduce the effects of noise and dust on adjacent facilities. Mufflers will be used on all heavy earthmoving equipment and the equipment will be operated only during normal working hours. Dust will be controlled by dust screens and watering of bare or exposed ground. Erosion and sedimentation controls will be employed as necessary. The closest potential receptors of construction related impacts include the drainage ditch along the north boundary of PACMISRANFAC, which is a minor wetlands habitat, and the base housing area, which is located approximately 3,400 feet to the south of the project site. Maintenance of a 50-foot vegetative buffer between the site's clear zone and the drainage ditch would remove potential construction impacts to the ditch. The proposed State Kawaiele Wildlife Sanctuary will still be under construction during the construction phase of the proposed HIANG project and would not be impacted.

5.2 CHANGES IN TOPOGRAPHY

Grading will alter the current topography of the site. Presently the site is relatively level with few depressions. Construction plans call for the area to be made essentially level with the addition of a 15-foot berm.

5.3 HYDROLOGY/DRAINAGE IMPACTS

Soil at the site is classified as Jaucus loamy fine sand, which is highly permeable. However, there are slight low areas on the site that appear to experience standing water following long and heavy rainfall. This is mainly due to soil saturation. Grading and leveling of the site would remove these natural low areas. If the resulting grading level were to remain too low, standing water would be expected to continue to seep from higher areas during periods of sustained heavy rainfall. This could be a problem on the facility site were the water to collect around foundations. However, this can be mitigated by grading the area to decrease the opportunities for standing water accumulation on the site.

Asphalt over the parking area and atop the berm would lead to an increase in runoff for the area. Any excessive runoff, especially from maintenance areas, could serve to degrade the wetlands potential of the nearby drainage ditch, which exists near the northern boundary of PACMISRANFAC near the proposed site, and the groundwater sources for the proposed Kawaiele Wildlife Sanctuary. Inasmuch as endangered fauna have been observed within the drainage ditch, precautions must be taken to direct runoff away from it, both during and after construction. Surface runoff from the proposed HIANG site will be directed to the southern and western edge of the project site adjacent to the road. Here, the runoff would be expected to percolate quickly into the ground due to the high porosity of the soil, In addition, the distance of the site from the drainage ditch and the wildlife refuge would prevent infiltration into groundwater sources for these two areas. Runoff from vehicle and equipment maintenance areas will pass

through **EPA** approved oil-water separators to prevent potential degradation to the area groundwater.

5.4 FLORA IMPACTS

None of the species found on the project site are listed as, or candidates for, endangered or threatened status. Given the abundant and generally exotic nature of the flora types present, and the relative small area of the site, removal of the vegetation would not constitute a significant adverse impact.

One species, the *Ophioglossum concinnum,* a small perennial fern which is a candidate endangered species, has been found near the site. This species is difficult to detect as it appears only after significant rainfall. During dry times it lies dormant underground. Recently, Ophioglossum has been found in many new areas on PACMISRANFAC, suggesting that the community is spreading. A thorough search was performed, and the habitat and plant communities associated with the Ophioglossum were not discovered on the proposed project site.

The Pacific Division Naval Facilities Engineering Command initiated an informal Section 7 consultation with the **U.S.** Fish and Wildlife (USFWS) in December 1991 regarding all current biological information on the Ophioglossum as it relates to the project site (see Appendix **F).** The USFWS concluded that the HIANG project will not affect the plant. However, under standard construction procedures for PACMISRANFAC, should the Ophioglossum be discovered, an informal Section 7 consultation with the **USFWS** would be necessary in order to mitigate potential impacts to the plant colony. Mitigative measures may include transplanting, project modification, or provisions for an "incidental take" permit.

5.5 FAUNA IMPACTS

The native birds recorded during the field study were those species which would be expected for the habitat available. The irrigation ditch forming the northern border of PACMISRANFAC near the site provides some measure of a wetlands habitat for water birds, and the forthcoming State of Hawaii Kawaiele Wildlife Sanctuary, located directly north of the property and approximately 120 feet from the proposed site, will provide a stable habitat for water birds and shorebirds.

The change in habitat from a second growth coastal forest to a built environment will alter the local populations of fauna found at this site. Species which prefer cover (such as the deer) may move from the site, while those which are better adapted to an urban habitat (such as the Golden Plover) could increase in number. Activity associated with operation of the facility, especially during training periods, has the potential to be disturbing to nesting birds within the neighboring sanctuary. In addition, any security lighting used at the facility has the potential to impact Shearwaters, which are often drawn to lights and subsequently can become disoriented. Radiation emitted from the antennas will have no effect upon passing birds or small mammals due to their short length of exposure and the inefficient absorption characteristics of their bodies.

To mitigate potential impacts of the HIANG facility on the area's fauna a buffer of trees and brush between the development drainage ditch and the Kawaiele Wildlife Sanctuary will be established. This buffer will be dense enough (50 to 60 feet) to mask visual disturbances to the Sanctuary (see Figure 10). Also, any security lighting will be equipped with shields that will deflect the light towards the ground. Finally, a drainage scheme will be designed that will avoid runoff contamination of the adjacent drainage ditch and the groundwater utilized by the Kawaiele Wildlife Sanctuary. With the establishment of the 50-foot vegetative buffer between the ditch and the 30-foot security clear zone to be set up along the **outside** perimeter **of** the HIANG facility, drainage

that portion of demand associated with new uses for Kekaha Armory represents growth in energy use.

5.21.5 Irreversible and Irretrievable Resource Commitments

The proposed project would involve the irretrievable loss of fiscal resources, as well as labor and materials expended during construction.

5.21.6 Short-Term Use Versus Long-Term Productivity

The site of the proposed HIANG project is currently unused second growth coastal forest. As such, it is productive only in its capacity as a habitat for fauna found in the area and as open space. Construction of the project will cause the site to cease its ability to serve in these capacities.

Short-term gains would include the increased employment opportunities for construction labor associated with the project, and the resulting economic gain these increased opportunities would bring the surrounding communities. Short-term losses would include the construction disruption to the environment surrounding the site.

Long-term impacts would include greater operational effectiveness and efficiency for the 154 Tactical Control Squadron. Mobilization time would be greatly enhanced by the consolidation of resources in close proximity to the airfields at **PACMISRANFAC.**

5.21.7 Urban Quality, Historic and Cultural Resources, and the Design of the Built Environment

Construction of the proposed project would result in the clearing of all natural vegetation on the site and its replacement with maintenance and storage buildings, a training facility, and a 15-foot-high berm. No historic or cultural resources were identified during surveys of the site. The proposed HIANG facility is consistent with other operational and training facilities at **PACMISRANFAC,** Barking Sands in both design and function. The State Historic Preservation Office has determined that the project would have "no effect" upon historic and cultural resources.

5.21.8 Cumulative Impacts

The proposed construction of the HIANG facility causes no significant adverse impacts. The ***Ophioglossum*** *concinnum* has not been found upon the site. However, should it be discovered, the **USFWS** would be consulted. No archaeological artifacts have been identified on the site; however, a monitoring program will be implemented during construction activities that cause sub-surface disturbance. This will involve the presence on-site of an archaeologist during such ground disturbing activities as grading and foundation excavation. Should any cultural or archaeological remains be discovered, all work will stop in the immediate vicinity of the find, and no further disturbance will take place until the situation has been assessed. Consultation with all pertinent parties will occur to determine the appropriate form of mitigation.

Adjacent to the site is a proposed State Kawaiele Wildlife Sanctuary. Urban runoff from parking lots, noise, and activity from the proposed facility have the potential to disturb wildlife which may use the area. Proper siting, including sufficient space for landscape buffers, will be included in the facility design to mitigate these areas of concern.

Cumulative wastewater effects from this project, as well as from the construction of **34** additional housing units in the area, will create near capacity conditions at the oxidation and leaching ponds. Capacity assessment prior to HIANG exercises should be conducted to determine if alternative

sewage disposal systems must be utilized. Planning should commence to increase the capacity of these ponds before additional future projects are approved.

The addition of more high and medium energy transmitters at PACMISRANFAC adds to an already complicated electromagnetic interference environment.

5.21.9 Means of Mitigating Potentially Adverse Effects

No potentially significant adverse effects as a result of this proposed project were identified. Construction impacts will be mitigated through the use of proper and approved construction techniques. Should the Ophioglossum be discovered it could be moved and replanted in another compatible area or an "incidental take" permit could be granted from the US Fish and Wildlife Service. Should historic or culturally important finds be identified during the construction phase, work will stop until such finds can be thoroughly examined and their significance determined. Specific mitigation measures recommended include:

- Approximately **50** to 60 feet of landscape buffers utilizing the present dense vegetation shall be maintained to reduce disturbances to fauna in the adjacent wildlife refuge. This buffer shall be established between the existing drainage ditch and the 30-foot security clear zone along the perimeter of the HIANG facility to also avoid impacts to the ditch. Light shields will be utilized on night security lighting to avoid disorientation of Shearwaters.

- To mitigate potential wetlands wildlife impacts, the facility will be designed to direct runoff from the proposed HIANG site to the southern and western edge of the project site adjacent to the road. Here, the runoff would be expected to percolate quickly into the ground due to the high porosity of the soil. In addition, the distance of the site from the drainage ditch and the wildlife refuge would prevent infiltration into groundwater sources for these two areas. Runoff from vehicle and equipment maintenance areas shall pass through EPA approved oil-water separators to prevent potential degradation to the area groundwater.

- One candidate endangered plant species, the ***Ophioglossum concinnum,*** has known habitat near the site and was searched for but not found. The Pacific Division Naval Facilities Engineering Command initiated an informal Section 7 consultation with the **U.S.** Fish and Wildlife **(USFWS)** in December 1991 regarding all current biological information on the Ophioglossum as it relates to the project site. The **USFWS** concluded that the HIANG project will not affect the plant. However, under standard construction procedures for PACMISRANFAC, in the event the Ophioglossum is discovered, an informal Section 7 consultation with the **USFWS** will be necessary in order to mitigate potential impacts to the plant colony. Mitigative measures may include transplanting, project modification, or provisions for an "incidental take" permit.

- **A** monitoring program, as recommended by the State Historic Preservation Office, will be incorporated during construction activities that will cause sub-surface disturbance. This will involve the presence on-site of an archaeologist during such ground disturbing activities as grading and foundation excavation. Should any cultural or archaeological remains be discovered, all work will stop in the immediate vicinity of the find, and no further disturbance will take place until the situation has been assessed. Consultation with all pertinent parties will occur to determine the appropriate form of mitigation. A Section 106 finding of "no effect" has been granted from the State Historic Preservation Office, Department of Land and Natural Resources.

CHAPTER SEVEN
REFERENCES

Bruner, Phillip. 1991. *Field Survey of the Avifauna and Feral Mammals for a Proposed Air National Guard Project Site at the Pacific Missile Range Facility, Barking Sands, Kauai.* Prepared for Belt Collins & Associates, Honolulu, Hawaii.

Department of Health. October, 1990. *Pacific Missile Range Facility, Barking Sands Wastewater Treatment Ponds Operation and Maintenance Inspection Report.* State of Hawaii, Honolulu, Hawaii. Unpublished.

Department of the Navy. 1991. *Housing Market Analysis, Pacific Missile Range Facility (PMRF), Kekaha, Kauai.* Prepared by **SMS** Research. Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii.

___. 1991. *Master Plan for the Pacific Missile Range Facility, Hawaiian, Area, Barking Sands, Kauai, Hawaii.* Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii.

___. 1991. *Hazards of Electromagnetic Radiation to Ordnance (HERO) Analysis of Hawaii Air National Guard (HANG) Forward Air Control Post (FACP) Facility Pacific Missile Range Facility (PMRF), Kauai, Hawaii.* Prepared by Naval Surface Warfare Center, Systems EM Effects Branch, Dahlgren, Virginia.

___. 1991. *Radiation Hazard and Electromagnetic Compatibility Analysis for the Hawaii Air National Guard Forward Air Command Post at Pacific Missile Range Facility, Barking Sand, Kauai.* **E3** Program No. E91137-H024. Prepared **for** Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii.

___. 1988. *Utility Systems Assessment of the Potable Water and Wastewater Systems at Pacific Missile Range Facility, Hawaiian Area.* Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii.

___. 1988. *Natural Resources Management Plan, Pacific Missile Range Facility Barking Sands.* Prepared by The Traverse Group, Inc. Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii.

___. 1985. *Flora, Fauna and Water Resources Report of the Pacific Missile Range Facility, Hawaiian Area.* Prepared by Botanical Consultants. Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawaii.

Environmental Protection Agency. 1977. *Compilation of Air Pollutant Emission Factors, 3rd Edition,* Research Triangle Park, North Carolina,

Funk, Evangeline. 1991. *Botanical Survey Report for the Air National Guard Project Site at Pacific Missile Range, Kauui.* Prepared for Belt Collins & Associates, Honolulu, Hawaii.

International Archaeological Research Institute, Inc. 1991. ***Archaeological Survey*** *and Subsurface Testing for Tactical Control Squadron Forward Air Control Post Project Air National Guard Project, Pacific Missile Range Facility, Barking Sands, Kauai, Hawaii.* Prepared for Belt Collins & Associates, Honolulu, Hawaii.