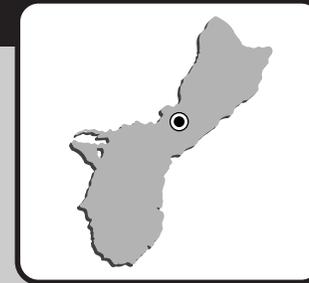


AGANA NAVAL AIR STATION

AGANA, GUAM



Engineering Field Division/Activity: PACDIV
Major Claimant: COMNAVFACENGCOM
Size: 2,435 Acres
Funding to Date: \$18,467,000
Estimated Funding to Complete: \$40,198,000

Base Mission: Provides services and material support for transitioning aircraft and tenants

Contaminants: Asbestos, paint, solvents, POL sludges, scrap metal, heavy metals

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	30	High:	2	Not Evaluated:	12
RCRA Corrective Action:	0	Medium:	12	Not Required:	0
RCRA UST:	0	Low:	4		
Total Sites:	30				

BRAC III

Sites Response Complete: 0

EXECUTIVE SUMMARY

The island of Guam is located at the southern end of the Mariana Island chain, approximately 3,600 miles west of Hawaii and 1,250 miles east of the Philippines. The former Naval Air Station (NAS) Agana is located just north of the center of the island where it is the narrowest. The Guam International Airport Authority (GIAA) is adjacent to the base and uses the base's runways for all commercial flights through Guam. Typical operations on the air station that contributed to contamination include machine shops, painting and paint stripping, instrument and gauge maintenance, vehicle maintenance, aircraft maintenance, fire fighting training, facilities maintenance shops for Public Works and the Seabees, photographic laboratories, boiler plants, medical laboratories, landfilling of wastes, handling and storage of materials (including hazardous and chemicals), supplies, fuels and ordnance. The past practices and operations that created contaminated sites were modified in recent years to prevent further contamination from occurring and now operations have ceased as a result of base closure. The sites of primary public concern are those that may have a contaminant migration pathway to the underlying groundwater aquifer beneath the former NAS Agana. The water quality in the aquifer beneath the former NAS Agana is of concern to the Navy and to the public because the water is a source of drinking water. This base is not under any legal agreements prescribing cleanup schedules.

The former NAS Agana is located on the highly permeable northern limestone plateau which allows high rainfall to quickly migrate to the groundwater aquifer. As a result, there is little surface water flow except during the rare periods of torrential rains, which flows to sinkholes in the limestone and to the man-made underground injection control (UIC) wells. Precipitation recharging through the limestone is the primary potential migration pathway for contaminants found on the base to reach groundwater. The base is surrounded by commercial and residential developments and drinking water wells are located within one mile of the base. There is one production well located on the base that is currently operated by the local government utilities agency. The issue of ground-

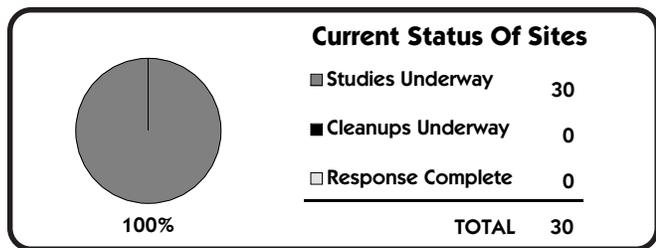
water contamination and migration needs to be resolved before any parcels can be transferred. Due to the complex hydrogeology of the area, an aggressive groundwater investigation is in progress to characterize the groundwater regime beneath the base.

A Restoration Advisory Board (RAB) has been established for NAS Agana. A Community Relations Plan (CRP) has been developed and three Information Repositories have been established.

Currently, of the 30 sites on the base, 30 sites are in the Remedial Investigation (RI) phase. In FY95, removal actions took place at 12 sites to install fencing to prevent exposure of contaminants to people working in the areas by inadvertent contact with contaminated soil. By FY01, RI phase will be completed for all of these sites and a removal action will be considered for the sites as necessary.

The NAS Agana RAB has been a major success in the cleanup program on this base. The RAB currently consists of 11 members of which 8 are from the local community. Members of the Reuse Committee also participate as RAB members. The RAB has reviewed all of the planning documents produced in connection with the cleanup and the closure process. The RAB has met on a monthly basis since its formation in December 1993 and now meets on a quarterly basis. The RAB meetings are a primary source of information for the general public on the environmental cleanup ongoing at NAS Agana.

The Base Realignment and Closure (BRAC) committee listed NAS Agana for closure in the 1993 BRAC Report. The military operations on the station have ceased since the operational closure on March 1995. The environmental restoration of contaminated sites is continuing. The property has been divided into four areas or parcels that are potentially suitable for public use and interim lease. Three Findings of Suitability for Lease (FOSL) have been completed for three of the parcels with one in interim lease agreement with Guam International Airport Authority (GIAA). One other parcel is also under Joint Use Agreement with GIAA. The Joint Use Agreement with GIAA allowed commercial airport operations to continue after the operational closure of NAS Agana. The remaining two parcels for interim lease to Government of Guam (GOVGUAM) is pending insurance and indemnification requirements as required by the Navy.



AGANA NAS RELEVANT ISSUES

ENVIRONMENTAL RISK



HYDROGEOLOGY - Guam has two equal-sized hydrogeologic provinces. In the southern half of the island, groundwater is found in volcanic rock of low permeability and the water-table elevation rises to hundreds of feet above mean sea level. In the northern Guam, most of the groundwater is contained in the aquifer termed the "northern lens" that is situated in the karsted and permeable Barrigada and Mariana limestones. The water-table rises from sea level at the shore to less than 10 feet above the mean sea level in the interior. The groundwater lens of northern Guam was designated as a "principal source aquifer" in 1978 by Guam Environmental Protection Agency.

The rainy season in Guam is from July through November with a mean annual rainfall of approximately 87.4 inches at NAS Agana (central Guam). On the northern plateau, most rain infiltrates the permeable limestone quickly to reach the groundwater aquifer and then travels laterally to the sea. In the South, rain is primarily translated into runoff due to the impermeability of the terrain, creating many rivers and streams that drain to the nearest surface water body or to the sea. Rain that does infiltrate is trapped in small aquifers between the rock formations and discharges as small seeps and springs.

NAS Agana is located on the south end of the northern limestone plateau in the center of the island. The limestone bedrock is overlain with well-drained sandy clayey soils with limestone gravel. Normally, precipitation drains rapidly through the soil and into the porous and fractured limestone, except during infrequent torrential rains when there is some surface runoff. Rainwater percolates downward through 200 to 300 feet of limestone to reach the water table that is three to five feet above sea levels and flows toward discharge zones along the seashore. Runoff from the paved areas flows into the storm water collection ditches or UIC wells through the limestone where it quickly percolates to the groundwater. On the northwestern edge of the base, the limited surface flow is over the cliffs and through the stormwater drainage system. There are no perennial streams on the northern plateau. The high rainfall and the quick penetration to the groundwater aquifer and the surface runoff to collection ditches and UIC wells, provide pathways for potential contaminant migration. One groundwater production well exists on-site and several others are present less than one mile from the base.



NATURAL RESOURCES - The limestone plateau of northern Guam is covered with what is known as a limestone forest; composed of trees, shrubs and other flora that make up the richest natural regions on Guam. These forests contain the greatest number of plant species that are unique to Guam. The terrestrial animal life of Guam is not as diverse but native species include several fruit eating bats, species of monitor lizards, and several thousand different insects. There are 16 animal and 3 plant species listed as endangered under the Federal law and many more under the local laws of Guam. Areas of critical habitats located around the island have been identified and are protected by the Federal and local Government. Directly surrounding the base are commercial and residential areas and the neighboring Naval Communications Station.



RISK - A Basewide Human Health and Ecological Risk Assessment will be conducted in accordance with U.S. EPA guidelines after the RI phase is completed for the base.

REGULATORY ISSUES



NATIONAL PRIORITIES LIST - The sites on the installation have not been scored under the EPA's Hazard Ranking System (HRS).



LEGAL AGREEMENTS - There are no legal agreements other than BRAC requirements driving the schedule for environmental cleanup.



PARTNERING - A partnering agreement was signed by the regulatory agencies in January 1995 and a follow-up partnering session was held in September 1995. These partnering sessions have led to an open and effective communication with all parties and facilitated the ongoing cleanup programs.

COMMUNITY INVOLVEMENT



RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in November 1992 and held three meetings before being converted to a Restoration Advisory Board (RAB) in December 1993. Currently, the RAB membership includes personnel from the Naval Facilities Engineering Command (NAVFAC) Pacific Division (PACDIV), PACDIV Caretaker Site Office (CSO), U.S. EPA Region IX, Guam Environmental Protection Agency (GEPA), Guam Community College, the local Reuse Committee and Commander Naval Forces Marianas (COMNAVMIANAS). Initially the RAB met monthly, but now meets on a quarterly basis. The RAB has 11 members of which eight are from the community. The RAB charter was signed in August 1994. Tours of the contaminated sites on the installation were conducted for the RAB in 1994 and 1995. The RAB meetings have been very successful and are a primary source of environmental information for the public. The RAB has received training and presentations on the cleanup programs from the Navy and the BRAC Cleanup Team (BCT). The RAB has reviewed all documents produced to date for the environmental cleanup process and have provided comments from the community perspective.



COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was published in September 1992. The first Fact Sheet was produced in August 1993 for public distribution and are currently issued on a quarterly basis. An open public meeting was held in August 1995 with a presentation given by the Navy on the cleanup progress.



INFORMATION REPOSITORY - Three Information Repositories were established in 1992 at the Neives M. Flores Memorial Library, the Robert F. Kennedy Library and at the Micronesian Area Research Center.

BASE REALIGNMENT AND CLOSURE



BRAC - The Base Realignment and Closure (BRAC) committee recommended NAS Agana for closure in 1993. The base was operationally closed on 31 March 1995. As of 1 April 1995, the major claimant became NAVFAC instead of CINCPACFLT.



BRAC CLEANUP TEAM - A BRAC Cleanup Team (BCT) was established in 1993. The BCT members are the PACDIV BRAC Environmental Coordinator (BEC), U.S. EPA Region IX and GEPA. The BCT meets quarterly and conducts teleconference calls monthly. The BCT has been instrumental in establishing a partnering process with the regulatory agencies. This partnering process has helped in making key decisions on regulatory issues and determining appropriate regulatory cleanup guidance and risk assessment requirements.



DOCUMENTS - A BRAC Cleanup Plan (BCP) was published in February 1994 and two updates of the BCP have been completed. An Environmental Baseline Survey (EBS) was completed in April 1994 and one update has been completed. The Environmental Condition of Property assessment as required by the Community Environmental Response Facilitation Act (CERFA) resulted in the following:

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
0 acres	0 acres	0 acres	0 acres	0 acres	42 acres	2,090 acres

AGANA NAS RELEVANT ISSUES



LEASE/TRANSFER - The NAS Agana property has been divided into four areas or parcels (1A, 1B, 2A, and 2B) that are potentially suitable for public use and interim lease. Three Findings Of Suitability for Lease (FOSL) for parcels 1B, 2A and 2B have been completed. There is one interim lease agreement and one Joint Use Agreement with Government International Airport Authority (GIAA). An interim lease agreement for the remaining two parcels, 2A and 2B, with GOVGUAM is expected to be signed once GOVGUAM has met insurance and indemnification requirements as required by the Navy.



REUSE - A community reuse committee has been formed by local community members called the Komitea Para Tiyan. On 26 December 1995, an adapted reuse plan was forwarded to the

Department of Housing and Urban Development (HUD) and the Assistant Secretary of Defense for Economic Security for review. However, the reuse plan has not been approved by the HUD since it failed to adequately address the homeless provider issues. The reuse plan is currently in revision for the incorporation of the homeless provider issues.



FAST TRACK INITIATIVES - Soil contamination investigations for 17 sites were fast tracked. By implementing a fast ten-day turnaround time for samples at the laboratory, critical decisions were able to be made in the field in a timely manner. Hot spots could be immediately investigated, saving the time and cost of remobilizing the field crew and sampling equipment..

HISTORICAL PROGRESS

FY84

Sites 1 and 2 - An Initial Assessment Study (IAS), similar to a Preliminary Assessment (PA) under CERCLA, was completed in October. It identified two potential sites, both of which were recommended for further study.

FY86

Sites 1 and 2 - The Confirmation Study (CS) was started.

FY90

Site 2 - Another CS was completed.

FY93

Sites 3-15 - A PA was completed recommending further study for the 13 new sites.

FY94

Sites 16-23 - An Environmental Baseline Survey (EBS) was completed recommending further study for additional eight new sites.
Sites 1 and 2 - The CS (now referred to as Site Inspection (SI)) phase was completed. The SI Report identified the presence of both soil and

groundwater contamination at both sites.

Site 1 - A removal action was planned to install a cap on the landfill.

Site 2 - A removal action was planned to install drainage controls around the holding pond.

FY95

Sites 16-29 - An EBS was updated in 1995 and identified additional 6 sites (Sites 24-29) for further investigation.

Site 10 - An SI was completed.

Sites 3-9, 11-16 and 28 - The SI phase was started.

Sites 1-5, 7-23 and 26 - An interim removal action was performed at each of these 23 sites to install fencing to limit access to the contaminated areas.

Site 29 - The SI phase for the groundwater study was initiated but later was transitioned into the RI phase. As part of the groundwater characterization study, 17 monitoring wells were installed. The collection of groundwater contaminant data from the monitoring wells began at the end of the fiscal year. Preliminary results from the first quarter of groundwater sampling indicated low concentrations of volatile organic solvents such as trichloroethene (TCE).

PROGRESS DURING FISCAL YEAR 1996

FY96

Sites 1-2 - Non-time-critical removal action was started.
Sites 3-9, 11-16 and 28 - RI field work continue.
Sites 3, 5-6, 8-9, 11-15 and 28 - No further action were recommended for these 11 sites. However, these sites are pending BCT concurrence.
Sites 20, 21 and 23 - RI field work was started. These sites were

identified as having high reuse priority and are scheduled for leasing to the Guam International Airport Authority once the sites are determined to be clean.

Site 29 - As part of the groundwater characterization study, second, third, and fourth quarter groundwater sampling have been completed. Additionally, a small-scale dye trace study and the installation of a groundwater treatment system at the on-site production well are underway.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Site 30 - Complete a PA/SI.
Permanent Closure of all ASTs and USTs by removal.
Sites 3, 5, 6, 8, 9, 11-15 and 28 - No Further Response Action Planned (NFRAP). Prepare NFA Action Memorandum.
Sites 2, 4, 7, 16 and 20 - Conduct non-time-critical removal action. Prepare Engineering Evaluation/Cost Analysis (EE/CA).
Sites 4, 16 and 20 - Prepare removal design.
Sites 4 and 29 - Complete RDs.
Site 29 - Conduct limited dye trace study. Install wellhead treatment system (Granular Activated Carbon Adsorption) on one production well (NAS-1). Complete Remedial Investigation.

FY98

Sites 17-19, 22, 24 and 26 - Conduct Remedial Investigation.
Sites 2, 7 and 10 - Prepare removal design.
Sites 21 and 23 - Conduct non-time-critical removal action. Prepare EE/CA and removal design.
Sites 4 and 16 - Implement Interim removal action.
Site 29 - Implement long term monitoring at NAS-1. Start Feasibility Study.
Site 29 - Complete a RI/FS.
Sites 2, 10, 16, 19, 20 and 23 - Complete RDs.
Site 29 - Complete a removable (RA).
Sites 4 and 16 - Planning to complete IRAs

AGANA NAS
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	28		1					
RI / FS				1	14	5	1	9
RD			2	6	8		1	
RAC				1				
RAO								1
IRA	12(12)			2(2)	2(2)	6(6)	1(1)	9(9)
RC					14	5	1	10
Cumulative % RC	0%	0%	0%	0%	47%	63%	67%	100%

GUAM NAVAL COMMUNICATIONS AREA MASTER STATION WESTERN PACIFIC GUAM

Engineering Field Division/Activity: PACDIV
Major Claimant: COMNAVCOMTELCOM
Size: 5,000 Acres
Funding to Date: \$661,000
Estimated Funding to Complete: \$13,440,000



Base Mission: Operates and maintains computer and communication facilities and equipment for Naval Shore Installations and fleet units in the eastern Pacific area

Contaminants: Metals, POLs

Number of Sites:		Relative Risk Ranking of Sites:		
CERCLA:	9	High:	0	Not Evaluated:
RCRA Corrective Action:	0	Medium:	0	Not Required:
RCRA UST:	0	Low:	0	
Total Sites:	9			

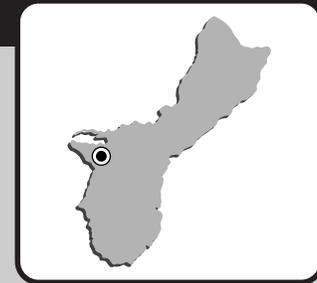
Sites Response Complete: 8

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	8							1
RI / FS								1
RD								1
RAC								1
RAO								
IRA								1(1)
RC	8							1
Cumulative % RC	89%	89%	89%	89%	89%	89%	89%	100%

GUAM NAVAL COMPLEX

APRA HARBOR, GUAM



Engineering Field Division/Activity: PACDIV
Major Claimant: COMNAVSUPSYSCOM/CINCPACFLT/COMNAVFACENGCOM
Size: 8,922 Acres
Funding to Date: \$70,631,000
Estimated Funding to Complete: \$67,982,000

Base Mission: Provides supplies, services and public works support for fleet units and ships; drydocking and emergency repair; and stores and issues ordnance and weapons

Contaminants: Acid, asbestos, heavy metals, low-level radiation, ordnance compounds, paint, PCBs, pesticides, plating wastes, POLs, solvents

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	27	High:	31	Not Evaluated:	4
RCRA Corrective Action:	26	Medium:	3	Not Required:	15
RCRA UST:	0	Low:	0		
Total Sites:	53				

BRAC IV

Sites Response Complete: 15

EXECUTIVE SUMMARY

The island of Guam is located approximately 3,500 miles west of Hawaii and 1,200 miles east of the Philippines. The Guam Apra Harbor Naval Complex consists of Naval commands located around the Apra Harbor area and the former Naval Magazine (NAVMAG) area southeast of the harbor. The Complex consists of numerous Naval commands, four of which were recommended for realignment or closure by the Base Realignment and Closure (BRAC) Commission in 1995 and are covered here: Guam Naval Activities (NAVACTS) formerly the Naval Station (NS) and NAVMAG, the Naval Fleet and Industrial Supply Center (FISC), the Naval Ship Repair Facility (NSRF), and the Public Works Center (PWC). Other Naval commands in the harbor area which are not BRAC activities, and are not included here are: the Naval Regional Dental Center (NRDC), and the Naval Regional Medical Center (NRMC). These commands have little pieces of property all over the harbor area so that it has the appearance of a crazy quilt. The United States Coast Guard (USCG) also has facilities in the harbor and there are pieces of private property scattered around.

Typical operations at the Navy activities in the Apra Harbor Complex that contributed to contamination include shops such as machine, plating, chemical treatment and dips, plumbing/pipefitting, welding/shipfitters, foundry, electrical, paint and paint stripping, woodworking, instrument and gauge maintenance, and vehicle maintenance. Other operations include photographic and printing shops, dry cleaning, power plants and boilers, pest control, and chemical and medical laboratories. Wastes were stored and disposed of in landfills, incinerators and Wastewater Treatment Plants (WWTPs). Materials, supplies, fuels and ordnance were stored on the complex. Past practices at these operations which created contaminated sites have been modified to prevent further contamination from occurring. The sites of primary public concern are those that have a contaminant migration pathway to the ecological receptors in the nearby wetlands and the harbors and bays. The site ranked high in Department of Defense's (DOD's) Relative Risk Ranking System primarily because of the potential impact to groundwater and risk to ecological receptors. The cleanup of some of the

sites is under a RCRA Part B Permit. The only permitted Hazardous Waste Disposal Facility on the island is located in the Apra Harbor Complex.

A Restoration Advisory Board (RAB) has been established for all the Naval activities in the Apra Harbor Complex. A joint Community Relations Plan (CRP) has been produced and a local Information Repository has been set up at the Neives M. Flores Memorial Library.

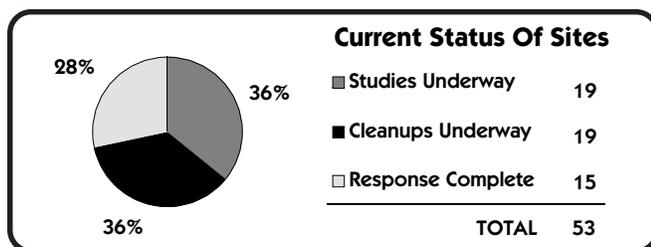
Combined, NAVACTS, NSRF, FISC and PWC have 27 CERCLA sites and 26 RCRA sites that are in the Installation Restoration Program (IRP). Three CERCLA sites were transferred to BRAC. Of the CERCLA sites, 1 site is in the study phase of an RI/FS; 3 sites are scheduled to begin the study phase in 2004; 1 site is in a cleanup phase and 7 sites are in the study phase of an Interim Removal Action; and 14 are considered Response Complete (RC). Of the RCRA sites, 18 of the sites are in the study phases, and 1 is considered Response Complete (RC) because the cleanup was completed. The majority of the CERCLA sites in study phase for Interim Removal Actions are in the Engineering Evaluation/Cost Analysis (EE/CA) stage and the 20 RCRA Corrective Action (CA) sites are in the RCRA Facility Investigation (RFI)/Corrective Measures Study (CMS) phase.

Three removal actions have been completed. One to remove the remaining Underground Storage Tanks (USTs) and sumps at NAVACTS Site 31 and another to remove contaminated soil at NAVACTS Solid Waste Management Unit (SWMU) 30. The third completed removal action was to install a fence at PWC Site 2810 to restrict access. There are 8 removal actions underway for CERCLA and none for RCRA.

Three removal actions for removal of objects such as tanks, and oil/water separators; one removal action for thermal desorption; and two removal actions to install caps on landfills, one removal action to install a fence at the landfill and one for treatment of PCB contaminated soils using BCDP are currently being planned under the IRA phase.

In FY97, the study phase will be on going at 7 SWMUs, corrective measure designs are planned going for 12 SWMUs, and one CERCLA site removal action will be on going. Five removal actions at CERCLA sites and 3 removal actions at RCRA sites are planned for the future.

The BRAC committee listed NAVACTS, NSRF, FISC and PWC for closure or realignment in the 1995 BRAC Report. Which parcels within the Apra Harbor Complex that will actually be excessed is still being determined. The Navy will retain some of the parcels, especially waterfront assets to allow continued support for the fleet in the area.



GUAM NAVAL COMPLEX RELEVANT ISSUES

ENVIRONMENTAL RISK



HYDROGEOLOGY - Guam is one of a series of South Pacific islands created by submarine volcanoes on the north-south oriented Marianas rift. The volcanic rock is overlain with coral reef limestone. There are four distinct physical features on Guam, a limestone plateau in the northern half of the island, an area of karst topography with steep limestone capped volcanic mountains in the southern half of the island, a sediment filled basin in the center of the southern mountainous area, and coastal alluvial deposits.

The rainy season in Guam is from July through November with a monthly average rainfall of about 12.5 inches. On the northern limestone plateau, most rain infiltrates the permeable formation quickly to reach the large groundwater aquifer and then travels laterally to the nearest coast. In the south, rain is primarily runoff due to the impermeability of the terrain creating many rivers and streams which drain to the nearest surface water body or the coast. Rain that does infiltrate is trapped in small aquifers between the rock formations and discharges as small seeps and springs. In the basin area is the Fena Reservoir, the primary water supply for the island, which is fed by runoff through numerous rivers.

The Naval Complex is located all around Apra Harbor and a large area in the southern mountainous area. Apra Harbor is located near the midpoint of the western shore and receives runoff from the mountainous area. The southern arm of the harbor, the Orote Peninsula, and the northern arm, Cabras Island, are both geologically similar to the northern half of the island. The eastern side of the harbor is primarily alluvium deposits with a high clay content. Wetland areas exist all around the harbor, especially on the eastern side. The area is very permeable and underlain by a shallow unconfined fresh water aquifer at depths of less than a foot near the wetlands areas to five feet in other areas. The general direction of groundwater flow is to the nearest wetlands and surface water body such as the harbor, Agat Bay or the Philippine Sea. Surface water from paved areas in the Apra Harbor Complex enters storm drains which discharge to the harbor and the Philippine Sea. Pathways exist for contaminants from the Apra Harbor Complex sites to reach the ecologically sensitive wetlands, harbors and bays. Diluted contaminant levels have been detected in the wetlands areas near several Installation Restoration (IR) sites.

The former NAVMAG area just to the southeast of the harbor is in the mountainous region and the Fena Valley watershed containing the Fena Reservoir is on the southeast side of the compound. Groundwater is at depths varying between 4 to 20 feet. Potential pathways exist for contaminants from sites on the former NAVMAG to enter the Fena Valley watershed. No contamination has been detected in the Fena Reservoir to date.



NATURAL RESOURCES - The Apra Harbor was originally a marine estuarine area filled with Mangrove trees. Due to dredging and filling operations started around 1900, and development in the harbor, only a remnant of the Mangrove wetlands remains on the east side of the harbor. The Mangrove wetlands are estuarine in nature and become fresh water aquatic wetlands farther inland with a transitional zone in between. Site 24 on NSRF impacts a wetlands area that is the habitat for the endangered Common Moorhen.

Reef-building corals in the outer areas of the harbor have also been reduced by human activities. Over 100 species of reef-building corals have been identified. Both the harbor and the wetlands are major habitats for a multitude of native species. The harbor was a major fishery and some spawning and nursery areas are still active. The harbor is used for fishing, recreation and by the Navy and United States Coast Guard (USCG).

The inland areas on the former Magazine are also habitats. Many non-native species, both plant and animal, have had a negative impact on the island. There are 16 animal and three plant species listed as endangered under the Federal law and many more under the local laws of Guam.



RISK - For NAVACTS, a Human Health Risk Assessment and an Ecological Risk Assessment following EPA guidance were prepared for the IR sites. For Sites 4, 14 and 31, data collected so far indicates no significant risk to human health or the ecosystem near the sites. Site 1 was found to present a definite risk to both human health and the nearby ecosystems.

For NAVACTS, a Baseline Risk Assessment was completed for Site 28. Site 28 was determined to pose both a human health and ecological risk, according to the EPA risk assessment guidelines. For NAVACTS Site 35, the need for a Baseline Risk Assessment will be determined during the Remedial Investigation (RI) phase.

For the NSRF, a Human Health Risk Assessment and an Ecological Risk Assessment were performed following EPA guidance for one site, the area behind the NSRF fence line (Site 24). The results indicated that contaminants on the site (sandblast grit, volatile organics, chlorinated pesticides and the chemical additive PCB) posed a significant risk to ecological receptors, but no risk to human health.

For the FISC, a Screening Human Health Risk Assessment and an Ecological Risk Assessment were conducted according to EPA guidance for site 19. Contaminants found in the wetlands and drainage channel sediments were found to present a significant risk to ecological receptors, but not to human health.

The combined total number of sites ranked as high risk in the Department of Defense (DOD) Relative Risk Ranking System is 31. These sites are ranked high primarily because of the potential impact to groundwater and risk to ecological receptors. A couple of the high ranked sites result from on-site workers having the potential to have direct contact with soil known to be contaminated.

REGULATORY ISSUES



NATIONAL PRIORITIES LIST - The installations have been scored under the EPA's Hazard Ranking System (HRS), however, to date, they have not been listed on the National Priorities List (NPL).



LEGAL AGREEMENTS - The Apra Harbor complex has the only Hazardous Waste Facility on the island. It is jointly operated by the FISC's Defense Reutilization and Marketing Office (DRMO) and the PWC is under a RCRA Part B Permit which is renewed every three years. The most recent permit was signed in August 1993 by the Navy, Guam Environmental Protection Agency (GEPA) and EPA Region IX. This permit requires the investigation and cleanup of all Solid Waste Management Units (SWMUs) identified in the contiguous Apra Harbor area as a condition of granting the permit. The initial RCRA Facility Assessment (RFA) was conducted by the EPA Region IX between 1986 and 1987 during which 48 SWMUs were identified. The permit specifies a Corrective Action (CA) schedule and required documents for the following SWMUs: eight SWMUs on NAVACTS (SWMUs 14, 15, 16, 17, 19, 25, 26 and 28); seven SWMUs on NSRF (SWMUs 36, 38-40, 42, 43 and 45); two SWMUs at the FISC (SWMUs 12 and 49); and three SWMUs at the PWC (SWMUs 1, 10 and 11). A Current Conditions Report, an update of the original RFA, was completed in 1994.

GUAM NAVAL COMPLEX RELEVANT ISSUES

For NSRF, a Notice of Violation (NOV) was issued by GEPA in May 1988 for the discharge of electroplating wastes and acid solutions into the sewer system via the floor drains. The Navy took immediate Corrective Action (CA) by installing valves in the floor drains and drumming all wastes for proper disposal.



PARTNERING - No formal partnering agreement is in place. The agencies involved in the Apra Harbor complex cleanup program cooperate to achieve the cleanup goals. The agencies involved include EPA Region IX, the GEPA, the U.S. Army Corps of Engineers Guam Operations Office, the Government of Guam's Department of Agriculture Division of Aquatic and Wildlife Resources, the Government of Guam's Division of Historic Preservation, the U.S. Department of Interior Fish and Wildlife Service Pacific Islands Office and the University of Guam.

COMMUNITY INVOLVEMENT



RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed for NAVACTS in 1989 and expanded to include all the Apra Harbor Naval activities in March 1993. The TRC met periodically on an as needed basis to discuss plans and review documents. TRC members were representatives of the Navy, GEPA, EPA Region IX, the Guam Division of Aquatic and Wildlife Resources, U.S. Army Corps of Engineers, Guam Historic Preservation Office, U.S. Geological Survey (USGS), National Oceanic and Atmospheric Administration (NOAA), and the University of Guam. The TRC was converted to a Restoration Advisory Board (RAB) in February 1995. The RAB has about 30 members and meets on an as needed basis. Three RAB meetings have been held in FY95 and four RAB meetings were held in FY96. A site visit of the sites with the public are usually conducted in the morning or in the afternoon before the RAB meeting. In FY95 the RAB members were given presentations on four draft RI reports: one for NAVACTS OLD WESTPAC site; one addressing four NAVACTS sites (the USS Proteus site, the NEX Garage Waste Oil Tank site, the Dry Cleaning Shop site and the Orote Landfill site); one report for FISC Lower Sasa Fuel Burning Pond site; and one report covering two NSRF sites (the Area Behind Fenceline site and the Plating Shop site). The RAB received presentations on the IR process, and background information. In FY96, the RAB members were given presentation on the status of PWC Guam Building 3009, draft RI report for PWC Carpentry Shop Dip Tank Site, draft Removal Site Evaluation (RSE) report for NAVACTS Orote Landfill Site, draft closure work plan for NAVACTS USS Proteus Site, draft RSE Sampling Analysis Plan (SAP) and field work for the sampling for FISC Lower Sasa Fuel Burning Pond Site, draft landfill cap design for PWC South Finegayan Construction Battalion (CB) Landfill Site and three EE/CA reports: one for NAVACTS Old WESTPAC Site, one for NAVACTS Navy Exchange (NEX) Garage Site and one for PWC South Finegayan CB Landfill Site. The RAB also received a presentation on the relative risk site evaluation. The RAB has provided information on community concerns and questions raised during a meeting were answered in writing and included in the Information Repository.



COMMUNITY RELATIONS PLAN - Community relations activities are conducted jointly for Guam NAVACTS, FISC, NSRF, PWC and other tenants on the complex at Apra Harbor. The Community Relations Plan (CRP) was completed in September 1992. The CRP is currently being updated. The RAB meetings and tours of the Installation Restoration Program (IRP) sites are open to the public to attend. Several publicly available Fact Sheets have been distributed in conjunction with the RAB.



INFORMATION REPOSITORY - A publicly available Information Repository was set up in the Nieves M. Flores Memorial Library in Agana in October 1992. It is updated and maintained by the Navy. It contains site reports along with other program information.

LEASE/TRANSFER - To date, one parcel at NAVACTS has been identified for transfer.

BASE REALIGNMENT AND CLOSURE



BRAC - Four of the Apra Harbor Naval Complex activities were recommended for closure or realignment by the Base Realignment and Closure (BRAC) Act in 1995, NAVACTS, NSRF, FISC and PWC. Due to the uncertainties regarding Navy force support requirements and local political considerations, it is not certain yet which parcels will be excessed. Due to the closure of NSRF and Agana NAS, the customer base for the FISC, PWC and some NAVACTS operations has been reduced leading to further realignment of operations. Some NAVACTS and PWC operations will continue and some tenant activities will remain. The waterfront facilities will be retained to support fleet operations in the area.



BRAC CLEANUP TEAM - The BRAC Cleanup Team (BCT) has been formally established. Membership will include the Navy BRAC Environmental Coordinator (BEC) from Pacific Division of Naval Facilities Engineering Command (PACDIV), and a representative from both Guam EPA (GEPA), and EPA Region IX.



DOCUMENTS - Work on a BRAC Cleanup Plan (BCP) began in June 1995 and was completed October 1996. An Environmental Baseline Survey (EBS) is in progress and a draft EBS report was completed in June 1996 and the final version Additional parcels have been included in the EBS effort. These sites may also be available for transfer or lease. As part of the EBS, the Environmental Condition of Property will be assessed as required by the Community Environmental Response Facilitation Act (CERFA) which classifies parcels of property into one of seven categories, depending on their degree of contamination.

Environmental Conditions of Property Classification

1	2	3	4	5	6	7
0	0	0	0	0	0	8,922
acres						



LEASE/TRANSFER - The Local Redevelopment Authority (LRA) has expressed interest in leasing certain parcels.



REUSE - A Reuse Committee, known as the Local Redevelopment Authority (LRA), was established on 15 Dec. 1995 by the Government of Guam. An "Interim Reuse Plan for Apra Harbor (Dry Dock Island, Drum Lot at Polaris Point, and Victor Wharf)" was completed in June 1996. A final reuse plan is scheduled to be completed in December 1996.



FAST TRACK INITIATIVES - The BRAC-funded sites will be examined for possible application of fast track initiatives when it has been determined which parcels of land could be leased or transferred.

GUAM NAVAL COMPLEX HISTORICAL PROGRESS

FY83

Sites 1-29 (Apra Harbor Complex) - In 1983, an Initial Assessment Study (IAS) which is similar to the EPA's Preliminary Assessment (PA), identified a potential 29 sites on the various Navy properties in Guam. The IAS covered the Guam NS, FISC, NSRF, PWC, NRMIC and NRDC in the Apra Harbor area in Volume I. Sites 5, 12 and 13 required no further study after the IAS.

FY84

Site 31 (NAVACTS) - This site, the grassy area behind Building 256-Laundry, was added to the Installation Restoration Program (IRP) by the EPA upon review of the IAS. It was covered in the section on industrial operations on the NS (now NAVACTS).

Sites 33-37 (NAVACTS) - Volume II of the IAS was completed for Agana NAS, NAVMAG, NAVCAMS WESTPAC, Naval Hospital and NAVFAC. These five sites were identified on the NAVMAG (now NAVACTS). Site 36 required no further study after completion of the PA. Volume III of the IAS, completed in December, contains hydrogeological and ecological information for all Guam Naval installations.

FY86

SWMUs - A RCRA Facilities Assessment (RFA) was started for all the Naval activities in the Apra Harbor Complex.

FY87

Sites 24 and 25 (NSRF) - The Site Inspection (SI) phase was started. **SWMUs** - The RFA was completed as part of the RCRA Part B permit process. A total of 48 Solid Waste Management Units (SWMUs) were identified on the Naval activities in the Apra Harbor Complex.

FY91

Site 32 (NAVACTS) - This site was discovered by the Navy during a routine examination of a parcel of land on the NS (now NAVACTS). A PA was completed for this site.

Sites 33 and 34 (NAVACTS) - The SI phase was completed in October 1990. Neither site required any further study and are Response Complete (RC).

Sites 1, 4, 14, 28, 31, 32-35 and 37 (NAVACTS) - The SI phase was completed in September 1991. Sites 32-34, and 37 required no further study and were designated RC. Site 35 requires an expanded SI.

Sites 1, 4, 14, 28 and 31 (NAVACTS) - The RI/FS phase was started in September.

Sites 24 and 25 (NSRF) - The Remedial Investigation/Feasibility Study (RI/FS) phase was started.

Sites 18 and 19 (FISC) - The SI phase was completed and Site 18 requires no further study.

FY92

Site 32 (NAVACTS) - The SI was completed and no further study is needed. **Site 19 (FISC)** - The RI/FS phase began.

FY93

Sites 24 and 25 (NSRF) - An SI phase was completed. Site 24 is a major concern because it is the habitat for the endangered Common Moorhen.

FY94

Sites 1, 4, 14, 28 and 31 (NAVACTS) - The Draft Remedial Investigation (RI) Reports were completed and sent to the regulatory agencies for review. The Draft RI Reports showed contamination levels sufficient to warrant a Baseline Human Health Risk Assessment and an Ecological Risk Assessment.

Site 31 (NAVACTS) - A non-time critical removal action took place to remove six Underground Storage Tanks (USTs) and two concrete sumps.

SWMUs 14-17, 19, 22 and 24-30 (NAVACTS) - An updated RFA was conducted and the Corrective Measures Study (CMS) was started for these SWMUs.

SWMUs 36, 38-40, 42, 43 and 45 (NSRF) - The CMS phase started.

SWMUs 12 and 49 (FISC) - The CMS phase started. (SWMU 49 FISC has since then been transferred to NAVACTS).

FY95

Sites 1, 4, 14, 28 and 31 (NAVACTS) - The RI/FS phase continued.

Site 24 (NSRF) - An RI report was completed in 1995 and preparation of a design package for a removal action at the site was initiated.

SWMUs 22, 24, 27 and 29 required no further study or action at the end of this phase.

SWMU 30 (NAVACTS) - The Design and the Corrective Measures Implementation (CMI) phases were completed. A removal action took place to remove contaminated soil from the site and this constituted the final cleanup on the site.

SWMUs 36, 42, 43 and 45 (NSRF) - The RFI/CMS process began to remove contaminated soil from these sites and remediate groundwater.

Sites 33 and 34 (FISC) - The RI/FS phase began.

Site 19 (FISC) - The removal action process was started to remove contaminated sediment.

SWMUs 12 and 49 (FISC) - The removal action process was started to remove contaminated soil. (SWMU 49 (FISC) has since then been changed to NAVACTS)

SWMUs (NAVACTS) 22, 24, 27, 29 and 30 - Have completed RFI/CMS.

PROGRESS DURING FISCAL YEAR 1996

FY96

SWMUs 22, 24 and 27 - Were determined to require no further study or action following the RFA.

Sites 1, 4, 14, 28 and 31 (NAVACTS) - The RI report covering Sites 1, 4, 14, and 31 was finalized in February 96. However, additional comments from the regulator were received on Site 31 after the report was finalized. Interim Removal Action phase was started for these sites, involving the preparation of an Engineering Evaluation/Cost Analysis (EE/CA), an Action Memorandum and a removal action Design (DES). The draft Removal Site Evaluation (RSE) was prepared for Site 1, the draft EE/CA was prepared for Site 4 and the draft closure work plan was prepared for Site 14. At Site 1 the action planned is a cap over the landfill to prevent dermal contact with and ingestion of the contaminated soil by both humans and terrestrial animals, a fence around the landfill to control access and stabilizing the cliff to prevent further cliff erosion. At Site 4, the planned action is the removal of the oil/water separator and the associated storm sewer and piping will be sealed. At Site 14, the planned

action is the removal of two remaining USTs. Site 28 (NAVACTS) was moved to the BRAC program.

Site 31 - Completed IRA.

Site 2810 (PWC) - Completed the first phase of the IRA.

Sites 16 (PWC), and 17 (PWC) - The removal action at Site 16 continued. The treatment of the contaminated soil began continuous operations in this fiscal year. The RI/FS phase continued for Site 17. The Draft RI report for Site 17 was completed this fiscal year and recommended no further action, however, a second round of comments from the regulator need to be resolved before the finalization of the report.

Site 19 (FISC) - The RSE field work began this fiscal year for Site 19 under the IRA phase.

Site 24 (NSRF) - Work continued on the preparation of the design package for a removal action at the site.

Completed the RFI/CMS for the following sites: SWMU (PWC) 1, 10, 11; SWMU (FISC) 12; SWMU (NAVACTS) 15, 16, 17, 19, 25, 26, 28; SWMU (SRF) 1N21, 2N21, 1N2047, 1N2074, 2N2074, 3N2074, 40LOT1.

GUAM NAVAL COMPLEX PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 1, 4, 14 and 28 (NAVACTS) - The draft EE/CA for Site 1 will be prepared. The actual removals for Sites 4 and 14 are expected to start.
Site 28 - Re-sampling to confirm suspect data is expected to start. In addition, an Expanded Remedial Investigation will begin for the additional adjacent areas which has been contaminated due to migration.
Sites 16 and 2810 (PWC) - Removal action at Site 16 should be continuing. Removal Action at Site 2810 should begin this fiscal year.
Sites 19 and 33 (FISC) - Draft and final EE/CA, and design for site 19 should be on going this fiscal year. RI is expected to start for site 33.
SWMUs 14-17, 19, 25, 26 and 28 (NAVACTS) - The CMS should continue and the Design of the corrective measures for SWMUs 14, 16 and 17 will begin.
Site 24 (NSRF) - A removal action is planned to remove contaminated soil, creosote-treated logs buried on the site and on the UST.
SWMUs 36, 38-40, 42, 43 and 45 (NSRF) - The RFI/CMS phase is expected to continue and the corrective measures design will begin.
SWMUs 12 and 49 (FISC) - The RFI/CMS phase is expected to continue. FY97 (SWMU 49, FISC is presently under BRAC).
Site 4 (NAVACTS) - Complete the RI/FS and response completed (RC).
Site 16 (PWC) - Complete the IRA.

FY98

Design (RCRA) will be completed for the following sites: SWMU (NAVACTS) 15, 16, 17, 19, 25, 26 and 28; UST (NAVACTS) 1; SWMU (PWC) 1 and 11.
 SWMU (FISC) 49, SWMU (NAVACTS) 14 and SWMU (NAVACTS) 49 will complete the RFI/CMS.
Site 17 (PWC), 28 (NAVACTS) and 2810 (PWC) - Planned to complete four IRAs.
Sites 1, 4 and 14 (NAVACTS) - The final design for the removal action for Site 1 is expected to continue. The removal action for Sites 4 and 14 are expected to continue.
Sites 16, (PWC) - The Removal Action should continue and the Planning Documents for the RI should begin.
Site 19 (FISC) - The Removal Action at Site 19 should continue.
Site 24 (NSRF) - Design package for Removal Action to mitigate existing site contamination to ecological risk should continue.
SWMUs 36, 38-40, 42, 43 and 45 (NSRF) - The corrective measures design is expected to continue and the Implementation (IMP) begun.
Site 28 (NAVACTS) - will complete the RI/FS.
Site 4 (NAVACTS) - will complete the RD and RC.
SWMU (FISC) 12 - Complete IRA (RCRA).

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	24					1		2
RI / FS			1	1	2			11
RD				1	1	2	1	6
RAC							2	1
RAO								2
IRA	1(1)	1(1)	1(1)	4(5)	2(2)			7(8)
RC	10		1	1	1		1	13
Cumulative % RC	37%	37%	41%	44%	48%	48%	52%	100%
RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	26							
RFI / CMS	5	18		3				
DES	1			10	2	9		
CMI	1				5	7	8	1
CMO						1		2
IRA	1(1)			1(1)	19(22)			
RC	5				4	6	8	3
Cumulative % RC	19%	19%	19%	19%	35%	58%	88%	100%

GUAM NAVAL FACILITY

GUAM

Engineering Field Division/Activity: PACDIV
Major Claimant: COMNAVFACENGCOM
Size: 322 Acres
Funding to Date: \$75,000
Estimated Funding to Complete: \$0



Base Mission: Conducts oceanographic observations in the Pacific Ocean
Contaminants: POLs, paint, refuse with hazardous waste, solvents, plating waste

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	2	High:	0	Not Evaluated:	1
RCRA Corrective Action:	0	Medium:	0	Not Required:	1
RCRA UST:	0	Low:	0		
Total Sites:	2				

Sites Response Complete: 1

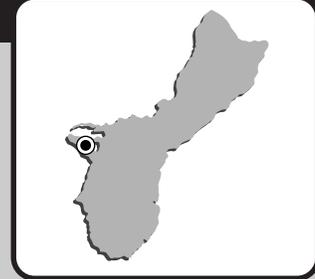
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI		1		1				
RI / FS								
RD								
RAC								
RAO								
IRA			1(1)					
RC		1		1				
Cumulative % RC	0%	50%	50%	100%	100%	100%	100%	100%

GUAM NAVAL REGIONAL DENTAL CENTER

GUAM

Engineering Field Division/Activity: PACDIV
 Major Claimant: BUMED
 Size: 3 Acres
 Funding to Date: \$91,000
 Estimated Funding to Complete: \$0



Base Mission: Provides complete dental services to Navy and Marine Corps personnel

Contaminants: Heavy metals

Number of Sites:

CERCLA: 1
 RCRA Corrective Action: 0
 RCRA UST: 0
 Total Sites: 1

Relative Risk Ranking of Sites:

High: 0 Not Evaluated: 0
 Medium: 0 Not Required: 1
 Low: 0

Sites Response Complete: 1

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	1							
RI / FS	1							
RD								
RAC								
RAO								
IRA	1(1)							
RC	1							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%