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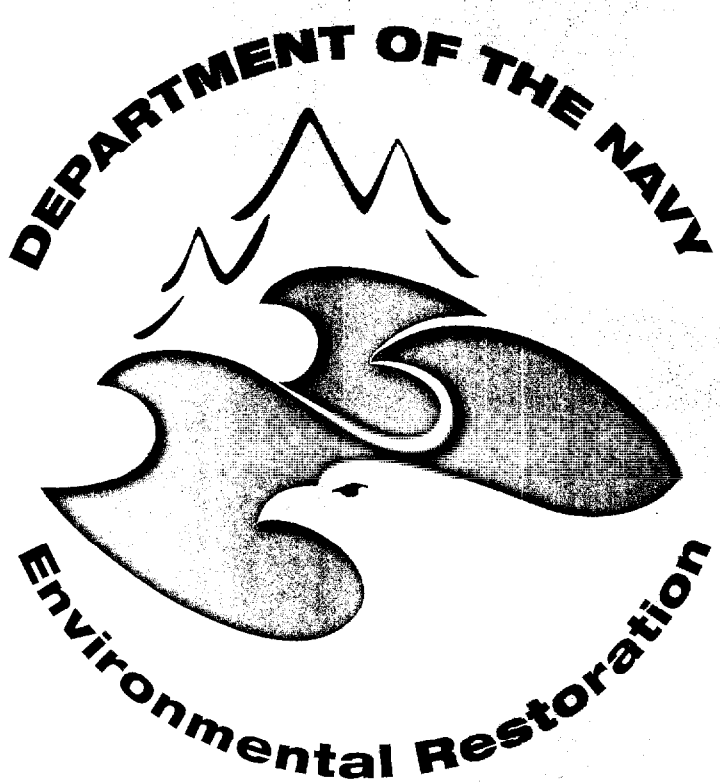
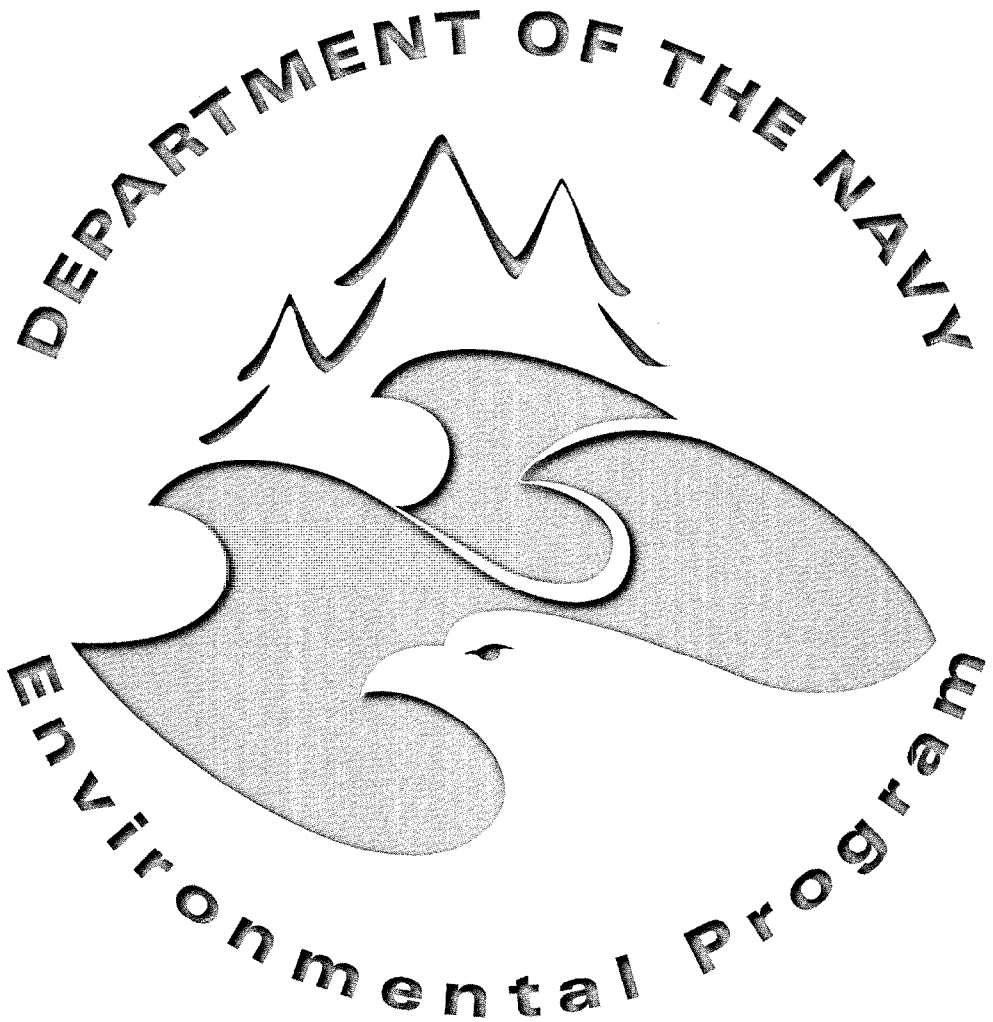
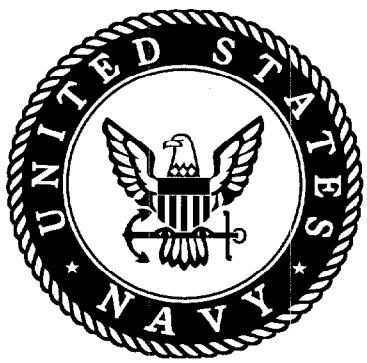
Department of the Navy Environmental Restoration For Fiscal Years 1997-2001



March 1997

DEPARTMENT OF THE NAVY ENVIRONMENTAL RESTORATION PLAN FOR FISCAL YEARS 1997-2001





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FOREWORD

The Department of the Navy is pleased to forward the Department of the Navy Environmental Restoration Plan for Fiscal Years 1997-2001. It is intended to chronicle the accomplishments made in cleaning up past hazardous waste disposal sites and provide a plan for achieving future restoration goals.

During FY 1996, the Navy refined the way we conduct the business of restoring our Navy and Marine Corps installations. As always, it is our goal to achieve cleanup of past hazardous waste sites in a prudent and cost effective manner. On 25 October 1995, Mr. Robert B. Pirie, Jr., the Assistant Secretary of the Navy (Installations and Environment) issued policy guidance which stated that the DON environmental cleanup program is based on the following principles: (1) We will evaluate and ultimately close out all sites in the program; (2) We will use relative risk evaluations and risk management to determine priorities for action within available funding; (3) We will seek to establish and maintain a stable funding profile at a level that protects human health and the environment, and makes progress toward fulfilling our legal obligation to address and reach decisions at all sites; (4) We will plan, prioritize and execute the program in open dialogue with regulators and public stakeholders, and ensure meaningful involvement of affected communities; and (5) We will expedite cleanups by using formal partnering and the flexibilities and lead agency responsibilities described in Executive Order 12580 and the National Contingency Plan for Oil and Hazardous Substance Spills.

Formatting in this year's edition organize data into easy to use categories that allow the reader to quickly locate key information. The use of icons and map boxes enhance the plan's readability. Progress and plans tables track each installation's cleanup efforts through FY 1996 and provide a road map for future cleanup actions over the next five years.

Consistent with previous reports, special emphasis is placed on installations included on the National Priorities List and significant Base Realignment and Closure installations. Detailed narratives provide historical information for cleanup actions taken under the Comprehensive Environmental Response, Compensation and Liability Act, the Resource Conservation and Recovery Act and the Underground Storage Tank program.

Appendices list Navy and Marine Corps installations by state, program and phase. These tables provide a snapshot of the Installation Restoration Program as of 30 September 1996 using information provided by Remedial Project Managers at each Naval Facilities Engineering Field Division or Activity.

It is hoped that you will find this edition of the five-year plan to be a useful asset in articulating the Department of the Navy's success in the environmental cleanup arena to installation personnel, regulators and the public. Widest possible distribution is encouraged.

COMMENT PAGE

The Department of the Navy (DON) recognizes that cleaning up the Nation's past hazardous waste disposal sites will impact many different segments of the Navy and the Marine Corps from the Remedial Project Managers (RPMs) working on installation investigations and remediations to the research laboratories developing new technologies to assist in the cleanup. We encourage your comments on this Plan. Please mail your comments to the address below, submitting as many pages as necessary. Our goal is to make this plan user friendly and responsive to your needs. Your input is greatly appreciated.

_____ Please include my name on the mailing list.

_____ Please remove my name from the mailing list.

Additional copies may be obtained by contacting:

U.S. Department of the Navy
Chief of Naval Operations (N45)
Crystal Plaza 5
2211 South Clark Place
Arlington, Virginia 20360-2000
(703) 602-5330

Comments: _____

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EXECUTIVE SUMMARY

The Department of the Navy (DON) Environmental Restoration Plan for Fiscal Years (FY) 1997-2001 provides a comprehensive look at the DON's efforts and commitment to identify and assess potential areas of environmental contamination resulting from past disposal activities and spills and perform cleanup actions as appropriate.

The DON initiated the Environmental Restoration Program in response to the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA). The passage of SARA brought Department of Defense (DoD) under the CERCLA umbrella with the creation of the Defense Environmental Restoration Program funded by the Defense Environmental Restoration Account (DERA). In the FY97 DoD Appropriations and Authorization Acts, Congress devolved the former DERA account directly to each Service. In FY97 the former DERA type funding will be designated Environmental Restoration, Navy (ER, N).

DoD established the Installation Restoration Program (IRP) by implementing guidance set forth in the Environmental Protection Agency's (EPA) National Oil and Hazardous Substances Contingency Plan (NCP). EPA's NCP set forth a procedure for identifying, investigating and cleaning up contaminated sites resulting from past hazardous waste disposals and spills. EPA lists the most contaminated of the sites being addressed under CERCLA on its National Priorities List (NPL). There are 45 DON installations listed on the NPL, was added in FY96.

Along with CERCLA IRP sites, past disposal and spill areas identified under other environmental laws also qualified for DERA funding. Under the Resource Conservation and Recovery Act of 1976, as amended (RCRA), the Corrective Action program identified potential areas of contamination as Solid Waste Management Units (SWMUs) or as Underground Storage Tanks (USTs) sites. If these sites are the result of past disposal practices and past spills of hazardous wastes, DON uses DERA funding to clean them up. Under the Base Realignment And Closure Acts (BRAC), DON funded cleanup sites that normally would qualify for DERA are funded from a special BRAC account. DON considers BRAC cleanups to be a part of the Environmental Restoration program.

As of 30 September 1996, the DON had 4,433 sites in the Environmental Restoration program at 236 DON installations. Of these, 2,549 sites were in a study phase, 502 had a cleanup underway and 1,382 sites were considered Response Complete (RC) by the DON. Of the 4,433 sites, 3,398 are being addressed as part of the ER, N program while 1,035 sites are funded through the BRAC cleanup account. During FY96, DON spent $365 million of DERA and $223 million of BRAC for a total of $585 million on the Environmental Restoration Program.

DON continues to exhibit a bias for cleanups. During FY96 64% of total program funding was spent on actual cleanups. Expected funding for the DON Environmental Restoration program in FY97 is $288 million for ER, N (formerly DERA) and $262 million for BRAC for a total of $549 million.

Due to Congressional reductions in FY96 funding levels, the DON placed greater emphasis on innovative approaches to program management with an overall goal to reduce the risk to human health and the environment presented by the DON contaminated sites. A second goal was to accomplish cleanups quicker, especially at closing bases, to accelerate the return of land to local communities for reuse.

In FY96, the DON continued to use the DoD Relative Risk Site Evaluation Model to determine a site's relative risk ranking. Of the 3,051 active DON sites, 1,342 were ranked high, 665 were ranked medium and 601 were ranked low relative risk. This determination was a key element in the risk management process used to determine priority for sites receiving DERA funding. In general, this will allow sites posing a greater relative risk to be cleaned up sooner. DON prioritizes funding for BRAC site cleanups based on identified reuse. This allows

quicker transfer of property to promote reuse and create new jobs. DON conducts special surveys to assess all property being transferred, and the property deeds contain assurances that the Federal government has taken all cleanup action necessary to protect human health and the environment. DON plans to have all sites relative risk ranked by the end of FY97.

Additionally, by making use of the removal action and interim remedial action processes outlined in the NCP, the DON has taken steps to reduce the risk associated with contaminated sites. Increased use of innovative technologies and efforts to transfer these technologies to the field has promoted quicker and less expensive cleanups. During FY96, DON increased coordination with regulators and other affected stakeholders to structure a national cleanup program with expanded use of innovative technologies.

In FY97 as occurred in FY96, DON plans to use the risk management process as well as funding availability as the primary factors during negotiations of new legal agreements. Incorporation of Site Management Plans in these agreements will allow for adjustments in schedules to accommodate relative risk evaluations and funding levels.

FY96 brought a continued commitment from DON to involve affected stakeholders in the cleanup process. Some 110 active and closing installations are served by Restoration Advisory Boards (RABs) who provide advice to DON decision makers on a variety of cleanup and reuse issues. During FY96 DON provided $2 million in DERA and BRAC funding to support RABs.

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CHAPTER 1
OVERVIEW AND GOALS OF DEPARTMENT OF THE NAVY'S ENVIRONMENTAL RESTORATION PLAN

This Department of the Navy (DON) Environmental Restoration Plan documents clean up of past hazardous waste sites and projects cleanup goals at DON installations over the next five years. DON installations include both Navy and Marine Corps facilities within the United States and its territories. This plan covers the clean up of contaminated sites which are the result of past spills and releases of hazardous substances. The Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), Superfund Amendments and Reauthorization Act of 1986 (SARA) and the Resource Conservation and Recovery Act of 1976, as amended (RCRA) are the primary laws which govern the Environmental Restoration Program. The goal of the DON's Environmental Restoration Program is to clean up past spill and disposal sites in order to protect human health and the environment.

With the passage of SARA, Congress established the Defense Environmental Restoration Account (DERA) to address the investigation and clean up of past hazardous waste sites at active bases. In the FY-97 DoD Appropriations and Authorization Acts, Congress devolved the former DERA account directly to each Service. In FY-97 the former DERA type funding will be designated Environmental Restoration, Navy (ER, N).

This Plan covers the investigation and clean up of sites that qualify for ER, N funding. It also includes investigation and cleanup activity at closing installations as a result of Base Realignment and Closure (BRAC) legislation. This Plan does not address clean up of oil spills and other similar actions which are the result of current operations at DON installations since ER, N funding is not intended to be used for such cleanups.

The DON has been delegated responsibility to carry out the restoration goals prescribed by Deputy Under Secretary of Defense (Environmental Security) on property it manages. The DON's environmental restoration efforts to assess, characterize, and clean up or control past contamination is centrally managed and consists of three separate areas: CERCLA Installation Restoration, RCRA Corrective Actions, and RCRA Underground Storage Tank (UST) Cleanups. These regulatory regimes apply to both active and BRAC installations.

This Plan provides the current status and projects expected progress in achieving necessary cleanups over the next five years. It also identifies future resources needed to complete all cleanup actions. DON revises this Plan annually to reflect progress and changes that have occurred in the planned actions at each installation. The data used in this edition reflects the status of the cleanup program at installations as of 30 September 1996.

GOALS OF THE ENVIRONMENTAL RESTORATION PROGRAM

1. Ensure full environmental compliance with Federal, state and local requirements pertaining to the cleanup of contamination from past hazardous waste disposal practices.

2. Reduce risk by taking immediate action to eliminate human exposure to contamination and remove or contain contamination that poses imminent threats.

3. Score individual sites on installations using DoD's relative risk site evaluation model to identify, on a national basis, those sites that pose the greatest relative risk to human health and the environment.

4. Develop partnerships with EPA, state and local regulatory agencies, keeping them informed of cleanup activities and soliciting their comments and recommendations throughout the cleanup process.

5. Involve the local community in the Defense Environmental Restoration Program. Establish Restoration Advisory Boards (RABs) at all Navy facilities with an active Environmental Restoration Program and at Marine Corps installations where there is sufficient, sustained local interest. Form RABs at all BRAC installations. Encourage stakeholder participation by making information available in a timely manner, providing opportunities for public comment, and considering all comments in the decision making process.

6. Expedite the cleanup process and demonstrate a bias for action by:

   - Utilizing a risk management approach to site remediation as the basis for sites funding prioritization. This approach incorporates relative risk, economy of scale and regulator and community stakeholder concerns in the prioritization process. The DON has established a goal to earmark 70% of cleanup program funds for high relative risk projects.

   - Taking stabilization or containment measures, as necessary.

   - Taking interim action where appropriate.

7. Consider planned land use in developing cleanup strategies.

8. Ensure that actions necessary to protect human health and the environment are taken prior to property sale or other transfer in accordance with CERCLA, Section 120(h) as amended by the Community Environmental Response Facilitation Act of 1992 (P.L. 102-425) and DOD policy.

CHAPTER 2
BASE REALIGNMENT AND CLOSURE

The Department of Navy conducts environmental restoration work at installations affected by the four rounds of base closures in a similar manner to cleanups at active installations with two major distinctions; 1) cleanup is not funded from ER,N Account, and 2) cleanup funding prioritization decisions are based primarily on the schedule for the property's economic reuse, with relative risk as a consideration.

The Base Realignment and Closure Act of 1988 (PL 100-526) (BRAC I) and the Defense Base Closure and Realignment Act of 1990 (PL 101-510) (BRAC II, BRAC III and BRAC IV) required the environmental restoration efforts at bases being closed or realigned to be funded from a separate BRAC account. It was the intent of Congress that closing bases would not have to compete for cleanup funds with active installations. It also provides an impetus for quicker cleanup and turnover of land to the public or private sector for economic reuse. Local Redevelopment Authorities (LRA) represent communities in developing plans for base reuse. The LRA is recognized by DoD as the entity responsible for developing or implementing the communities redevelopment plan.

In July 1993, the President announced a five-part program to speed economic recovery for communities where military bases are slated to close. As a result, a BRAC Cleanup Team (BCT) has been established at each of the Navy's closing bases where property is available for transfer to the community. The BCT is empowered with the authority, responsibility and accountability for environmental cleanup programs at these installations, with the emphasis on taking necessary actions to facilitate reuse and redevelopment. The BCT works closely with the LRA to exchange cleanup information related to redevelopment plans, priorities and decisions. The DON is working closely with regulators to use innovative technologies and management approaches that will allow bases to be cleaned up even earlier than originally planned. The DON made significant progress in the Base Realignment and Closure (BRAC) arena over the past year. Navy and Marine Corps personnel are committed to "Fast-Track" cleanup at closing bases as demonstrated by the following accomplishments:

- Completing environmental baseline surveys at BRAC I-IV installations to determine the environmental condition of property and to document the status of the cleanup program.
- Partnering with regulators to develop the most cost effective cleanup estimates and schedules.
- Completing the BRAC Cleanup Plans (BCPs) for BRAC I-IV installations.
- Integrating study and design work efforts between study and cleanup (CLEAN and RAC) contract personnel to accelerate cleanup.

Site Status - As of the end of FY96, DON had identified 1,035 sites on BRAC installations. DON has completed all necessary cleanup response actions at 84 sites and cleanup is underway at an additional 70 sites, and the remedy is in place at 2 sites.

Environmental Condition of Property - As of the end of FY96, DON identified a total of 108,274 acres available for transfer from BRAC I-IV installations. This is an increase of 72,845 acres from the end of FY95. To date, 7,159 acres have been transferred to other federal agencies and 549 acres have been transferred to communities for economic reuse.

Redevelopment Plans - For BRAC I-IV installations, 28 redevelopment plans have been approved, and an additional 9 plans have been developed and are awaiting approval. For 3 installations, these plans were not required due to Federal to Federal transfers.

Cleanup Strategy - DON's cleanup strategy for FY96, due in part to a decrease in cleanup funding and the environmental congressional ceiling, was to:

- Fund all cleanup projects where an there is an imminent threat to human health and the environment.
- Prioritize funding for cleanup projects for which there is specific reuse and property recipient identified for the property.
- Support the Local Redevelopment Authority (LRA) and BRAC Cleanup Team (DON, EPA and state regulatory personnel) cleanup priorities based on reuse.
- Fund high priority site characterization studies and support development of the Findings of Suitability for Transfer/Lease (FOST/L) documentation for economic revitalization efforts.
- Fund cleanup in accordance with DON's Environmental Policy Memorandum 95-02 "Consideration of Future Land Use in Determining Cleanup Standards for Base Realignment and Closure (BRAC) Property" of 17 Aug. 95.
- Continue to support a bias towards cleanup versus study due to cost effectiveness and time savings.
- Develop an aggressive execution schedule to ensure continued full obligation of available funds by the end of each fiscal year, while maintaining a healthy funds expenditures profile.

Regulator Involvement - In FY96 and FY97, DON continues to:

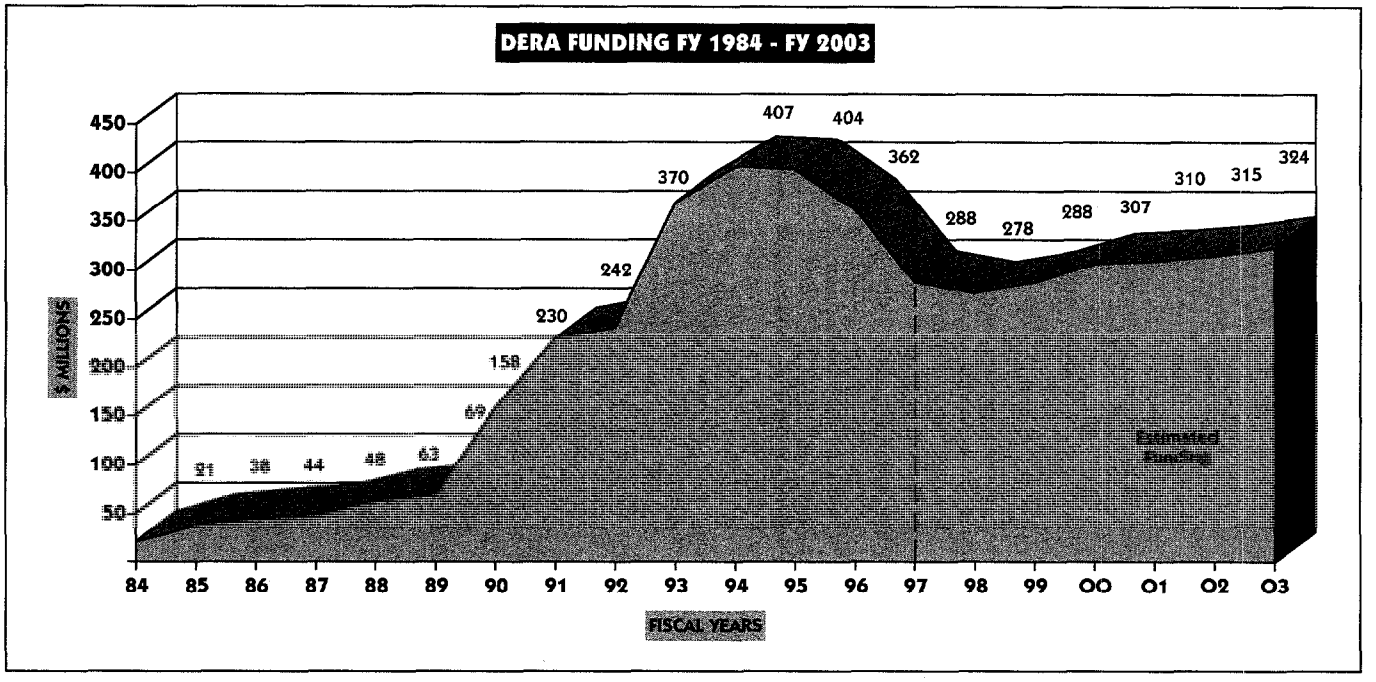
- Partner with BCTs to refine the scope and type of cleanup projects which should be accomplished, and to prioritize projects to be accomplished or budgeted.
- Provide support to the Fast-Track Cleanup Implementation Work Group.
- Provide BRAC Cleanup Plan Abstracts which establish a baseline and metrics to assess program progress.
- Participate in and support BRAC Cleanup Team training.
- Conduct an OSD/Navy Community Conference to exchange ideas and update communities on cleanup issues at BRAC installations.

CHAPTER 3
ENVIRONMENTAL RESTORATION PROGRAM FUNDING LEVELS AND STATUS

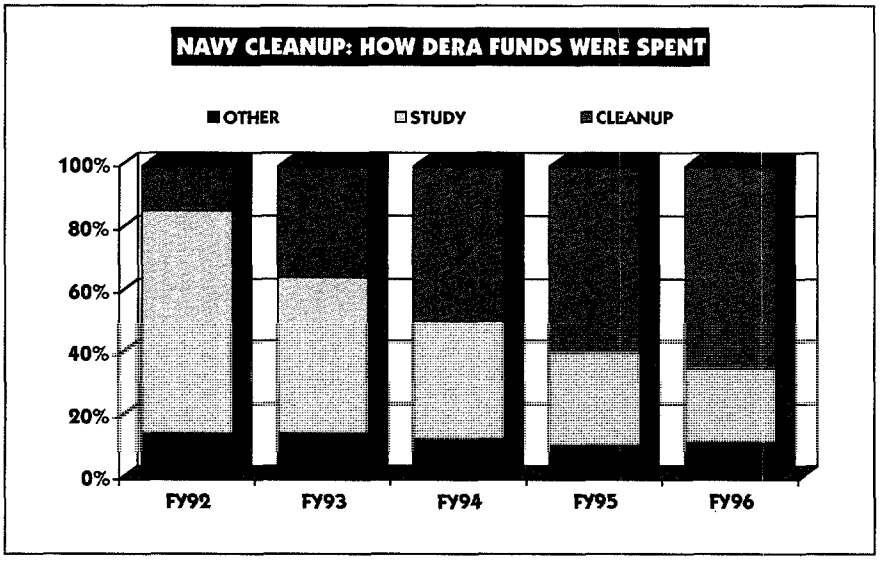
This section provides Environmental Restoration Program statistics and a picture of the cleanup program. Graphic displays show funding trends and site demographics.

3.1 FUNDING

Since 1984, over $2.0 billion in Defense Environmental Restoration Account (DERA) funding has been spent identifying, assessing and cleaning up past hazardous waste disposal sites at Navy and Marine Corps installations.

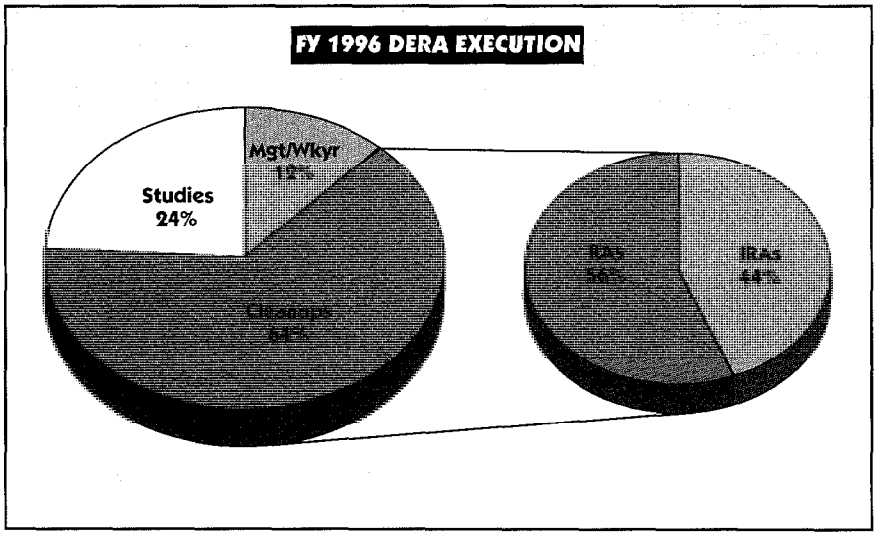


During the program's early years, the Department of the Navy (DON) spent most of the DERA funding on studies to locate sites and characterize the nature and extent of contamination. Over the last five years, increasing emphasis has been placed on accomplishing cleanups. From FY92 through FY96, DON has made steady progress in meeting this goal. During FY92, the share of DERA funding attributed to cleanups was 14%. It jumped to 60% in FY95 and to 64% in FY96. The DON goal for FY97 is to spend a minimum 60% of ER, N on cleanups.



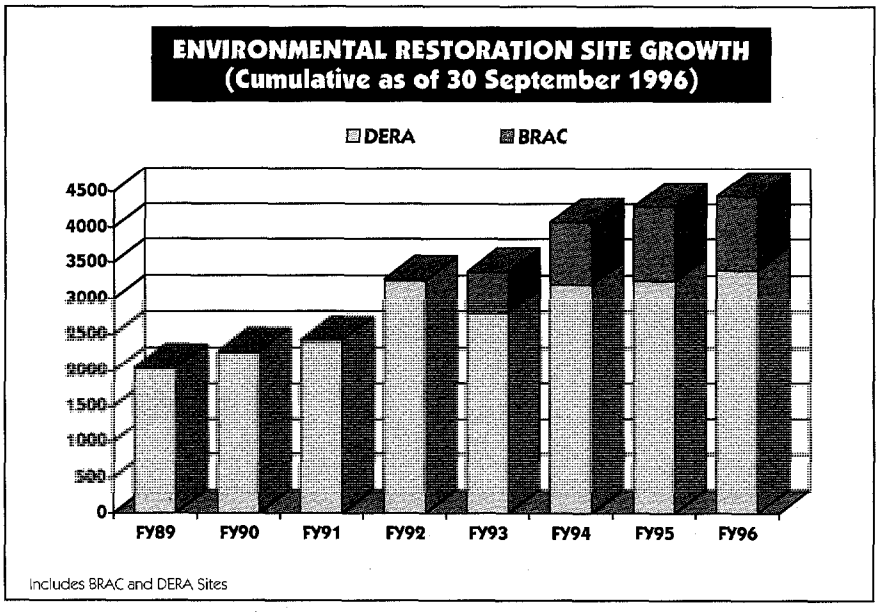
In 1996, Congress reduced the DOD-wide DERA program by $200 million. DON's share of this cut was $56 million. DON employed a risk management strategy to adjust its FY96 cleanup program to meet these lower funding levels, and at the same time, ensure that the most highly contaminated sites with the greatest potential for harm to human health and the environment were addressed first.

A closer look at FY96 DERA execution shows the split between studies, cleanups and program administration costs (management/workyears). DON increased the cleanup proportion of the program to 64% in FY96. Of the DERA funds spent on cleanups, 56% represent Remedial Actions (RAs). Over the past few years, increased use of IRAs and removals help protect human health and the environment, accomplish cleanups sooner and reduce study costs. This trend changed however in FY96, as the study proportion of the program decreased and more sites moved into the cleanup phase.

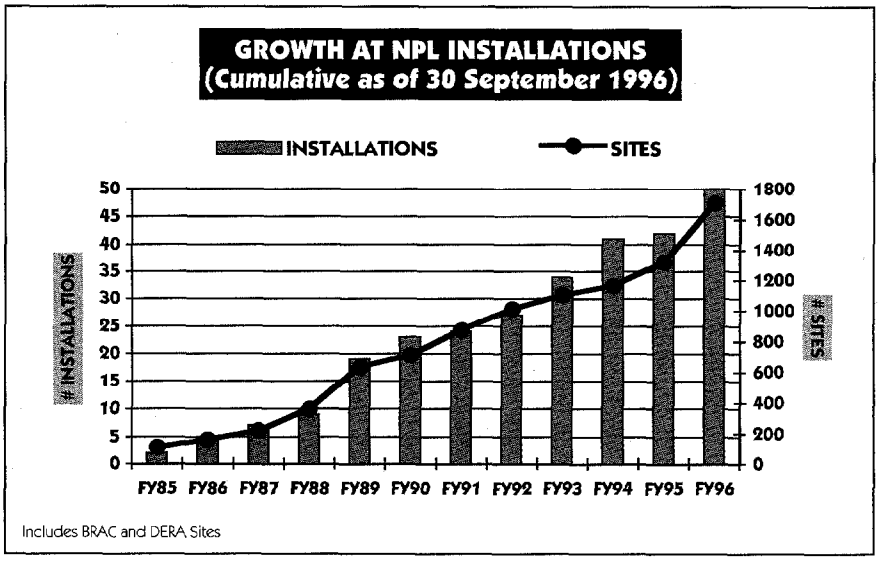


3.2 SITE STATUS

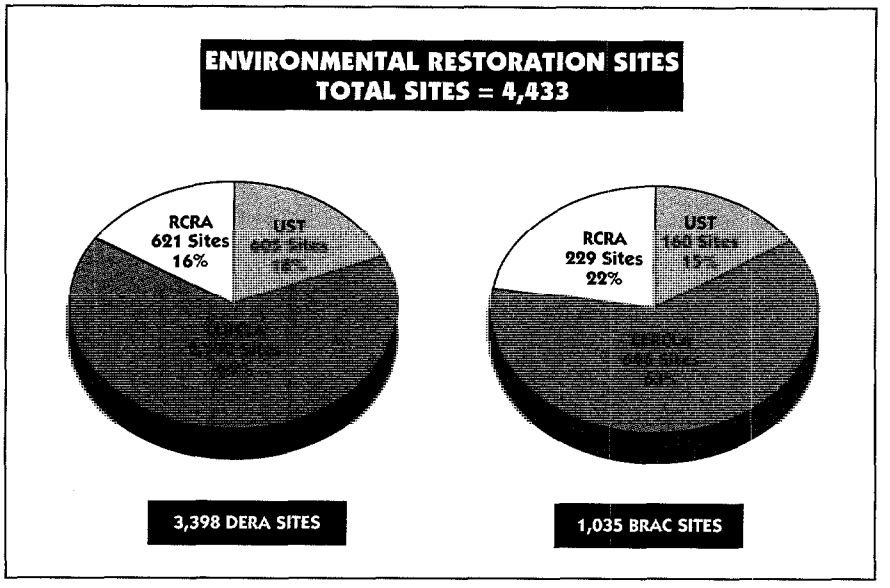
The size of the cleanup program has grown dramatically, doubling since FY89.



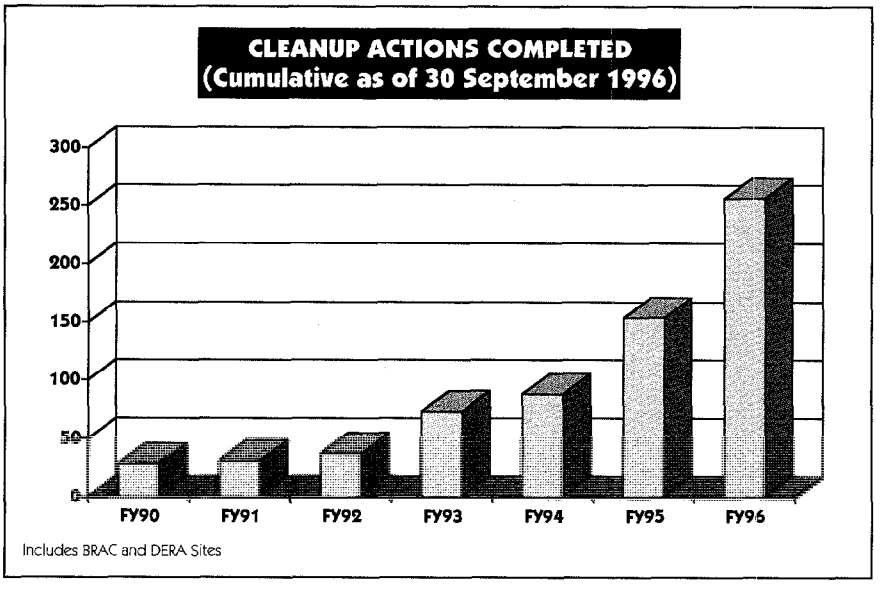
Currently there are 45 DON installations with 1,706 sites on the U.S. Environmental Protection Agency's National Priorities List (NPL). By comparison, in FY90, only 23 DON installations with 709 sites were on the NPL. Growth in the number of NPL installations is expected to stabilize at 2-3 installations per year over the next five years. Of the 45 NPL installations, 27 have a signed Federal Facilities Agreement (FFA).



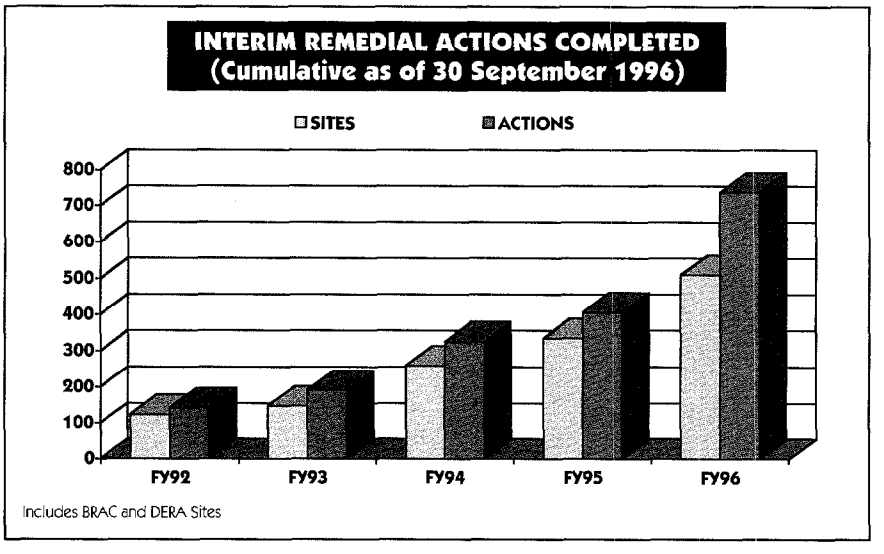
As of 30 September 1996, there are 4,433 sites in the cleanup program; 3,398 DERA and 1,035 BRAC. This chart shows a breakout between DERA and BRAC funded sites by each of the three regulatory regimes that govern cleanups; Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA) and the Underground Storage Tank (UST) component of RCRA.



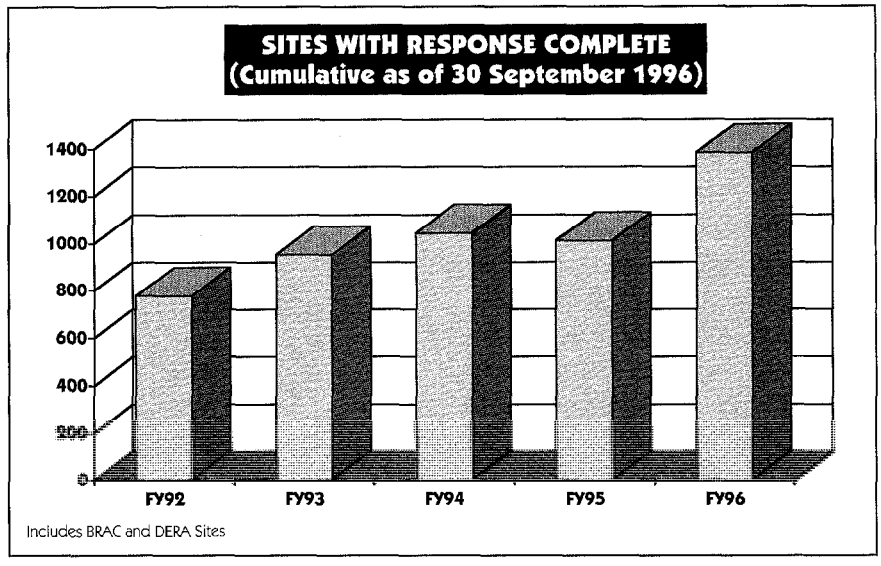
Site cleanup is comprised of two components: Remedial Actions (RAs) and Interim Remedial Actions (IRAs). Remedial Actions represent final solutions to site contamination. Once the RA is completed, no further cleanup action at a site is planned. Remedial Actions have been completed for 228 sites. Of the 228 completed RAs, 38 are BRAC sites, 190 are DERA.



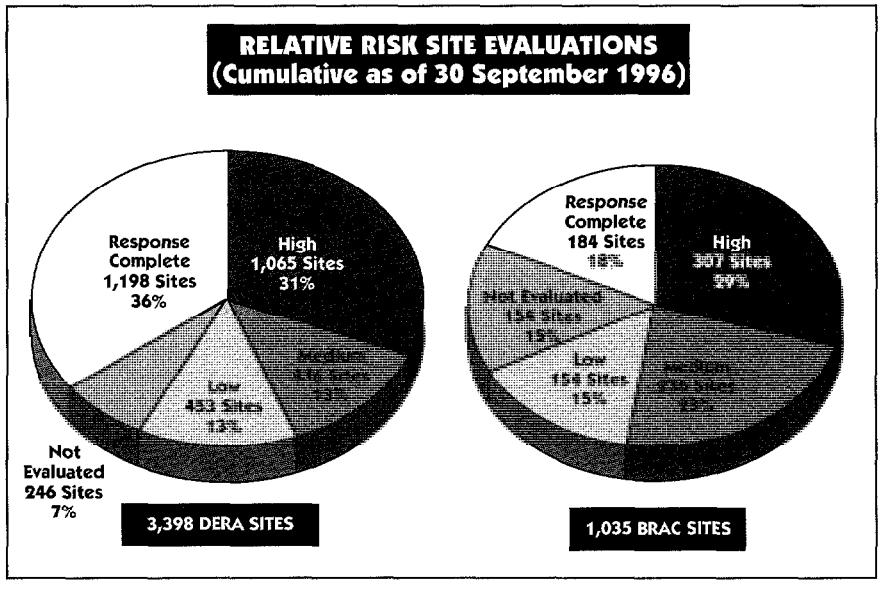
Interim Remedial Actions are frequently taken while a site is still in the study phase to reduce risk, stabilize a site and proceed to cleanup quickly. DON's focus on increased use of IRAs is shown here. By FY96, DON had completed 705 Interim Remedial Actions at 568 sites. Of the completed IRAs, there were 165 actions at 141 BRAC sites and 540 actions at 427 DERA sites.



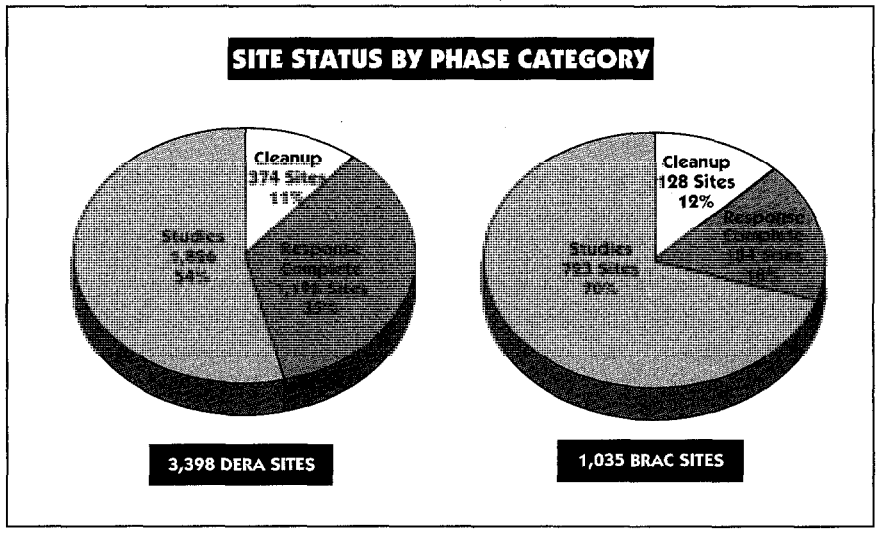
In addition to Remedial Actions that move sites to the Response Complete (RC) category, DON evaluates and determines that many sites require no further action during the study phase. Responses are now complete at 1,382 sites, of which 1,203 are the result of no further action decisions and 179 are the result of completed cleanup actions.



During FY96 DON continued to rank DERA and BRAC sites using the DOD Relative Risk Site Evaluation Model. The results are shown here. Sites without sufficient data to run the model were categorized as "not evaluated". Sites that are response complete do not have a relative risk rank.



Sites are divided into three phase categories: studies, cleanup and response complete. The DON has an aggressive program to cleanup past hazardous waste disposal sites at both active and BRAC installations. During the next five years, DON expects a marked improvement in the number of sites achieving response complete status.



CHAPTER 4
SUCCESS STORIES

The Department of the Navy (DON) has been implementing various initiatives in the areas of policy, technology, and information management to foster the principle of "better, faster, and cheaper" environmental studies and cleanups. Our efforts to become a leaner, more efficient, and responsive organization have, in many instances, resulted in savings of time and money. These have been achieved while maintaining satisfaction amongst all the stakeholders involved with the environmental projects.

This Chapter provides brief descriptions of some events exemplifying applications and results of DON's innovative practices.

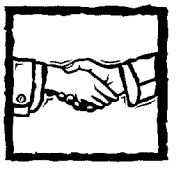
FY96 SUCCESS STORIES

ENVIRONMENTAL MANAGEMENT

- Camp Lejeune MCB - Time-Critical Removal Actions
- NORM - Normalization of Environmental Data Systems

TECHNOLOGIES

- YUMA MCAS - In-well air stripping and ozone sparging
- Point Barrow NARL - Airstrip Fuel Spill Site
- Camp Lejeune MCB - Five Well Site Assessment



PARTNERING AND STAKEHOLDER INVOLVEMENT

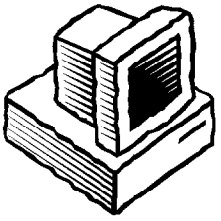
- 1996 West Coast Navy and Marine Corps Base Realignment and Closure (BRAC) Cleanup Team Seminar
- California Interagency Partnering Guidance
- EL TORO MCAS - Partnering
- NTC Orlando - Area C Investigation
- NTC Orlando - Investigation of Southwest Corner, Main Base

Camp LeJeune MCB - Time-Critical Removal Actions

Using guidance established in the National Oil and Hazardous Substances Pollution Contingency Plan, Marine Corps Base (MCB), Camp Lejeune has completed numerous Time-Critical Removal Actions (TCRAs). These TCRAs were employed to reduce risk to human health and the environment while continuing with the environmental investigation process.

May through June 1996 found MCB, Camp Lejeune again employing a TCRA to remove pesticide-contaminated soil from an IR site. IR Site 80, the Paradise Point Golf Course Maintenance Area, underwent a removal action to reduce the human health risk associated with soil contaminated with pesticides that were stored and mixed at the site.

When faced with soil contamination and minimal or no groundwater contamination, MCB, Camp Lejeune took the lead agency role and provactively initiated TCRAs. Through implementing TCRAs, MCB, Camp Lejeune has been able to remove risk to human health and the environment as well as expedite the IR process by removing contamination. This has enabled MCB, Camp Lejeune to sign RODs requiring remediation alternatives of No Action or Institutional Controls only.

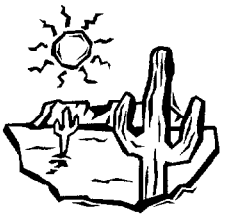


NORM - Normalization of Environmental Data Systems

Prior to FY96 the Navy environmental restoration program was managed and budgeted by coordinating the input from several stand-alone and incompatible data information systems such as:

- Planned execution data in Interim Execution Database (IEDB)
- Actual execution data in Facilities Information System (FIS)
- Remediation cost estimating system (cost-to-complete (CTC))
- Relative risk ranking system
- Defense Site Environmental Restoration Tracking System (DSERTS)
- Budget database

In FY95 and FY96 NAVFAC normalized environmental restoration program data by merging the separate systems into one system called NORM. Normalization of data consists of collecting data in only one place and storing it efficiently in relational tables. The FIS system was modified to be the on-line, official site register, downloading site names into NORM. The Relative Risk, CTC, and DSERTS system components were incorporated into NORM, which enabled NAVFAC Engineering Field Divisions (EFDs) to prepare cost estimates, and site risk rankings themselves. Scheduling, reporting, exporting, and editing features were added. A budget module pulled all component data together to streamline the budgeting process. Every environmental restoration project manager (RPM), manager, and analyst in the EFDs can access this wealth of information through their desk-top computers. NORM has streamlined the management of data for the Navy environmental restoration program while providing a hands-on tool for RPMs to better manage their projects and significantly improving the quality and timeliness of the data. The NORM system has successfully been used to produce a DERA and BRAC budget and a Five-Year-Plan, and to fulfill reporting requirements to higher authority.



YUMA MCAS - In-well air stripping and ozone sparging

A Project Team consisting of the U. S. Environmental Protection Agency Region IX (EPA), Arizona Department of Environmental Quality (ADEQ), Marine Corps Air Station (MCAS) Yuma, Jacobs Engineering (JEG) and Southwest Division, Naval Facilities Engineering Command developed a plan to apply an alternative cleanup technology to remediation of Operable Unit 1 (OU1) at MCAS Yuma. OU1 consists of groundwater plumes contaminated with chlorinated solvents. The project needed to be rapidly awarded and implemented in the field to meet enforceable Federal Facilities Agreement (FFA) deadlines.

The project team was aware of the limitations of more traditional "pump and treat" technologies and agreed to try a more innovative in-situ groundwater remedial technology to determine its applicability to the overall cleanup of contaminated groundwater at MCAS Yuma. A one day meeting was scheduled for four potential vendors to present their "innovative technologies." Following a lengthy discussion, the team agreed on two groundwater treatment technologies; "in-well" air stripping and ozone sparging. There were still some technical issues surrounding data gaps and plume delineation, but it was agreed that additional sampling data could be gathered in conjunction with the pilot studies.

The Source Treatment Reduction Alternatives Plan (STRAP) for OU1 was developed to provide field-based data to supplement information contained in the OU1 Feasibility Study. The STRAP document presents the technical approach and general procedures that will be implemented to perform the pilot treatability studies. It also addresses some of the additional investigations required to fill data gaps. One of these investigations was the use of "Gore-Sorbers," a passive soil gas survey used to look for soil gas concentration in one particular area. The initial STRAP was completed in mid-May 1996.

With the award of the Remedial Action Contract (RAC) a more directed approach was used to collect and present data. The contractor compiled individual "Implementation Memoranda" along with the required Health and Safety Plans instead of a large formal workplan. Each Implementation Memorandum (IM) addresses a separate part of the project. For example, IM#1 addresses the Gore-Sorber and HydroPunch sampling events, and IM#2 addresses the C-Sparge (ozonation) pre-pilot test. The advantage of this is that each IM is a stand alone document. IMs can be produced in a progressive order and have less review time so that the project is not held up if a team member was not in agreement on a particular section.

Field work began in late June and the STRAP is finalized. The passive soil-gas survey and pre-pilot ozone sparge testing have been completed. Hydropunch sampling is ongoing to fill data gaps. MCAS Yuma is taking a leadership role in demonstrating promising new technologies to clean up groundwater contamination. These technology successes when combined with innovative management techniques to streamline the review process hold the promise of big returns in the future.

Point Barrow NARL - Airstrip Fuel Spill Site

Four major fuel spills at the Barrow airstrip resulted in contamination of the subsurface soil and groundwater in the surrounding area. A number of studies concluded that the petroleum contamination was migrating toward Lake Imipuk, a source of drinking water used by the local inhabitants.

A plan was implemented to construct a containment berm that would intercept and recover the contamination before it impacted the drinking water source. The containment berm and recovery system relies upon the local Arctic conditions to impede the flow of contamination. The system raises the permafrost by insulating it from surface heat. The summertime melting of the permafrost is inhibited, thereby creating an ice dam in the subsurface. The contaminated groundwater is diverted into a recovery trench and transferred to a water treatment facility. The water is treated to acceptable state standards and discharged into a sewage lagoon.

During construction of the system a large stream of free product (virgin fuel) was encountered within the excavation of the containment berm. The containment berm was quickly relocated since it could not be installed in an area where free product was present. A recovery trench was installed and has proven to work very well. Over a four month period the trench has recovered over 23,000 gallons of fuel.

Disposal of the large volumes of recovered fuel still remained a problem. A number of alternatives for both on-site and off-site disposal were evaluated. These disposal options were not particularly appealing due to the high cost of equipment, shipping, and labor in the Arctic. Estimates for the options ran as high as $3.00 to $5.00 a gallon, with capital cost ranging from $250K to $400K.

The most attractive option was finding a customer in the local area who could use the fuel as a product and who was equipped to manage the fuel. After an exhaustive search, a qualified firm with the necessary equipment and manpower interested in procuring the fuel was identified. The firm, which will use the fuel for their construction equipment, has agreed to purchase the recovered fuel for 25 cents per gallon.

This is a win-win situation for both the Navy and the local community. The Navy benefits because we actually generate revenue from our recovery operation and avoid an estimated $1.2 million cleanup cost over the life of the project. The local community benefits in two ways; their drinking water source is protected by the recovery system, and they obtain a good usable fuel at a fraction of the retail cost.

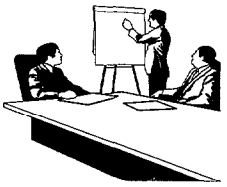
Camp Lejeune MCB - Five-Well Site Assessment

The Underground Storage Tank (UST) program at Marine Corps Base (MCB), Camp Lejeune had more than 125 contaminated sites that were in some stage of remediation. Before corrective action could be put in place, an UST site had to be investigated to determine the extent of contamination and the appropriate remediation needed. Historically, a typical site assessment was composed of 12 Type II wells (shallow aquifer), 3 Type III wells (intermediate aquifer), and 15 Hydropunch borings to delineate soil and groundwater contamination. Quite often, soil contamination was poorly delineated while a large number of monitoring wells were placed at the outer edges of the groundwater plume.

To eliminate unneeded monitoring well costs, MCB, Camp Lejeune modified the previous investigation process to a five Type II well and two Type III well site assessment. The decrease in monitoring wells was replaced by obtaining soil and groundwater data via 15 Geoprobe sampling points, which have replaced the Hydropunch sampling. The Geoprobe sampling was initially analyzed so that the monitoring wells could be strategically placed to ensure complete horizontal and vertical delineation of both soil and groundwater.

By cutting back the amount of monitoring wells used in a site assessment, more than $20,000 per site has been saved, and a total of $200,000 has been saved in Fiscal Year 1996. By strategically using fewer wells, a better quality site assessment was accomplished. The cost avoidance allowed valuable resources to be applied to other remediation efforts.

PARTNERING AND STAKEHOLDER INVOLVEMENT



1996 West Coast Navy and Marine Corps Base Realignment and Closure (BRAC) Cleanup Team Seminar

Over 150 environmental professionals involved with cleanup of closing U.S. Navy and Marine Corps bases met at the 1996 West Coast Navy and Marine Corps Base Realignment and Closure (BRAC) Cleanup Team Seminar, held in Newport Beach, California to discuss initiatives and strategies that significantly impact cleanup policies. The seminar attracted professionals and senior managers representing federal and state regulators. Navy and Marine Corps commands from the Pacific Coast whose installations are scheduled for closure or realignment, commands providing environmental cleanup support, and civilian companies contracted by the Department of Navy to perform cleanup at bases.

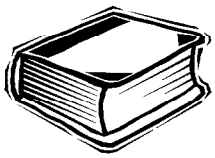
The three day seminar gave participants the forum to address issues that are fundamentally changing and improving the way environmental cleanup at Navy and Marine Corps bases is accomplished. Issues discussed at the various sessions included: BRAC Cleanup Teams, Superfund reauthorization, streamlining of government, balancing of economic and environmental concerns, risk-based management and future land use, stakeholder involvement, establishment of the Navy's budget, discretionary and nondiscretionary funding, federal legislation that governs the budget process, Restoration Advisory Boards, technical breakthroughs in natural attenuation, and statistical methods used to conduct risk assessment. A one day Bioremediation Innovative Technology Seminar was sponsored by NFESC that focused on technology demonstration and application. Display booths exhibited services offered by the Naval Facilities Engineering Service Center (NFESC), the Air Force Center for Environmental Excellence, and the U.S. Environmental Protection Agency Technology Innovation Office.

The seminar helped to broaden and solidify the ongoing partnering necessary to make the most efficient use of available resources and expedite the cleanup of bases and their subsequent transfer to civilian use.

California Interagency Partnering Guidance

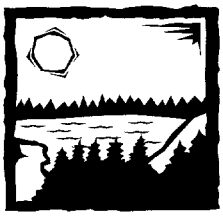
During FY96, EPA Region IX, Cal-EPA/DTSC, NAVFACENGCOM - EFA West, and NAVFACENGCOM - EFD South West jointly developed a document entitled "Interagency Partnering Guidance". The guide formally outlines the partnering relationships of each of the stakeholders and acts as a framework to further strengthen the well-established partnering concept . The Guidance laid four major pillars of that framework: 1) Common Goals and Objectives, 2) Common Means of Achieving Goals and Objectives, 3) Common Values in Performing Work, and 4) Mutual Commitments.

This document, intended for use by Navy, EPA, and state of California RPM's, provides specific guidance on roles and responsibilities, communication mechanisms, meetings guidance, and conflict resolution.



EL TORO MCAS - Partnering

The BRAC Cleanup Team (BCT) has established a partnering agreement and team charter that incorporates the latest and most efficient management techniques to coordinate installation restoration (IR). Team building seminars were held in October 1994 and May 1996. Examples of efficient management techniques and team building include: setting some agency review times shorter than required under the FFA; concurrent document review among BCT members to improve formal draft FFA submittals; and withdrawal of portions of sites from CERCLA at any time in the process if the data supports a CERCLA petroleum exclusion.



NTC Orlando - Area C Investigation

Studies of the Area C laundry site detected perchloroethylene in soil and groundwater at concentrations that exceeded action levels. The findings were discussed at a Restoration Advisory Board (RAB) meeting where citizens were concerned about whether any contamination from the site has migrated to Lake Druid, a small lake about 200 yards west of the site. The traditional approach to site investigation can take between 2-4 years. Because of the concerns of the RAB, the Orlando Partnering Team (OPT) took sediment and surface water samples from Lake Druid. Analytical results were received within one month. A preliminary risk evaluation showed no immediate risk to human health, but State surface water standards were exceeded, requiring additional action and assessment. To stop the surface release to the lake, the OPT initiated an Initial Remedial Action (IRA). This information was presented to the RAB, which concurred with the cleanup decision, in January 1996. The Remedial Project Manager located funding for the investigation, design, and pilot study portions of the IRA, and it was awarded in March 1996.

This quick response to stakeholder concerns reinforces the value of Restoration Advisory Boards and the public participation process. Partnering helped accomplish in 3 months what would have normally taken 2 to 4 years. Speedy assessment of the contaminated site and the planned IRA will reduce the risk of contamination to Lake Druid and possibly reduce the cost to remediate the site. Community concerns were addressed and the Navy is working toward the rapid cleanup and transfer of the NTC, Orlando property.

NTC Orlando - Investigation of Southwest Corner, Main Base

To minimize disruption to current operations, NTC, Orlando used a phased approach to site investigations. Investigations were programmed in the order in which the Navy vacated the facilities.

The Southwest Corner is located in the Naval Nuclear Power Training Command portion of the Main Base. It is largely undeveloped with areas for outdoor recreation and dumpster storage. The parcel was scheduled to transfer to the Local Redevelopment Authority (LRA) in 1999.

The LRA wants to attract developers and generate immediate cash flow in order to finance the redevelopment of other parcels. To accomplish this, the LRA requested that NTC, Orlando transfer the Southwest Corner in 1996. The Southwest Corner was not scheduled for site screening until the FY97 program, and the FY96 program could not accommodate additional screening. However, a late FY95 award task order modification to screen eight sites (intended for the McCoy Annex) could be adjusted to include three additional sites at the Main Base if a corresponding number were dropped from the McCoy Annex. Since both the McCoy Annex and the Southwest Corner are now targeted for early redevelopment, the Orlando Partnering Team (OPT) consulted with the LRA, which agreed to shift its priorities. The LRA identified the sites that could be dropped and have since reprioritized the remaining site work to gain maximum flexibility for redevelopment.

The savings that will accrue cannot be measured in dollars, but can be appreciated as intangibles. The Navy has gained the trust and cooperation of the LRA, which will enhance the efforts of the OPT over the life of the program. The Navy is now in a position to release the property to the LRA as much as 2 1/2 years earlier than originally planned. This action reduces the cost to the citizens of Orlando for financing the redevelopment of NTC, Orlando and directly supports the President's 5-Part Plan for Fast Track Cleanup.

CHAPTER 5
INSTALLATION SUMMARIES

5.1 Organization

This chapter presents the details of cleanup actions that have taken place or are planned, for the 236 installations in the Department of the Navy (DON) Environmental Restoration Program. Installations are listed alphabetically by state and city. In a few cases, multiple adjacent installations have been grouped together into an installation complex with a single summary for the complex.

All installation summaries contain a map box for a quick overview, and a set of Progress and Plans tables, which present a tabular summary of the cleanup program plans for the installation.

More extensive summaries are provided for installations that are included on the National Priorities List (NPL), and major BRAC closures.

5.1.1 Mapboxes

Mapboxes are designed to give the reader a capsule reference to significant installation data, including the location of the installation within the state, number of sites, funding, Relative Risk Rankings, contaminants and a mission statement.

5.1.2 Installation Narratives

The narratives present an in depth picture of the installations. In addition to looking at the cleanup actions at an installation, the history and conditions which contributed to the contamination have also been addressed. Relevant issues are categorized using icons to describe hydrogeology, natural resources, findings of risk evaluations, the status of legal agreements, the current standing of community involvement programs, and the progress of BRAC closures.

5.1.3 Progress and Plans Tables

The Progress and Plans tables capture past cleanup progress and provide a plan for future cleanup actions. Each installation can have up to three tables, based on the number of regulatory programs its sites fall under. Site counts, by fiscal year, are determined by using the actual or estimated end dates for a given phase, using data from the Navy's NORM database.

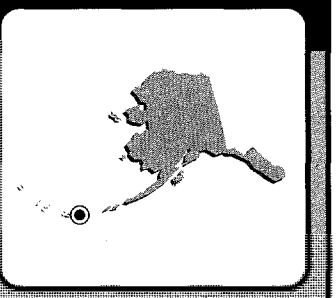
For Interim Remedial Actions (IRAs), the number of sites that have an action are printed followed by the number of actions (in parenthesis) completed or planned for those sites.

The value for Response Complete (RC) indicates the number of sites where actual Remedial Actions are complete or no further response action is planned.

5.1.4 Acronyms and Glossary

Acronyms used in this report are listed alphabetically in Appendix N. For a definition of terms, refer to the Glossary in Appendix O, at the end of this document.

ADAK NAVAL AIR FACILITY
ADAK, ALASKA



Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible]

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	54	High:	33	Not Evaluated:	43
RCRA Corrective Action:	2	Medium:	4	Not Required:	55
RCRA UST:	40	Low:	1		
Total Sites:	96				

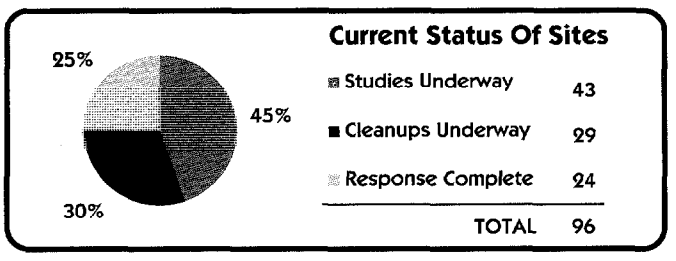
NPL | BRAC IV

Sites Response Complete: 24

EXECUTIVE SUMMARY

Adak Naval Air Facility (NAF) occupies approximately 76,800 acres on the northern half of Adak Island. All NAF buildings and facilities are located near the shores of Kuluk Bay and Sweeper Cove. NAF Adak provides services and materials to support aviation activities and operating forces of the Navy on Adak. The Navy's anti-submarine warfare surveillance mission no longer requires these facilities to support its aircraft. NAF was recommended for closure by the Base Realignment and Closure (BRAC) Commission in 1995. Past operations contributing to site contamination include ordnance handling, firing ranges, sanitary landfills, a metals landfill, aircraft re-fueling, pest control, fire fighting training, power plant maintenance and operation, demolition of former communications facilities and random disposal of drums and other materials (including transformers) in unpopulated areas on Adak Island. Generally, abandoned drums on Adak are empty fuel storage drums dating back to the WW II time frame. These empty drums were sometimes used to build structural bulkheads and drainage culverts and pose no significant threat to the environment in their present condition. Because these drums are scattered widely over the island costs for collection and disposal of these abandoned drums on Adak would be extremely expensive. Therefore collection and disposal of abandoned drums in an appropriate solid waste disposal facility has not been considered a viable remediation option. Wastes generated from current operations on Adak are managed according to hazardous waste regulations. NAF Adak was placed on the National Priorities List (NPL) in 1994. A Federal Facilities Compliance Agreement (FFCA) was signed in 1990. On 15 November 1993, the Navy, EPA and the Alaska Department of Environmental Conservation signed a Federal Facility Agreement (FFA).

Community Relations - Adak is a remote location with virtually no non military community located on island. To foster community involvement and input in the clean up effort for the island a number of initiatives have been used as part of the community relations effort on Adak. These include development of an extensive off island mailing list and distribution of fact sheets to representatives of a number of interested stakeholder groups; open house meetings in Anchorage as well on Adak to provide information on clean up activities; and maintaining complete information repositories for clean up activities on Adak as well as Anchorage and Seattle. A RAB was formed in January of 1996 and is composed of approximately 30 members with representatives from a broad spectrum of the community at large. This group has been meeting at least once a month since its inception.



All PSEs have been completed at sites listed in the FFA. Characterization work is continuing at SWMU 67 in preparation for construction of an intrusive barrier (cap) to minimize potential exposure to PCB contaminated soils at the site. Installation of this cap is expected to be one the final major remedial actions required for non petroleum contaminated sites listed in the (FFA) for NAF Adak.

Unexploded Ordnance remains a concern at sites listed in the Federal Facilities Agreement (FFA) as well as in the other inhabited and remote areas of the northern half of Adak Island. Identification and clearance of UXO is planned for areas within the core area of the NAF Adak complex to enable real estate transfer of these areas to occur as part of the BRAC closure process. While these areas are not specifically identified in the FFA for environmental investigation or remediation, a large number of ordnance items have been found. Consequently, these areas must be treated as potentially contaminated with UXO. Planning is underway to perform a detailed archival search of historical information on past management of ordnance material on Adak. After this archival research is completed, a geophysical survey will be performed to identify any potential UXO items that may exist below ground surface within the core NAF Adak area. Intrusive investigations will then be performed to identify, remove, and dispose of these UXO items.

Remediation efforts continue at petroleum contaminated sites on Adak. A time critical removal action to recover free product and associated contaminants has been initiated at SWMU 17 in 1996. The system installed under this removal action is currently successfully operating to recover free product. Upgrades to the existing housing area fuel spill recovery system are under construction and are expected to be operational by fall of 1996. An additional free product recovery system is under design for the Tank Farm A fuel spill area. This system is expected to utilize bioslurping technology and is planned for construction during 1997.

Upon nomination of NAF Adak for BRAC IV, Engineering Field Activity, North-West (EFA NW) visited representatives from Congress and the State of Alaska, Fish and Wildlife, Coast Guard, EPA and various military representatives to identify stakeholders points of interest. A Reuse Planning Committee and BRAC Cleanup Team (BCT) have been formed. Stakeholder consensus for all decisions regarding BRAC execution is a major concern. The BRAC Cleanup Plan (BCP) was published in November 1996.

ADAK NAF
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - No developed or extensive aquifer system is present on NAF Adak. Groundwater is not used as a potable water source. Many of the disposal sites are located within surface streams, ponds and lakes or in the proximity to these water bodies. Therefore, surface drainage is a primary mechanism of contaminant migration to freshwater environments and critical habitats within the marine water bodies. A Groundwater Study has been completed for NAF Adak to determine the nature and extent of the groundwater regime on the island and the potential for site contamination to impact groundwater quality. A Background Sampling Study has also been completed for NAF Adak to determine reference conditions for surface water, groundwater and soils.

NATURAL RESOURCES - Native vegetation, located in both actively used areas and all other areas on Adak, consists of grasses, legumes, forbs, mosses and lichens. Fish are abundant in lakes and streams on NAF Adak and in the surrounding marine waters. Five species of salmon are found in the waters surrounding Adak - pink, chum, silver, red and king. All species except the king salmon, spawn in the local streams. Halibut, an important fish to commercial and sport fisherman, is found in the intertidal and near tidal zones around Adak Island. Other fish, including herring and perch, are popular with local anglers. A total of 146 species of birds have been observed on Adak Island. Some of these birds are commonly found and others are seasonal migrants. Nine areas on Adak Island are important to bird life. These areas include a cliff, the Clam Lagoon, intertidal area, tern colony, wetlands, Finger Creek, Mount Reed and Shagak Bay. Mammal species include the Arctic fox and caribou. Marine mammals include sea otters, porpoise, sea lions, fur seals and twelve species of whales. Some of these whales inhabit the local waters year-round, while others seasonally migrate through the region. Adak has several species of animals and plants which are protected. The Aleutian Canadian goose, an endangered species, the Eskimo curlew, protected by the State of Alaska and the Aleutian shield fern, a rare plant species, are found on the island. Bald eagles are common in Adak. Also, seven types of protected whales are found in the area.

RISK - Under the DOD Relative Risk Ranking System, 23 sites were rated high relative risk, 4 medium and 1 low. SWMU 1 has been in operation since 1942 as an ordnance disposal area and firing range training area. Surface water from SWMU 1 discharges to Andrew Lake, a recreational area. SWMU 6 is located near Andrew Lake and was a drum disposal area. Contaminated sediments from SWMUs 1 and 6 may pose an exposure risk to benthic community and upper tropic levels such as sea otters, eagles, etc. Several high ranked sites are landfills where wastes such as petroleum products, paints, solvents, sanitary refuse, batteries and metals were disposed. Interim Removal Actions (IRAs) were recently initiated on two landfills, SWMUs 11 and 13. The IRA at SWMU 11 consist of recontouring the site and diverting an existing stream to prevent contact with landfilled materials. At SWMU 13, the IRA consists of consolidating existing on-site debris and placing a cover on the site to form an intrusion barrier to prevent exposure of landfilled materials. Two SWMUs, 20 and 67, have soils contaminated with the chemical additive PCB. Aquatic ecological receptors are located in the Trout Creek area. This area is also a recreational area. A Removal Action is planned to cap areas of high PCB contamination at SWMU 67 to form an infiltration barrier. This will prevent erosion and leaching of contaminated soils containing the chemical additive PCB from the site and eliminate contamination of downgradient areas including an important salmon spawning stream.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - NAF Adak was listed on the National Priorities List (NPL) on 31 May 1994 with a Hazard Ranking System (HRS) score of 51.37.

LEGAL AGREEMENTS - On November 15, 1993, the Navy, EPA and the Alaska Department of Environmental Conservation signed a Federal Facility Agreement (FFA). In the FFA, sites were renumbered and 48 sites were divided into four Operable Units (OU). The FFA also identified requirements for basewide studies of groundwater and background sampling.

PARTNERING - A number of partnering initiatives have been undertaken both prior to and after the Base Realignment and Closure (BRAC) listing of NAF Adak. Under the FFA, representatives of EPA, Alaska Department of Environmental Conservation and the Navy have operated as a partnership to arrive at remedial decisions.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in 1992. The Navy attempted to establish a DOD Aleutian Islands' Restoration Advisory Board (RAB). Since Adak, Amchitka and many other islands in the Aleutian chain have no native population, a regional RAB was considered desirable. When Adak went BRAC, the Navy withdrew from the effort to stand up the Aleutian Island RAB and established a RAB for the BRAC cleanup process at Adak. The initial RAB meeting was held in Anchorage in January of 1996. Adak RAB membership includes stakeholders from tribal organizations, environmental protection groups, business interests, and members of the community at large as well as parties interested in land transfer possibilities.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was completed in October 1989. In August 1993, the CRP was updated to reflect changes in the Installation Restoration Program (IRP) and to meet federal and state environmental regulations. In March of 1995, the CRP was again extensively revised to reflect changes that resulted from the signing of the FFA. The CRP will be updated periodically to reflect base operational activities and Remedial Actions (RAs) planned in the near future.

INFORMATION REPOSITORY - An Information Repository was established in 1990 and has been relocated to the University of Alaska Anchorage, Alaska.

BASE REALIGNMENT AND CLOSURE

BRAC - Upon nomination of NAF Adak to Base Realignment and Closure (BRAC) IV list, EFA NW visited representatives from Congress and the State of Alaska, Fish and Wildlife, Coast Guard, EPA and the military participants (NAF, CINPACFLT and NSGS) to identify stakeholders issues of interest. A Reuse Planning Committee, BRAC Cleanup Team (BCT), and a BRAC Environmental Cleanup Team (BECT) which provides technical support for developing the cleanup strategy has been formed. Stakeholder consensus for all decisions regarding BRAC execution is a major concern.

BRAC CLEANUP TEAM - After NAF Adak was listed for closure, a BRAC Cleanup Team (BCT) was formed. There is also a BRAC Environmental Cleanup Team (BECT) and a Reuse Planning Committee. All of these groups exist to arrive at stakeholder consensus to the maximum extent possible.

DOCUMENTS - A BRAC Cleanup Plan (BCP) was published in November 1996.

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
0 acres	0 acres	0 acres	0 acres	0 acres	0 acres	61,000 acres

ADAK NAF
RELEVANT ISSUES

LEASE/TRANSFER - No leases or transfers of property have taken place to date.

REUSE - A Reuse Planning Committee has been formed. A draft Reuse Plan was prepared. Based on this draft reuse plan, the State of Alaska withdrew as lead agency in reuse planning and has supported the formation of the Local Reuse Authority which is currently headed by the Aleut Nation.

FAST TRACK INITIATIVES - NAF Adak's BCT, BECT and RAB are working together to ensure the clean up process on Adak is accelerated to support the Navy's goal of operational closure of Adak by September of 1997.

HISTORICAL PROGRESS

FY86

Sites 1-32 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), identified 32 potentially contaminated sites at NAF Adak.
Sites 1-9, 12 and 18-19 - These sites were determined not to pose a threat to human health or the environment and were not recommended for further investigation.
Sites 1 and 8 - An Interim Remedial Action (IRA), posting warning signs to restrict access to areas containing unexploded ordnance, was completed.
Sites 10, 11, 13-17 and 20-32 - These sites were recommended for further investigation.

FY88

SWMUs 24 and 77 - A RCRA Facility Assessment (RFA) for these two sites was completed.

FY89

Sites 10, 11, 13, 17 and 20-32 - A Site Inspection (SI) addressed the 20 sites recommended for further investigation in the PA.
SWMUs 24 and 77 - A RCRA Facility Investigation (RFI) was completed.

FY90

Site 16 - A removal action was completed. The action involved the deactivation of fire fighting training pits and the disposal of oily water and sludge contaminated with solvents, PCBs and petroleum products.

FY91

Sites 34 and 36 - An SI found polynuclear aromatic hydrocarbons at Site 34 and the chemical additive PCB and solvents at Site 36. The SI recommended further investigation at both sites.

FY92

Site 13 - An SI found significant levels of pesticides, the chemical additive PCB, dioxins, furans, heavy metals (arsenic, lead and zinc) and organic compounds in sediment and surface water. The SI recommended further investigation.
Site 38 - An SI found low levels of metals and organic compounds. The SI recommended further investigation.
Site 39 - An SI found elevated concentrations of the chemical additive PCB and organic compounds in soil, as well as significant levels of arsenic, lead and petroleum hydrocarbons in groundwater. The SI recommended further investigation.

FY93

SWMU 62 - Interim measures began to treat groundwater contaminated with petroleum, oil lubricants.
UST 7 and SWMU 60 - Removal of abandoned field constructed ASTs and pipelines were completed.

FY94

UST 1 - Plans to remove nineteen abandoned USTs were developed.
USTs 6 and 11 - NSGA USTs were removed.
UST 8 - Thirty abandoned USTs and pipelines were removed.
UST 18 - Completed a removal action to bioremediate 4,500 tons of petroleum contaminated soil on-island. Operations and maintenance of the bioremediation system began.

FY95

Site 92 - A time critical removal action was completed that consisted of excavation and removal of 44 leaking incendiary (Napalm) bombs and 2 cluster bombs containing 34 incendiary bombs. These bombs were disposed of by open detonation and burning on Adak island in a containment structure built specifically for this purpose.
Sites 92 and 95 - Removed drums and tanks and small amounts of contaminated soil.
SWMUs 1, 8, 14, 17, 20, 52, 53, 59, 55 and 67 - Conducted field work to support Preliminary Source Evaluations (PSEs).
SWMUs 2-7, 23, 27, 29, 30, 42, 51 and 72 - Removed drums and tanks and small amounts of contaminated soil.
SWMUs 11 and 13 - An Interim ROD was signed in March. Action was to re-route surface water around landfill at SWMU 11 and evaluate offshore debris at SWMU 13. The ROD also required that covers be provided for both landfills.
SWMU 24 - The CMS was completed.
UST 1 - Completed removal action to remove various abandoned USTs.
UST 9 - Operation of the Housing Area fuel recovery system continued. While this system is still recovering significant volumes of free product, recovery rates are declining in the existing wells as a result of decreasing volumes of petroleum product in the area influenced by the existing recovery wells.
UST 18 - Remedial Action (RA) began and soil bioremdiation continued.

ADAK NAF
PROGRESS DURING FISCAL YEAR 1996

FY96

Adak is unique because of it's remoteness. In 1996, a plan to expedite the critical cleanup at Adak before operational closure was prepared and approved by the ASN (I&E). Field work to support the basewide Remedial Investigation and Feasibility Study (RI/FS) was completed in August of 1996. It is expected that the RI/FS will recommend No Further Remedial Action for most of the FFA sites on Adak as a result of the remedial actions already taken. The focus of the RI/FS investigation has been on clearance and boundary identification on UXO sites, requirements for access restrictions, ongoing security, and future land use restrictions.
SWMUs - Final reports for the Preliminary Source Evaluations was completed in February for several SWMUs. This report documents extent of contamination and design and future requirements for cleanup.
SWMUs - 9, 17, 52, 53 and 59 - completed PA/SI.
SWMU - 9 is response complete.
SWMU 11 - Interim Remedial Actions (IRA) work was completed in May of 1996 (IRAs) which consisted of recontouring the site to form an intrusion barrier and provide for improved surface water drainage from the site.
SWMU 13 - Construction of an IRA is ongoing. The IRA consists of consolidating existing on-site debris and placing cover on the site to form an intrusion barrier to prevent exposure of landfilled materials.
SWMU 67 - A non-time critical removal action is planned. An Engineering Evaluation and Cost Analysis (EE/CA) have been completed for this removal action.
SWMU 24 - Complete IRA.
Site 75 - RA completed.
Site 76 and SWMUs 1, 2, 4, 6, 7, 10, 13-16, 20, 52, 53, 55, 59, 67 and 74 - Completed RI/FS.
UST 9 - Installation of additional recovery wells is planned to enhance the recovery of petroleum product.
Site 76 and SWMUs 2, 4, 6, 7, 10, 11, 13-17, 19, 20, 25, 52, 53, 55, 59 and 74 - Completed RD.
Site 92 - IRA completed.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Projected work includes on-going and completion of Tier Approach to Risk Assessment for most petroleum sites. In addition, enhancements to existing petroleum recovery systems are being constructed and an additional recovery system which employs innovative bioslurping technology is planned for the petroleum release from Tank Farm "A".

Final recommendations from the basewide RI/FS are expected to be available in FY97. With the possible exception of UXO sites, it is expected that most of the sites considered in the RI/FS will be recommended for No Further Action.
TARA Process, SWMUs 1-6, 8, 10-23, 25 and 29-36 - Plan to complete corrective action plan.
SWMU 16 - Plan to complete RAO.
SWMU 17 - Petroleum recovery efforts continue. Efforts to identify and mitigate other sources of petroleum contamination in adjacent areas continue.
SWMUs 19 and 25 - Both sites are permitted operating landfills that will be closed as required by the State of Alaska regulations.
SWMU 24 - Plan to complete CMI.
SWMU 77 - Plan to complete CMS and IRA.
SWMUs 24 and 77 - Plan to close in place (RC).
SWMUs 1, 17, 29 and 67 - Plan to complete RD.
SWMUs 4, 6, 7, 11, 15, 16, 20, 53, 55, 59, 65, 67 and 74 - Plan to complete IRAs.
SWMUs 13, 16, 20, 24, 53, 59, 67, 74 and 77 - Are planned to be response complete.
Site 75 - Completed PA/SI and RI/FS.
Site 76 and SWMUs 10, 11, 13, 16, 20, 25, 52, 53, 59, 67 and 74 - Plan to complete RA.

FY98

SWMU 17 - Continue to maintain and operate the housing fuel recovery system. Maintain and upgrade bioslurping facility to maximize fuel recovery.
Sites 92 and 161 and SWMUs 8, 17, 21, 23 and 27-29 - Plan to complete RI/FS.
SWMU 27 - Plan to complete RD.
Sites 92-94 and 161 and SWMUs 1, 2, 4, 6-8, 14, 15, 17, 19, 27, 29, 55 and 65 - Plan to complete RAs.
UST 24 - Plan to complete SA and CAP.
TARA Process, SWMUs 1-25 and 29-37 - Plan to complete IMP.
SWMUs 1, 2, 8, 10, 11, 17, 29 and 52 - Plan to complete IRAs.
Sites 92-94 and161 and SWMUs 6, 7, 10, 11, 15, 19, 21, 23, 28, 29, 52, 55 and 65 - Plan to be response complete.
UST 7 - Plan to complete IRA.
USTs - 1-6, 8, 10-23, 25 and 29-37 - Plan to be closed in place (response complete).

Maintain and operate thermal desorption facility for contaminated soils basewide if required.

Initiate closing of monitoring well permits if required.

ADAK NAF
PROGRESS AND PLANS

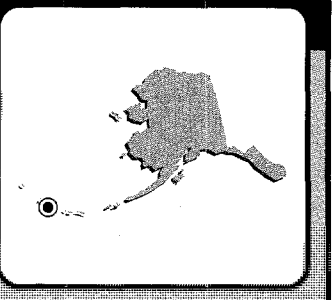
CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	46	5	1					
RI / FS	1	18	1	9				
RD		20	4	1				
RAC		1	12	18	1	1		
RAO			1				5	1
IRA		1(2)	13(17)	8(11)		4(7)		
RC	17	1	9	17	1	3	5	1
Cumulative % RC	31%	33%	50%	81%	83%	89%	98%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	2							
RFI / CMS	1		1					
DES								
CMI			1					
CMO								
IRA		1(2)	1(1)					
RC			2					
Cumulative % RC	0%	0%	100%	100%	100%	100%	100%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	14			1				
CAP	2		31	1				
DES	1							
IMP				34				
IMO					2			1
IRA	18(22)	1(1)		1(1)				1(1)
RC	6			31	2			1
Cumulative % RC	15%	15%	15%	93%	98%	98%	98%	100%

AMCHITKA FLEET SURVEILLANCE SUPPORT COMMAND DETACHMENT 1

AMCHITKA, ALASKA



Engineering Field Division/Activity: [illegible]
Major Claimant: COMSPAWARSYSCOM
Size: 5 Acres
Funding to Date: $616,000
Estimated Funding to Complete: $17,479,000

Base Mission: Detects aircraft and ships using relocatable over the horizon radar
Contaminants: ICRs, HORs, lead, volatile organic compounds

Number of Sites:
CERCLA: 11
RCRA Corrective Action: 0
RCRA UST: 0
Total Sites: 11

Relative Risk Ranking of Sites:
High: 4
Medium: 1
Low: 1
Not Evaluated: 4
Not Required: 1

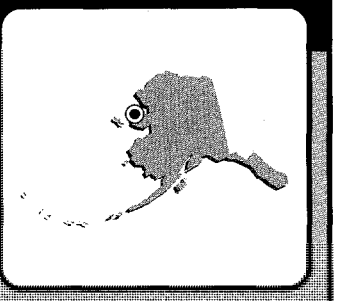
Sites Response Complete: 4

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	2	5		4				
RI / FS				1	3	6		
RD				1		1	2	1
RAC				1		3	2	3
RAO								5
IRA					1(1)			
RC	1			1		2	2	5
Cumulative % RC	9%	9%	9%	18%	18%	36%	55%	100%

CAPE PRINCE OF WALES NAVAL COMMAND CONTROL AND OCEAN SURVEILLANCE CENTER

CAPE PRINCE OF WALES, ALASKA



Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible] Acres

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: Conducts Arctic experiments and gathers weather information

Contaminants: Paint, sewage with hazardous waste, solvents, electrolyte, gas cylinders, PCBs

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	3	High:	0	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	3	Not Required:	0
RCRA UST:	0	Low:	0		
Total Sites:	3				

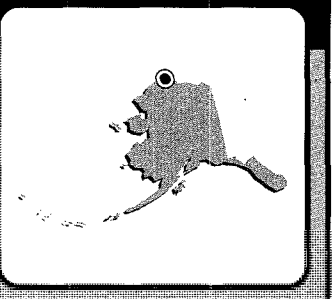
Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	3							
RI / FS				1	1			
RD						1	1	
RAC		1					1	1
RAO								
IRA	1(1)			1(1)			1(1)	
RC				1			1	1
Cumulative % RC	0%	0%	0%	33%	33%	33%	67%	100%

POINT BARROW NAVAL ARCTIC RESEARCH LABORATORY

POINT BARROW, ALASKA



Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible] Acres

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: Conducts Arctic Research

Contaminants: POLs, gasoline, diesel, benzene, toluene, ethylbenzene, xylene

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	13	High:	8	Not Evaluated:	4
RCRA Corrective Action:	0	Medium:	1	Not Required:	0
RCRA UST:	0	Low:	0		
Total Sites:	13				

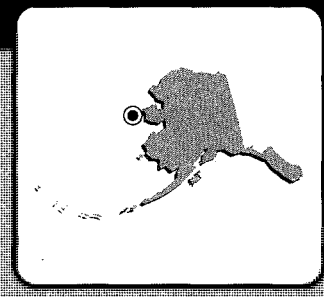
Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	10	1	2					
RI / FS				8	1	1		1
RD					3	1		
RAC						2	3	3
RAO								4
IRA	2(2)	1(1)	2(2)	1(1)	2(2)	1(1)	1(1)	1(2)
RC				5		1	2	5
Cumulative % RC	0%	0%	0%	38%	38%	46%	62%	100%

ST. LAWRENCE NAVAL COMMAND CONTROL AND OCEAN SURVEILLANCE CENTER

ST. LAWRENCE, ALASKA



Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible]

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: Provided telecommunications link to remote parts of Alaska, currently inactive.

Contaminants: [illegible]

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	4	High:	3	Not Evaluated:	1
RCRA Corrective Action:	0	Medium:	0	Not Required:	0
RCRA UST:	0	Low:	0		
Total Sites:	4				

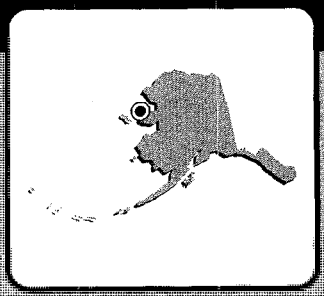
Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	3				1			
RI / FS				1				
RD					1			
RAC						1		3
RAO								
IRA				1(1)	1(1)	1(1)		
RC								4
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

TIN CITY NAVAL COMMAND CONTROL AND OCEAN SURVEILLANCE CENTER

TIN CITY, ALASKA



Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Site: 6 Acres

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: Provided telecommunications link to Deadlie parts of Alaska, currently inactive

Contaminants: PCBs

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

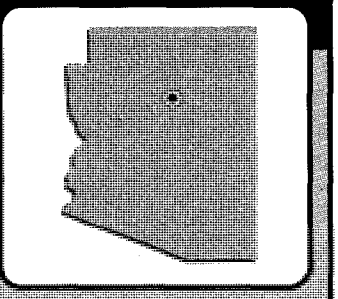
Relative Risk Ranking of Sites:			
High:	1	Not Evaluated:	0
Medium:	0	Not Required:	0
Low:	0		

Sites Response Complete: 0

PROGRESS AND PLANS

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

FLAGSTAFF NAVAL OBSERVATORY STATION
FLAGSTAFF, ARIZONA



Engineering Field Division/Activity: SWDIV

Major Claimant: COMNAVVEREOCTCOM

Size: 960 Acres

Funding to Date: $50,000

Estimated Funding to Complete: $71,000

Base Mission: Provides data for navigation, positioning and communications

Contaminants: Heavy metals, POLs

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

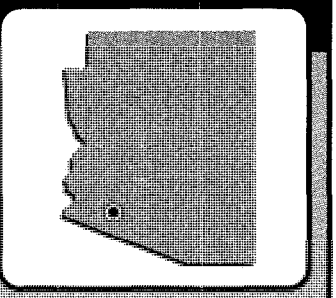
Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI			1					1
RI / FS								
RD								
RAC								1
RAO								
IRA								
RC								2
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

SENTINEL NAVAL COMMAND CONTROL AND OCEAN SURVEILLANCE CENTER

SENTINEL, ARIZONA



Engineering Field Division/Activity: SWESTDIV

Major Claimant: COMSPAWARSYSCOM

Size: 1,760 Acres

Funding to Date: $374,000

Estimated Funding to Complete: $0

Base Mission: Supports wave propagation projects and surveys; plans, designs and constructs very low frequency antennas for communication with satellites.

Contaminants: PCEs (investigation in progress)

Number of Sites:

CERCLA:	2
RCRA Corrective Action:	0
RCRA UST:	1
Total Sites:	3

Relative Risk Ranking of Sites:

High:	0	Not Evaluated:	0
Medium:	0	Not Required:	3
Low:	0		

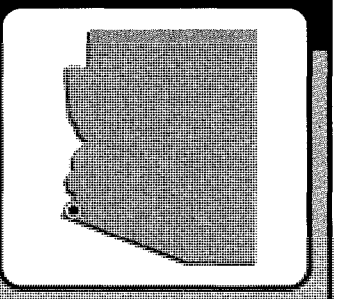
Sites Response Complete: 3

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	2							
RI / FS								
RD								
RAC								
RAO								
IRA								
RC	2							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP								
DES								
IMP		1						
IMO								
IRA		1(2)						
RC		1						
Cumulative % RC	0%	100%	100%	100%	100%	100%	100%	100%

YUMA MARINE CORPS AIR STATION
YUMA, ARIZONA



Engineering Field Division/Activity: SWDIV
Major Claimant: CNC
Size: 3,000 Acres
Funding to Date: $[illegible]
Estimated Funding to Complete: $[illegible]

Base Mission: Supports tactical aircrew combat training for Pacific and Atlantic Fleet Marine Corps forces deployed.

Contaminants: Benzene, JP-5, PCEs, volatile hydrocarbons, volatile and semivolatile organic compounds, metals

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	20	High:	7	Not Evaluated:	5
RCRA Corrective Action:	0	Medium:	3	Not Required:	1
RCRA UST:	5	Low:	12		
Total Sites:	25				

NPL

Sites Response Complete: 1

EXECUTIVE SUMMARY

Marine Corps Air Station (MCAS) Yuma occupies approximately 3,000 acres of desert southeast of Yuma, Arizona. The MCAS has been a military air base since the early 1940s. Operations such as aircraft maintenance and servicing, and fire fighting training have been the biggest contributors to sources of contamination. MCAS Yuma was listed on the NPL in 1990 due to the discovery of the organic solvent TCE in the groundwater, a potable water source. A Federal Facility Agreement (FFA) was signed with EPA and the State of Arizona in FY92.

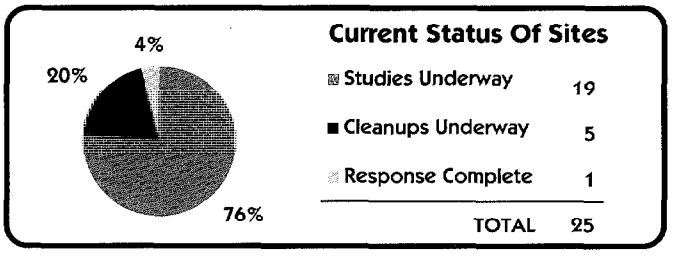
Most of the land adjacent to MCAS Yuma is agricultural. North of the station, commercial and industrial uses are predominant. Contamination of groundwater is of major concern in wells located within three miles down gradient of the station which are used for drinking water.

At MCAS Yuma, Site Inspections (SIs) have been completed at twelve sites. A Feasibility Study (FS) is underway at Sites 1-18 (Operable Unit (OU) 2). The Remedial Investigation is complete at those sites. A RI/FS, a Remedial Design (RD), and an interim removal action (IRA) have been performed at one site. Site 18 was catalogued as response complete in FY96. One Underground Storage Tank (UST) site has a completed Corrective Action Plan (CAP) and at another one a corrective measure implementation (IMP) was performed. Implementation of corrective measures is underway at two UST sites.

No further action will be recommended at 12 CERCLA sites. Three of the sites will have institutional controls because the risk is not acceptable for residential scenarios, but is okay for industrial usage. Three other sites have asbestos-contaminated materials and remedial designs and remedial actions will be accomplished in FY97. Corrective measures implementation is planned for two UST sites in FY97.

A Restoration Advisory Board (RAB) was established in FY95 and includes members from the local community and city and meets on a semiannual basis. A Community Relations Plan (CRP) was updated in FY94. Information Repositories were established in FY90.

Through partnering and innovative approaches, the MCAS Yuma Project Team was able to save two to three years and approximately $10 million on the Remedial Investigation phase of the Installation Restoration Program (IRP). The MCAS Yuma Project Team consists of: MCAS Yuma; Region IX EPA; Arizona Department of Environmental Quality; and Southwest Division, Naval Facilities Engineering Command. The innovative approach was to conduct a remediation-driven investigation that provides for real-time decision making, interactive review of the data to determine further investigative requirements, and continuation of field activities at the sites without going through delays for workplans and associated review and approval cycles. A biocell facility was constructed at MCAS Yuma in FY95 to treat contaminated soil generated by the base. This should result in significant cost savings as the hydrocarbon contaminated soil is extremely expensive to dispose of or treat using other methods.



YUMA MCAS RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Wells within three miles down gradient of the station are used for drinking water supply, industrial supply, agricultural irrigation and dewatering. The Yuma area receives little annual rainfall and evapotranspiration rates are far in excess of available precipitation. This, combined with the flat-lying topography and presence of highly permeable surface soils, has produced no significant drainage features on the Yuma Mesa. Drainage in the surrounding area is generally confined to localized depressions and subdued topographic lows. There are some gullies near the southwestern end of the runways, indicating run-off does occur from this area during storms. Because of the large amount of concrete, local flooding sometimes results after a heavy rain. Flood waters may remain for several days in areas such as the flight line and the main portion of the station. MCAS Yuma has installed drywells that are registered with the State of Arizona. These wells are designed to receive storm water from precipitation events and allow it to infiltrate the ground. There are no large surface-water bodies in the immediate vicinity of MCAS Yuma.

NATURAL RESOURCES - Remnants of the original creosote bush-white bursage vegetation community are present at the station. Most of this vegetation, particularly near the main area, is moderately to highly disturbed. Yuma's proximity to the Colorado River makes this area important for migrating birds. No state or federally listed threatened or endangered species are currently known to be present at MCAS Yuma.

RISK - Baseline Human Health Risk Assessments and Ecological Risk Assessments were conducted on a site by site basis as part of the Remedial Investigation/Feasibility Study (RI/FS). All 20 CERCLA sites were ranked for their relative risk using the DOD Relative Risk Site Evaluation Model. Six of the CERCLA sites and one of the Underground Storage Tank (UST) sites was ranked as high relative risk) in the DOD Relative Risk Ranking System. The high ranking was due to soil contamination for five of the sites and groundwater contamination for three of the sites.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - In February 1990, MCAS Yuma was listed on the National Priorities List (NPL) with a Hazard Ranking System (HRS) score of 32.24. The listing was due to the presence of the organic solvent TCE in the groundwater which is a drinking water source. However, TCE has not been found in the drinking water wells.

LEGAL AGREEMENTS - In FY92, the Department of the Navy signed a Federal Facility Agreement (FFA) with EPA Region IX and the State of Arizona. The FFA established operable units (OUs); a schedule for future work (i.e., the Remedial Investigation/Feasibility Study (RI/FS) and the Record of Decision (ROD)); procedures for investigating USTs; and provisions for additional sites identified by a RCRA Facility Assessment (RFA) to be added to the OUs. The RFA was later redesignated as a Federal Facility Agreement Assessment Program (FFAAP). The FFAAP is based on RCRA Corrective Action Program guidance and standards but is incorporated into the RI/FS by including the FFAAP Areas of Concern in a new OU. The OUs were established as follows: OU 1 - Regional Groundwater Unit (Base Wide Groundwater); OU 2 - Surface/Subsurface Soils (Sites 1-18); and OU 3 - Future Installation Restoration Program Sites (SWMU 25).

PARTNERING - The MCAS Yuma Project Team has used an innovative approach for the Remedial Investigation (RI) of Operable Unit (OU) 2 (surface and subsurface soil, Sites 1-18). The Team, comprised of MCAS Yuma; Region IX EPA; the Arizona Department of Environmental Quality, and Southwest Division, Naval Facilities Engineering Command; met during January 1994 to March 1994 to develop the approach. The approach consisted of developing expedited, site specific workplans; using on-site mobile laboratories and cone penetrometer testing to provide sampling and on-site analysis for supporting real time decision making; and transmitting the data to the regulators and obtaining concurrence on further investigation sampling. The on-site laboratories provided the data within two days of receipt of the sample. Site-specific workplans were developed and submitted for regulatory review; the regulators provided review comments in two weeks, and the field work started the following week. Two to three years have been saved by eliminating future workplans, review, field work, and report cycles that occur in the typical RI approach. Approximately $10 million was saved by using cone penetrometer rigs to obtain the samples and on-site mobile laboratories for analyses.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - The Technical Review Committee was established in April 1990. Announcement for the formation of the Restoration Advisory Board (RAB) was advertised in the local newspaper in FY94. A RAB open house was held October 1994. Thirteen members from the community participated. Eleven public participants submitted applications for RAB membership and were accepted by the Base Commanding Officer. The first RAB meeting was held on 1 February 1995. The RAB meets semiannually. It includes members from the local community, city, and base housing.

COMMUNITY RELATIONS PLAN - The Community Relations Plan (CRP) was finalized in October 1992 and submitted to regulatory agencies for review. The CRP was updated in FY94 to incorporate regulatory comments. MCAS Yuma prepares and distributes Fact Sheets on a regular basis (1-2 per year).

INFORMATION REPOSITORY - Two Information Repositories were established in April 1990: one at the installation and one at the Yuma County Library. The information from the Administrative Record was placed in the Information Repositories for public access.

YUMA MCAS HISTORICAL PROGRESS

FY80

Site 11 - In order to remove an immediate danger, a removal action was completed at Site 11, Radiation Pipe, to remove sealed pipes containing low level radioactive dials, gauges, and tubes.

FY85

Sites 1-12 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), completed in September 1985, identified 12 potentially contaminated sites at Marine Corps Air Station (MCAS) Yuma. Of these 12 sites, Sites 7, Fire School, and 9, Southeast Sewage Lagoons, were recommended for Confirmation Studies, equivalent to a Site Inspection (SI) due to the potential for groundwater contamination.

FY86

Site 13 - The Marine Wings Weapons Unit (MWWU) used Building 1585 to mix chemicals for tear gas and napalm weapons and to clean the equipment. Rinseate from these operations went to a septic tank. An investigation of soil and groundwater in this area, completed in October 1985, found halogenated organic compounds and solvents (trihalomethanes, methyl ethyl ketone (MEK), acetone, and methylethenylcyclohexane) in the groundwater. When this investigation was completed, the site was still an operating facility; however, after the site was abandoned, it was added to the Installation Restoration Program (IRP) as Site 13.

FY87

Site 14 - This site was added to the IRP. Between 1973 and 1984, water from two oil/water separators, one for a wash rack and one for a hangar, was discharged to the lagoon south of Bldg. 97 (Site 14).

FY88

Sites 7 and 9 - A Confirmation Study, Verification Phase, equivalent to an SI, was completed in April 1988 for Sites 7 and 9. The report found volatile and semivolatile organic compound contamination in soil and groundwater at the Fire School (Site 7) and no volatile organic compounds present in excess of Maximum Contaminant Levels (MCLs) at the Southeast Sewage Lagoons (Site 9). Both sites were recommended for further study.

Sites 1-10 and 12-14 - In July 1988, the State of Arizona Department of Environmental Quality requested that 11 of the 12 sites (all except the Radiation Pipe, Site 11) identified in the IAS, as well as Sites 13, MWWU Drain Field, and 14, Lagoon South of Building 97, be investigated in an SI. Since Sites 7 and 9 were investigated in an SI completed in April 1988, no further PA/SI effort was necessary for those. Site 10, Ordnance Area Disposal Sites, was not investigated at this time because it was an ordnance facility and drilling for samples would be dangerous.

FY90

Sites 1-6, 8 and 12-14 - The SI for Sites 1-6, 8 and 12-14 was completed in October 1990. The report found local hydrocarbon contamination and elevated concentrations of priority pollutant metals at the Flight Line (Site 1); minor hydrocarbon contamination in the shallow soil at the Shops Area Z (Site 2); petroleum hydrocarbon contamination above state action levels and metals concentrations above background levels in soils at the Auto Hobby Shop (Site 3); metals concentrations and sulfates above background levels at the Radar Hill Disposal Area (Site 4); metals concentrations above state action levels at the Old 2nd LAAMBN (Light Anti-Aircraft Missile Battalion). Compound (Site 5); arsenic and barium concentrations above state action levels at the First Sewage Treatment Lagoon (Site 6); metals (aluminum, antimony, arsenic, beryllium, cobalt, lead and vanadium) concentrations above state action levels at the Southeast Station Landfill (Site 8); metals concentrations above state action levels at the Tear Gas Burial Site (Site 12); minor hydrocarbon contamination and metals concentrations above state action levels at the Drain Field Former Building 1585 (Site 13); and lead, manganese, and petroleum hydrocarbon concentrations above state action levels at the Lagoon Building 97 (Site 14).

FY91

Sites 15-17 - Three new sites were recommended by the State of Arizona to be included in the Installation Restoration (IR) Program in 1991. Leaky Hazardous Waste Underground Storage Tanks (USTs) #363 and #364 (Site 15), consisting of two USTs installed in 1943 and used for storage of waste solvents, thinners, paint wastes, degreasing and stripping residues, and petroleum products, failed volumetric tank tests in 1987 and were removed. Leaky Hazardous Waste USTs, Bldg. 230 #2 and #4 (Site 16), consisting of two USTs installed in 1979 and used for storage of waste solvents, paint strippers, thinners, MEK, degreasing agents, epoxy catalysts and thinners, isopropyl alcohol, and aliphatic thinners, failed tank pressure tests in 1988/89 and were removed. Leaky Hazardous Waste UST Bldg. 1708 #3 (Site 17), consisting of a tank installed in 1985 and used for storage of waste decontamination solutions (triphosphate detergents/oily residue), failed a volumetric test in 1988 and was removed.

Site 18 - One additional site was identified in 1991 by the Department of the Navy as a result of visible staining in a drum storage area. The Rogue Drum Storage Area (Site 18) had been used as the collection point for all drums on the installation. These drums contained various materials and wastes such as petroleum products, solvents and Investigation-Derived Wastes (IDW).

SWMU 25 - A Visual Site Inspection was voluntarily completed by the Department of the Navy in September 1991 and identified 198 Solid Waste Management Units (SWMUs) at MCAS Yuma.

FY93

Site 18 - A removal action was completed at Site 18, Drum Storage Area, to remove 92 drums of investigative derived waste resulting from the installation of groundwater monitoring wells.

SWMU 25 - 198 SWMUs identified during the 1991 Visual Site Inspection were revisited and narrowed down to 25 SWMUs which are being studied under CERCLA authority in the IR Program as SWMU 25.

USTs 2 and 4 - An Initial Site Characterization (ISC) was completed.

FY94

UST 1 - An ISC was completed to determine the extent of contamination. During the Site Characterization, a pilot treatability study got underway to remove the free product from the groundwater. Three fuel recovery systems were installed at the fuel farm and the motor transportation pool area. It is planned that the free product-contaminated groundwater at the Fuel Farm will continue to undergo a pump-and-treat operation to remove the free product until FY97.

FY95

OU 1 (Site 19) - The draft Remedial Investigation (RI) Report was submitted to the regulators for review in April. The report identified several areas of contamination that required further investigation. The project team met in May to jointly develop an Operating Unit (OU) 1 field sampling plan addendum that would fill the data gaps. By using innovative field screening techniques, the plume containing the organic solvent TCE was fully delineated by September.

OU 2 (Sites 1-18) - The draft RI Report was submitted to the regulators in January 1995 and recommended No Further Action (NFA) on all eighteen sites. After negotiating with the Project Team over six months, all 18 sites have been recommended for NFA with the exception of minor surface removal actions of asbestos containing material.

UST 1 - A Corrective Action Plan (CAP) was completed. A treatability study was ongoing to examine the air sparging method for treating dissolved solids contamination at the Fuel Farm and Motor Transport Pool.

UST 5 - Corrective Measure (ground water treatment) was initiated.

YUMA MCAS
PROGRESS DURING FISCAL YEAR 1996

FY96

OU 2 (Sites 1-18) - The OU2 RI was finalized in March 1996. The OU2 draft and draft final FS were submitted to the agencies. The draft Proposed Plan and draft ROD were also submitted to the regulatory agencies. Eighteen sites were investigated under this OU. Three sites were asbestos debris and there is a planned removal action to eliminate the risk. Institutional controls will be implemented to minimize potential health risks that may be associated with land use changes at three of the sites. The other twelve were recommended for no further action. The OU2 FS, ROD and Proposed Plan were all prepared on a fixed price contract.
Site 18 - RI/FS completed; Response Complete.
OU 1 (Site 19) - The OU1 RI was finalized. The draft FS was submitted to the regulatory agencies. Two pilot studies for in situ groundwater cleanup for chlorinated solvents are being performed and when the data from the studies is available, the draft final FS and draft Proposed Plan will be submitted. The draft ROD for OU1 is due to the agencies in February of 1997.
USTs 2 and 4 - CAPs are in process
UST 4 - Completed CAP. Corrective Measure were initiated.
Site 19 - Remedial Design completed.
OU 3 (SWMU 25) - A Final Preliminary Records Search/Visual Site Inspection (PR/VSI) was completed. A Federal Facility Assessment Report will be completed by end of FY97.
Complete field investigation of FFAAP sites was completed in FY96.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

USTs 1 and 2 - Corrective Measures will be completed. IMO will be completed at UST 1.
Sites 1-17 and 19 - Complete Feasibility Study, and Record of Decision by the Spring of FY 97. Complete report of FFAAP investigation in FY 97.
Sites 1, 2, 5, 6 and 11-17 - Projected Response Complete.

FY98

Complete any FFAAP removal actions required by FY 98.
Sites 7 and 9 - Complete RAs; Response will be Complete at Site 9.
Sites 1 and 19 - Complete IRAs.
UST 2 - Corrective Measure Implementation scheduled to be completed.
UST 4 - IRA expected to be completed.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	12							1
RI / FS		1	18					1
RD		1						3
RAC				2				5
RAO								1
IRA	1(1)			2(2)		1(1)	1(1)	3(3)
RC		1	11	1		1		6
Cumulative % RC	0%	5%	60%	65%	65%	70%	70%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP	1	1						
DES								
IMP	1		2	1				1
IMO			1					2
IRA				1(1)	1(1)			3(3)
RC					1			4
Cumulative % RC	0%	0%	0%	0%	20%	20%	20%	100%

ALAMEDA NAVAL AIR STATION
ALAMEDA, CALIFORNIA

Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible] Acres

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	23	High:	14	Not Evaluated:	1
RCRA Corrective Action:	0	Medium:	10	Not Required:	0
RCRA UST:	7	Low:	5		
Total Sites:	30				

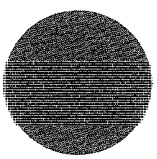
BRAC III

Sites Response Complete: 0

EXECUTIVE SUMMARY

Naval Air Station (NAS) Alameda is located on Alameda Island, which lies at the western end of the city of Alameda in Alameda County, California. NAS Alameda was listed for closure by the 1993 Base Realignment and Closure (BRAC) commission and is scheduled for closure 30 April 1997. The BRAC Cleanup Team (BCT) was initiated in FY93 and immediately began an Environmental Baseline Survey (EBS) which has been completed. A BRAC Cleanup Plan (BCP) was also completed in FY94 and is currently in its third edition. Navy operations which contributed to prominent site types include landfilling, discharge through stormdrains to create offshore sediment sites, plating and painting shops and transformer storage areas. A former oil refinery also exits at NAS Alameda. The Navy has changed its operational processes to prevent further contamination. Prominent installation restoration sites include soil, groundwater and sediment contamination of substances like petroleum, SVOCs, TCE, PCBs and metals. A Federal Facilities Site Remediation Agreement (FFSRA) was initiated in FY93 with the State of California but has not been signed. However, a Remedial Action Order from the state exists for the Skeet Range and several other sites.

NAS Alameda is predominantly a man made extension to Alameda Island. The fill layer of unconsolidated sediments ranges from 7 to 30 feet deep. The base is surrounded on three sides by waters of the San Francisco Bay. There are no naturally occurring surface streams or ponds on NAS Alameda. Surface water either infiltrates to the groundwater or runs off into storm drains that discharge to San Francisco Bay. Many of these storm drains are at sea level. Presently groundwater under the base is designated as a municipal drinking water source though no groundwater is used for water supply on NAS Alameda. NAS Alameda and the Regional Water Quality Control Board are re-evaluating the designation and probable beneficial uses of the groundwater to determine the most appropriate cleanup levels.



Current Status Of Sites

Studies Underway	30
Cleanups Underway	0
Response Complete	0
TOTAL	30

100%

Information Repositories are located at the Main Alameda Public Library and at the NAS Alameda Library. A Technical Review Committee (TRC) was formed in FY90 and converted to a Restoration Advisory Board (RAB) in FY93. The RAB has 32 members who meet monthly. The RAB has coordinated and advised the BCT making positive changes in the progress of the IR program and the community relations plan.

At the end of FY96, the investigation portion of the Remedial Investigation/Feasibility Studies (RI/FS) phase for 23 sites was complete. Removal actions at several sites are underway. Additionally, 5 ongoing treatability studies are helping to accelerate the cleanup at NAS Alameda. A Record of Decision (ROD) will be signed for one Operable Unit (group of sites) at NAS Alameda in FY98. The remaining three Operable Units will be signed in FY99/00 with Remedial Design (RD) in years 2000/01.

The Site 16 removal of PCBs and lead contaminated soil is scheduled for FY97. To reduce immediate hazards caused by methane gas buildup at Site 2 (West Beach Landfill), a fence was constructed around the landfill perimeter and the methane gas was vented. Studies for potential early treatability of sediments at the Seaplane Lagoon are being conducted along with studies to determine bio-availability and the lateral and vertical extent of contamination. Use of innovative technologies and active partnering will accelerate long term cleanup and decrease cost. In FY95, NAS Alameda secured a contract with the University of California, Berkeley, to explore innovative technology as applied to treatability studies.

Sixty abandoned tanks and surrounding soil were excavated and removed in FY95 from an Underground Storage Tank (UST) site. Plans for removing 44,000 feet of abandoned fuel lines were completed in FY95 at another UST site and preliminary soil and groundwater sampling has been done to facilitate cleanup.

Several parcels have been leased, including a lease to the electric car company CALSTART. Further, a large FOSL sector covering one quarter of the base is in preparation. The LRA has several companies lined up to occupy these buildings. To coordinate reuse needs with cleanup, the BCT and LRA meet monthly to discuss schedules, immediate requirements and long term goals to expedite the transfer and conversion of the base.

ALAMEDA NAS
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Alameda NAS is located on Alameda Island. Alameda Island lies along the eastern side of the San Francisco Bay and is separated from the city of Oakland by the Oakland Inner Harbor. To the west and south of Alameda NAS is the San Francisco Bay. There are no naturally occurring surface streams or ponds on NAS Alameda. Surface water either infiltrates to the groundwater or runs off into storm drains that discharge to San Francisco Bay. Many of these storm drains are at sea level. Presently no groundwater is used for water supply on Alameda Island or in Oakland, but NAS Alameda has been examining groundwater for potability.

NATURAL RESOURCES - The endangered California Least Tern breeds and nests on Alameda Island. This is the largest colony of Least Terns in Northern California. In 1984, there were 47 nesting pairs, now there are 128 nesting pairs. This was due to an active management plan that removed the predators. The hatch of this year was at a record 200 chicks. This breakwater island is one of the only night roost areas for California Brown Pelicans in the San Francisco Bay. Many other species of birds nest here and the island is frequented by migratory birds such as Caspian Terns, Canadian Geese and Western Gulls. Elephant Harbor Seals and other marine animals also use this breakwater island.

RISK - Phase I of the Ecological Assessment Plan was completed in FY93. A survey was conducted as part of the Ecological Assessment to identify and delineate two wetland areas and to determine potential impacts on the wetlands from Installation Restoration Program (IRP) sites. Phase I of the Ecological Assessment is now completed. The ecological risk to the two wetland areas and potentially impacted offshore areas is greater than the risk to human receptors and will therefore serve as the major risk driver.

Under the DOD Relative Risk Ranking System, 12 CERCLA sites and two UST sites at NAS Alameda received a high relative risk ranking. The ASTM Risk Based Corrective Action methodology for cleanup at TPH sites is being used at NAS Alameda. Sites 4 and 22 and USTs 3 and 8 all have contaminants that include petroleum products and volatile organic compounds affecting groundwater. However, the groundwater may be designated as a non-potable source thereby relaxing cleanup levels. Site 17 (Seaplane Lagoon) and Site 20 (Oakland Inner Harbor) have contaminants that include semi-volatile organic compounds, the chemical additive PCB, pesticides and metals affecting sediment. Contaminated sediment may impact humans via the ingestion of contaminated shellfish and fish.

The remaining eight high relative risk sites include a landfill, abandoned fuel storage tanks, the former oil refinery area, a plating shop, pest control areas and a transformer storage area. Soils in these areas were found to be contaminated with the chemical additive PCB, semi-volatile compounds, pesticides, metals and petroleum products. Human receptors may include current and future on-site workers through inhalation and dermal contact. Two sites, Site 1 and Site 2 (West Beach Landfill) have contaminants that may affect soil and sediments. Receptors for these areas also include ecological receptors (flora and fauna) and numerous threatened and endangered bird species. NAS Alameda has presented its risk assessment approach to regulators and is now implementing that approach.

REGULATORY ISSUES

LEGAL AGREEMENTS - A Federal Facilities Site Remediation Agreement (FFSRA) was initiated in FY93 with the State of California. It remains in negotiations and is unsigned. The FFSRA will contain a Site Management Plan (SMP) for scheduling of cleanup activities.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in FY90 and met quarterly. The TRC was converted to a Restoration Advisory Board (RAB) in FY93. Some of the original TRC members are on the RAB. The first formal RAB meeting was held in April 1994. The RAB has 32 members from NAS Alameda the community, the Sierra Club, school district, a public health official and the Alameda Reuse and Redevelopment Authority (ARRA). The RAB meets monthly. Focus groups also meet to discuss charter interests. The RAB has developed a charter which identifies and resolves issues and ensures that all stakeholders have ample opportunity to advise the BCT in the decision-making process. The RAB had presentations and training on the CERCLA process, early actions, treatability studies and a session on geology. Some RAB members have also participated in RAB workshops. The Community Outreach Focus Group is developing ways to communicate environmental issues with the public.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was completed in FY89 and identified the efforts that would be taken to keep the community informed on the base cleanup issues. This plan is in the process of being updated, with expected completion during FY96.

INFORMATION REPOSITORY - An Administrative Record was established in FY89. Information Repositories are located at the Main Alameda Public Library and at the NAS Alameda Library. A copy of the Administrative Record documents are contained in the local Information Repositories.

BASE REALIGNMENT AND CLOSURE

BRAC - NAS Alameda was placed on the Base Realignment and Closure (BRAC) list in September 1993. Operational closure is scheduled for April 1997.

BRAC CLEANUP TEAM - The BRAC Cleanup Team (BCT) was initiated in FY93 and is committed to the use of innovative technologies and treatability studies. This will accelerate cleanup and reduce future remedial action expenditures.

DOCUMENTS - An EBS identified 208 parcels of land for potential reuse. Parcels will be recategorized in early FY97. Transfer of parcels and accelerated cleanup actions are a high priority. A revised BCP will be completed in FY97. The Phase I EBS (Community Environmental Response Facilitation Act of 1992 (CERFA) Determination) designated six parcels as Category 1. The Phase II EBS investigated the remaining 202 parcels. Designations are expected to readjust at least 30% of the Category 7 parcels to Categories 2 and 3. Category 7 applies to those parcels where the environmental conditions have not been classified, while a Category 2 or 3 applies to parcels that are environmentally sound and available for transfer.

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
3 acres	0 acres	0 acres	0 acres	348 acres	380 acres	905 acres

REUSE - The Alameda NAS reuse plan is being coordinated through the following organizations; Alameda Reuse and Redevelopment Authority (ARRA), Alameda Base Reuse Advisory Group (BRAG) and the East Bay Conversion and Reinvestment Commission (EBCRC), as well as focused interaction with the BCT. The City of Alameda has also established a Base Closure Department which supports the ARRA, coordinates with the Navy, the BRAG, as well as other commissions and agencies that have reuse jurisdiction in areas such as air and water quality, transportation planning, seaport and shoreline.

ALAMEDA NAS
RELEVANT ISSUES

The City of Alameda has an Interim Reuse Plan, covering the 10-15 years following base closure. The Final Long Term reuse Plan was completed January 1996. The initial plan was to lease structures where similar current functions can be maintained. The next initiative is to lease in furtherance of conveyance and finally to transfer.

FAST TRACK INITIATIVES - Early removal actions will be used to eliminate hot spots and sources to expedite property transfer. Innovative technologies will accelerate cleanup and decrease cost. Active partnering with agencies in conjunction with responsible decision making will accelerate Findings of Suitability to Lease (FOSL), IRP and decrease cost. Several removal actions are complete and several more are planned for FY97 including two radiological removals, and the removal of PCB and lead contaminated soil.

Priority planning and streamlined contracting procedures lead to improved team work between the Navy and other agencies. All buildings at the installation were evaluated for asbestos to determine the need for further action or emergency cleanup.

Issues needing regulatory review include approaches for identifying background and ambient conditions, approaches to risk assessments and criteria for reviewing EBS material and FOSLs and for integrating new sites into the IRP. NAS Alameda has learned to make the most of its limited funds to continue cleanup programs. Base closure adds a further dimension in that it requires regulators and the Navy, to evaluate programs not only in terms of protectiveness, but also in terms of the community's reuse plan. Only with adequate funding and staffing will regulatory agencies be able to meet this new challenge creatively and meaningfully.

HISTORICAL PROGRESS

FY83

Sites 1-12 - An Initial Assessment Study (IAS) was completed and identified 12 potentially contaminated sites. Sites 8-12 (currently known as Sites 20-22, 13 and 14) were found not to pose a threat to human health or the environment. Sites 1-7 (currently known as Sites 2, 1, 17, 3, 15, 16 and 4) were recommended for further investigation because of their potential effect on human health and the food chain, in particular the endangered California Least Tern.

FY85

Sites 1-4 and 15-17 - A Confirmation Study (CS) was completed and found heavy metals and organic compounds in soils and groundwater. Resampling was recommended to confirm the groundwater results. Sites 1-4 were recommended for further investigation. Sites 15-17 were recommended for No Further Action (NFA).

FY87

Sites 1-4 and 5-20 - The EPA Region IX and the California Department of Toxic Substances Control required that these sites be studied in the RI.

FY88

The RI/FS was initiated with the development of RI/FS work plans.
Sites 1 and 2 - The California Regional Water Quality Control Board (RWQCB), San Francisco Bay Region, required that a Solid Waste Assessment Test (SWAT) be conducted at these two sites to determine if hazardous waste was migrating from the landfill into San Francisco Bay.

FY93

Initiated Field Sampling and Data Summary report. Initiated Ecological Assessment.

Sites 1 and 2 - The Draft Final Solid Waste Water Quality Assessment Test Report (Phases 5 and 6) was completed. The report concluded that volatile and semi-volatile organic compounds appear to have migrated from these sites to off-site groundwater.

FY94

Completed Phase I of Environmental Baseline Survey.
Site 13 - An IRA to remove lead and acid contaminated soils was completed. The IRA was required by the Department of Toxic Substances and Control (DTSC) and the RWQCB San Francisco.

FY95

Basewide - Plans and specifications for removing 44,000 ft of abandoned fuel lines was complete. Preliminary soil and groundwater sampling was done to facilitate cleanup.
All Sites - Phase I of the Ecological Assessment was completed. Human Health Risk draft report was completed. A Data Summary document was completed.
Site 7 - Removal of four USTs and contaminated soil around tanks was completed.
Site 15 - Excavation of PCB and lead contaminated soils was started.
Site 5 - A bench scale testing was performed for a site demonstration by Lockheed called electrokinetic remediation, to remove metals and other ionic compounds near the old plating shop. Studies for potential early treatability of sediments at the Sea Plane Lagoon were started . Minor characterization was recommended to determine bioavailability and the lateral and vertical extent of contamination.
Site 16 - Began Engineering Evaluation/Cost Analysis (EE/CA) for removal of petroleum, the chemical additive PCB and lead contaminated soil.
Site 18 - Time-critical removal action; debris from catch basins were removed.

PROGRESS DURING FISCAL YEAR 1996

FY96

All Sites - Phase II of the Ecological Assessment underway.
Sites 1 and 2 - Radiological grid surveys was completed.
Sites 5 and 10 - Radiological surveys of radium paint areas was completed.
Site 5 - The pilot scale demonstration by Lockheed of electrokinetics ongoing.
Site 17 - Studies for potential early treatability of sediments at the Sea Plane Lagoon are underway. Minor characterization was recommended to determine bioavailability and the lateral and vertical extent of contamination.
Site 18 - The time-critical removal action continued to remove sediments from the storm sewer lines.
Sites 2, 3, 13 and 17 - Treatability studies are underway through UC Berkeley. These studies will evaluate the feasibility of using innovative technologies and examine Intrinsic Bioremediation of contaminated sediment. Steam enhanced extraction has been evaluated (bench-scale) at Site 13.
Site 15 - Excavation of contaminated soil was completed. Site 15 was backfilled with clean soil. Contaminated soil was stockpiled at a protective area waiting for treatment.
Site 16 - Initiated a removal action.
Updated the Community Relations Plan (CRP), final revised CRP will be released in early FY97.
Revised the Long-Term Monitoring Plan.
Completed Phase I and II of EBS.
Remedial Design for UST sites, planned for FY96, postponed to FY97 due to funding constraints.
Recategorization of parcels was begun in FY96 and will be complete in FY97. Delay was due to lengthy negotiations with regulators regarding background level.

ALAMEDA NAS
PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Complete treatability studies for 5 sites through the CLEAN Contract.
Begin the final phase of the aquatic and terrestrial ecological assessment.
Develop a consolidated waste unit for disposal of contaminated soils.
Issue the first draft of RI report.
Sites 1 and 2 - Radiological surveys of landfills will be completed.
Sites 5 and 10 - Begin design of decontamination of elevated levels of radiation.
Sites 7 and 22 - An EE/CA for the removal of petroleum contaminated soils should be completed.
Site 14 - An EE/CA for removal of petroleum products should be completed.
Site 16 - An EE/CA for removal of the chemical additive PCB and lead should be completed. Removal action implementation is planned.
Site 18 - The removal of waste and debris from storm sewer lines and manholes will be completed.
Sites 3, 13 and 17 - Treatability studies will be complete. Potential follow on treatability studies with UC Berkeley will look at enhanced bioremediation for Sites 3 and 13, bioremediation of chlorinated solvents at Site 4 and 5, and pilot-scale treatability study of sediments from Site 17.
Site 2 - Demonstration by University of Waterloo for treatment of chlorinated solvents and BTEX (Benzene, Toluene, Ethylbenzene, Xylenes) in groundwater will be completed.
Site 5 - Demonstration by Lockheed Martin of electrokinetic removal of metals from soils at former plating shop will be completed. Demonstration by Resolution Resources of 3-D Seismic Profiling to identify DNAPL (Dense Non-Aqueous Phase Liquid) in subsurface will be completed.

FY98

Initiate basewide ROD and RD/RA.
Complete the RI report for three OU's.
Complete the FS report for one OU.
Complete the removal actions of Sites 7,14, 16 and 22.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	8							
RI / FS				19	4			
RD					6	11	1	1
RAC						3	11	5
RAO								14
IRA			1(1)	4(4)	4(5)			
RC				3	1		3	16
Cumulative % RC	0%	0%	0%	13%	17%	17%	30%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP				5	1			
DES					5	1	1	
IMP					1	2	4	
IMO								7
IRA			6(6)		2(2)			
RC								7
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

AZUSA NAVAL COMMAND CONTROL AND OCEAN SURVEILLANCE CENTER, MORRIS DAM FACILITY

AZUSA, CALIFORNIA

Engineering Field Division/Activity: SWDIV/EFDSW

Major Claimant: COMSPAWARSYSCOM

Size: 30 Acres

Funding to Date: $50,000

Estimated Funding to Complete: $3,050,000

Base Mission: Tests and evaluates torpedoes and torpedo components.

Contaminants: Paint, ordnance compounds, PCBs, POLs

Number of Sites:

CERCLA:	2
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	2

Relative Risk Ranking of Sites:

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

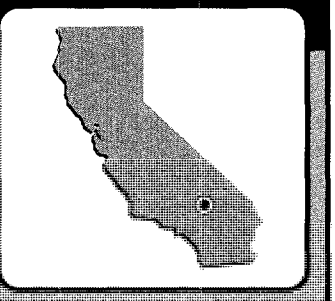
Sites Response Complete: 1

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	1							
RI / FS								1
RD								1
RAC								
RAO								
IRA	1(1)							1(3)
RC	1							1
Cumulative % RC	50%	50%	50%	50%	50%	50%	50%	100%

BARSTOW MARINE CORPS LOGISTICS BASE

BARSTOW, CALIFORNIA



Engineering Field Division/Activity: SWESTDIV

Major Claimant: CNC

Size: 5,893 Acres

Funding to Date: $65,994,000

Estimated Funding to Complete: $74,406,000

Base Mission: Originally conducted industrial operations, currently maintains, repairs, rebuilds, stores and distributes supplies and equipment.

Contaminants: Heavy metals, PCBs, PCEs, pesticides/herbicides, volatile organic compounds, dichloroethane, ethylene dibromide, trichloroethylene, tetrachloroethylene

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	38	High:	9	Not Evaluated:	0
RCRA Corrective Action:	1	Medium:	5	Not Required:	5
RCRA UST:	3	Low:	23		
Total Sites:	42				

NPL

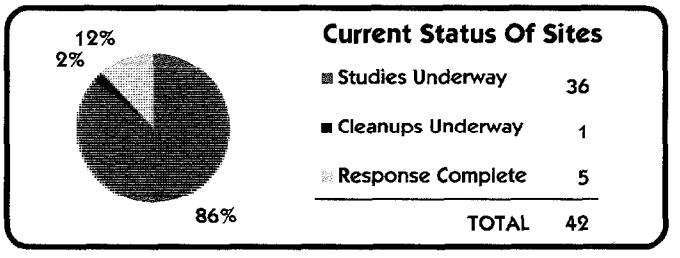
Sites Response Complete: 5

EXECUTIVE SUMMARY

Marine Corps Logistics Base (MCLB) Barstow is located directly east of the City of Barstow, in the central Mojave Desert, about halfway between Los Angeles and Las Vegas. MCLB Barstow consists of three separate, distinct areas: the Nebo Main Base, the Yermo Annex, and the Rifle Range. The Nebo Annex houses most of the Base's administrative activities: Base housing, military and dependent support facilities, and covered storage for warehousing activities. The Yermo Annex is utilized mainly for industrial maintenance, repair, and rebuild activities. The Rifle Range provides a secured area where Marines can practice and improve their marksmanship skills. Typical operations that contributed to contaminated sites on the facility include: vehicle maintenance, weapons repair and maintenance, missile systems maintenance and repair, communications, electronics repair, machine shop, petroleum products and chemical storage, and an Industrial Wastewater Treatment Plant (IWTP). MCLB Barstow was listed on the National Priorities List (NPL) in November 1989 due to the detection of high levels of the organic solvent TCE in groundwater monitoring wells. MCLB Barstow signed a Federal Facility Agreement (FFA) with EPA and California regulatory agencies in October 1990.

The Nebo, Rifle Range, and Yermo areas of MCLB Barstow are all fairly well isolated from neighboring communities which are located 1/4 to 1 mile from facility boundaries. Commercial land development adjacent to the facility includes sand and gravel mining and processing. Also, the City of Barstow maintains a sewage treatment plant and effluent disposal ponds adjacent to the property. Other surrounding land is generally unused and undeveloped desert land. Results from field investigation efforts have shown the groundwater contamination at both Yermo and Nebo to be the major environmental concern.

Initial Assessment Studies and other investigations conducted between FY 83 and FY 90 identified thirty-eight CERCLA sites and three Underground Storage Tank (UST) sites at Barstow Marine Corps Logistics Base. To facilitate cleanup efforts and as a result of the Federal Facility Agreement, the CERCLA sites were divided into seven Operable Units (OU). Site types include sludge disposal areas, plating waste disposal areas, low-level radioactive storage areas, spill sites, and evaporation ponds.



Currently, 33 CERCLA sites are in the Remedial Investigation/Feasibility Study (RI/FS) phase. Four removal actions have been completed in as many sites. One Interim Remedial Action (IRA) is underway. One Underground Storage Tank (UST) site is in the Investigation (INV) phase. Investigation of UST site 2 was delayed due to regulatory review time extension.

In the future, at the CERCLA sites, all RI/FSs are expected to be complete by the end of FY97 Corrective Action Implementation (IMP) will be completed at one UST site in FY97 and the other in FY98.

Granulated Activated Carbon Units have been installed on Base production wells to treat the TCE and PCE found in the groundwater. At Nebo, TCE contamination found in an off base well resulted in a Removal Action to provide base water to the 3 affected families (March 1993). At Yermo, it is also clear that PCE and TCE well above Maximum Contaminant Levels (MCLs) is migrating off-base and must be remediated, and in 1996 a removal action was performed installing carbon filtration for 2 affected off-base families.

A Technical Review Committee (TRC) was established in FY91 and meets on a regular basis. A Community Relations Plan (CRP) was completed and an Information Repository established in 1991.

As the Installation Restoration Program (IRP) moves from study to cleanup, decisions affecting land use are now being made. Large portions of land will be tied up during construction of the infiltration galleries for the Yermo groundwater treatment. Landfills covering several acres of land will get capped, affecting long term use of the land. Some areas of land are going to institutional controls, limiting the land use. Because of this, involvement by Base officials in the IRP is becoming more critical.

The success story for 1996 is the construction of the Yermo annex groundwater treatment system. The system actively treats and contains the large groundwater plume that runs across most of the Yermo annex and extends well into private property boundaries. This complete system should be ready for startup in December 1996.

BARSTOW MCLB
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Groundwater is the only source of water for both domestic and industrial use in the area. Four documented historical contaminant sources have contributed to the degradation of groundwater quality in the vicinity of Barstow. They are effluent disposal from the City of Barstow's Wastewater Treatment Plant (WWTP), irrigation water from the MCLB golf course at Nebo, waste discharged from the AT&SF rail yard at Barstow, and chlorinated solvents from the Nebo Main Base. The Mojave River recharges regional groundwater. However, groundwater conditions at the Yermo Annex are significantly different from the conditions at the Nebo Main Base. At the Yermo Annex, groundwater is encountered from between 133 and 147 feet below ground surface (bgs). At the Nebo Main Base, groundwater is encountered much shallower, between approximately 10 and 75 feet bgs in the central area of the Base and up to 175 feet bgs on the alluvial fan south of Interstate 40. In the bed of the Mojave River, groundwater has been encountered at a depth of only 4 to 5 feet bgs. The groundwater table has remained relatively stable at Nebo Main Base, but has been lowered about 70 feet at the Yermo Annex since the 1930's. The lowering of the water table can be attributed to regional groundwater withdrawal due primarily to agricultural irrigation wells with minor influences coming from private and public production wells. Currently, there are two active Yermo Annex production wells which are located within the Yermo contaminant plume. Both of these wells have carbon filtration systems to remove Volatile Organic Compounds (VOCs) to non-detectable levels. This water is currently used for various domestic and industrial uses at the Yermo Annex. The remaining production wells at the Yermo Annex are currently inactive. Production wells at Nebo Main Base have been inactive since about 1975.

The dry bed of the Mojave River is the dominant surface water feature in the Mojave Desert. A surface water drainage control system was built for the Nebo Main Base soon after the base was established. Assembly of storm drains, culverts, and paved areas distribute runoff to a main drainage canal at Nebo Main Base. This canal directs the water generally south to west and ultimately northeast across the Main Base to the Mojave River. Surface water discharge is less controlled and typically less of a problem at the Yermo Annex; however, in April 1993 the Mojave River flooded over its banks, deluging the southern portion of the Annex and destroying two monitoring wells.

NATURAL RESOURCES - Due to extensive land clearing, paving, and construction, native flora and fauna have been disturbed at Nebo, the Main Base, and at the Yermo Annex. Non-native species have been planted in some areas in both Nebo and Yermo. Outside the boundaries of the Base, relatively unaltered natural habitats still exist. The Creosote Bush Scrub, Alkali Sink and Semi-dune vegetation communities surrounding the Yermo Annex and Nebo Main Base provide diverse habitats for many species of native and non-native wildlife. The principal native vertebrates in the area are rodents, reptiles, and birds. Introduced species include pocket gophers, starlings, flickers, song sparrows, meadowlarks, and ravens. One endangered species and two threatened species have been identified on or near MCLB Barstow. The Mojave Tui Chub is endangered and the Mojave Ground Squirrel and the Desert Tortoise are both threatened species.

RISK - Baseline Human Health Risk Assessments and Ecological Risk Assessments are being conducted as part of the Remedial Investigations (RIs). Ten sites were ranked as high relative risk in the Department of Defense (DOD) Relative Risk Ranking System. The high ranking was due to contaminated groundwater for eight of the sites and contaminated soil for three of the sites.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - MCLB Barstow was included on the National Priorities List (NPL) on 21 November 1989 based on a Hazard Ranking System (HRS) score of 37.93. The listing was due to the detection of organic solvent in groundwater monitoring wells located at the Nebo facility.

LEGAL AGREEMENTS - A Federal Facility Agreement (FFA) between the Department of the Navy (DON), the EPA Region IX, the California Department of Health Services and the California Regional Water Quality Control Board (CRWQCB), Lahontan Region, was signed in October 1990. The agreement established schedules and regulatory review turnaround times for key project milestones.

Thirty-eight sites were divided into six Operable Units (OUs) in the FFA. OU 1 (Site 37) and OU 2 (Site 38) address groundwater contamination at the Yermo and Nebo Annexes, respectively. OU 3 (Sites 18, 20, 21, 23 and 34); OU 4 (Sites 2, 5, 9 and 11); OU 5 (Sites 15-17, 19, 22, 24-32, 35 and 36); and OU 6 (Sites 1, 3, 4, 6-8, 10, 12-14 and 33) address contaminated soil at 36 sites that were identified in previous Installation Restoration Program (IRP) investigations. OU 7 will be added to address any sites identified in the RCRA Facility Assessment (RFA). For tracking purposes the potential sites in OU 7 are referred to as "Sites 33-99", but the actual number of sites will be determined by the RFA. As of November 1996, the RFA is in Draft form and requires agency concurrence.

PARTNERING - A week long team building session was held in FY93. Regulatory agencies which attended were EPA Region IX, Cal-EPA, and the CRWQCB, Lahontan Region. Since then, regular meetings and conference calls have served to foster teamwork.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Restoration Advisory Board (RAB) has not been established yet for this base. So far, there has been no public interest in the establishment of a RAB, but the Marine Corps base will establish a RAB if such interest surfaces. However, a Technical Review Committee (TRC) was formed in November 1990, and meets as needed. The next TRC meeting is scheduled for December 1996.

COMMUNITY RELATIONS PLAN - Community Relations Plan (CRP) was completed in 1991. Fact sheets are produced on a quarterly basis. A public meeting is held at least once a year. Turnout is usually low due to lack of public interest.

INFORMATION REPOSITORY - Current and regularly maintained Information Repository and Administrative Record were established in 1991.

BARSTOW MCLB
HISTORICAL PROGRESS

FY83

Sites 1-33 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), completed in September 1983, identified 33 potentially contaminated sites at MCLB Barstow. Sites 1-14 are located at the Nebo Annex, Sites 15-32 are located at the Yermo Annex and Site 33 is located at the Rifle Range which is contiguous with Nebo.

FY86

Sites 2, 5, 9, 11, 18, 19, 21, 23, 34 and 35 - A Confirmation Study (CS), equivalent to a Site Inspection (SI) completed in February 1986 found pesticides and herbicides in soil and the organic solvent TCE in groundwater at Site 2; petroleum hydrocarbons and the pesticide DDT in soil at Site 11; petroleum hydrocarbons and heavy metals (arsenic, barium, beryllium, lead, and vanadium) in soil and petroleum hydrocarbons, the organic solvents dichloroethane and ethylene dibromide in groundwater at the Sludge Waste Disposal Area, Site 18; and heavy metals (arsenic, lead, and vanadium) in soil and petroleum hydrocarbons in groundwater at the Industrial Waste Disposal Area, Site 21; the chemical additive PCB in sludge at Site 34; and no evidence of heavy metals contamination in soil at Site 35. (Metal-contaminated sandblast grit had been suspected at Site 35, a Class III Landfill.) The report found no or insignificant levels of contamination at the Chemical Storage Area, Site 5; the Fuel Disposal Area, Site 9; the First Hazardous and Low Level Radiological Storage Area, Site 19; and the Landfill Area, Site 23.

FY89

Site 37 - An Action Memorandum (equivalent to an Interim Record of Decision (IROD)) was completed in July 1989 for installation of an activated carbon groundwater treatment system to remove volatile organic contaminants from the Yermo drinking water system. The system will continue operating as long as it is required to protect the Base's drinking water. The system has been effective in removing volatile organic compounds (VOCs) to below detection limits.

FY90

Sites 37 and 38 - In partial response to a Cleanup and Abatement Order issued in July 1989, a study was conducted in February 1990 to determine whether contamination from on-site operations had adversely impacted drinking water supplies in the vicinity of Yermo and Nebo Annexes. The results of the study indicated that, although trace amounts of volatile organic compounds were detected in two of 17 off-site wells, the detected concentrations did not pose a human health risk and were well below federal and state drinking water standards. The off-site wells are scheduled for continued monitoring during the Remedial Investigation (RI).
Site 38 - An SI was completed.

FY91

Site 36 - Another new site, the Proposed Vehicle Maintenance Shop, was identified in 1991. Although no SI was done at this site, petroleum products were found in the soil and the site was recommended for a Remedial Investigation/Feasibility Study (RI/FS).
RCRA Sites - A Preliminary Review/Visual Site Inspection (PR/VSI) Report was completed in August.

FY92

UST 1 - Forty-one Underground Storage Tanks (USTs) were removed in June 1992.

FY93

Sites 15 and 17 - A removal action involving the removal of industrial waste sludge was completed in FY93 at the Oil Storage/Spillage and IWTP Areas, Sites 15 and 17.
Sites 37 and 38 - An Interim Remedial Action (IRA) was completed in June 1993 at OU 2 (Site 38) that provided water to three families using water from an off-base well contaminated with the organic solvent TCE. Efforts are underway to improve the water supply at OU 2 and to provide a water supply to residents affected by OU 1 (Site 37). An alternative water supply is expected to be provided through FY20. A treatability study at Site 37 using a Pilot Extraction Well and Air-Sparging system was performed in FY93 to determine the appropriate removal required to control off-base migration of contaminated groundwater.
Site 35 -The percolation ponds continue to be aerated and a filter was installed in FY93 to remove the organic solvent tetrachloroethylene from water before discharge to the ponds. This is expected to continue until FY98, if sampling indicates tetrachloroethylene concentrations above the state action level.

FY94

Site 34 - A removal action to remove soil contaminated with the chemical additive PCB was conducted.
Site 2 - A removal action to remove contaminated soil was completed.

FY95

OU 7 - A RCRA Facility Assessment (RFA) at MCLB Barstow was initiated and is expected to be completed in December 1996. It is planned that sites identified during the RFA as needing further action will be investigated under CERCLA as OU 7 in an RI/FS.
Sites 1-38 - RI/FSs were underway.
OU 1 (Site 37) - The results of the pilot-scale study conducted during FY 93 and FY94 were used to prepare the Engineering Evaluation and Cost Analysis (EE/CA) and design a groundwater remediation system. An Extraction Well and Air-Sparging system is being implemented at OU 1 and will operate until FY20. A time critical/emergency removal action was conducted to provide carbon filtration of wells for private residents off Yermo Annex.
OU 2 (Site 38) - Two pilot-scale studies involving air sparging vapor extraction and a groundwater pump-and-treat system were constructed.
UST 2 - An Investigation (INV) was completed. UST 2 consists of approximately 70 additional tank locations that the California Regional Water Quality Control Board (CRWQCB), Lahontan Region, is requiring to be removed and tested. Ground Penetrating Radar confirmed the existence of only seven tanks which will be removed in FY96.

A success story during FY95 was the cost reduction of the Phase II field effort for Operable Units (OUs) 5 and 6 from $12 million to $4 million. This was accomplished by negotiating a lesser scope (which still met Data Quality Objectives (DQOs)) with the regulatory agencies.

PROGRESS DURING FISCAL YEAR 1996

FY96

Sites 2, 5, 9, 11 and 18 (OUs 1 and 4) - RI/FSs were completed and sites were determined Response Complete.
Site 37 (OU1) - Yermo GW Removal Action success story. - The 10 million dollar groundwater removal action at Yermo consisting of air sparging combined with vapor extraction (for source control) as well as groundwater extraction and treatment (for containment) has been started and should finalize construction in December 1996.
UST 2 - Corrective Action Plan (CAP) was completed for the removal of seven tanks .

BARSTOW MCLB
PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 1, 3, 4, 6-8, 10, 12-33 and 35- 38 - RI/FSs will be completed at 27 sites, as well as the RODs.
Sites 1, 3, 4, 6, 8, 10, 12-19, 22, 24-33 and 36 - Will be response complete.
Site 21, 37 and 38 - Remedial site evaluations and potential removal actions are planned for initiation and completion in FY97.
UST 2 - Complete Corrective Action Implementation and expect determination that the site is Response Complete.
UST 3 - Complete Site Assessment.

FY98

Sites 23, 37, and 38 - complete RD.
Site 3999 - Complete RFI/CMS.
UST 3 - Complete CAP and its implementation. Expect determination that the site is Response Complete.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	11							
RI / FS		5	33					
RD				3	1	2		1
RAC					3	1	2	1
RAO								2
IRA	4(4)		3(5)					1(1)
RC		5	26		1	1	2	3
Cumulative % RC	0%	13%	89%	89%	84%	87%	99%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA								
RFI / CMS				1				
DES								1
CMI								1
CMO								
IRA								
RC								1
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA			1			1		
CAP		1		1				1
DES								1
IMP			1	1				1
IMO								
IRA	1(1)							
RC			1	1				1
Cumulative % RC	0%	0%	33%	67%	67%	67%	67%	100%

BRIDGEPORT MARINE CORPS MOUNTAIN WARFARE TRAINING CENTER

BRIDGEPORT, CALIFORNIA

Engineering Field Division/Activity: SWDIV/SW

Major Claimant: CMC

Size: 45,815 Acres

Funding to Date: $7,610,000

Estimated Funding to Complete: $11,288,200

Base Mission: Provides training and limited logistics support to deploying Marine Corps forces, develops, tests, and evaluates equipment for cold weather and mountain operations.

Contaminants: POLs, methyl ethyl ketone, naphthalene, benzene, toluene, ethylbenzene, xylene

Number of Sites:

CERCLA:	10
RCRA Corrective Action:	1
RCRA UST:	7
Total Sites:	18

Relative Risk Ranking of Sites:

High:	7	Not Evaluated:	1
Medium:	6	Not Required:	1
Low:	3		

Sites Response Complete: 1

PROGRESS AND PLANS

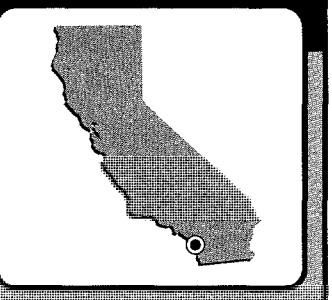
CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI		4						6
RI / FS				1	1	1		5
RD				1				2
RAC					1			2
RAO							1	
IRA	2(2)			1(1)				
RC					1	1	1	7
Cumulative % RC	0%	0%	0%	0%	10%	20%	30%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	1							
RFI / CMS								
DES								
CMI								
CMO								
IRA								
RC	1							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	2							
CAP		1	1					2
DES					1			3
IMP				1	1			3
IMO								
IRA	2(2)							1(1)
RC				1	1			5
Cumulative % RC	0%	0%	0%	14%	29%	29%	29%	100%

CAMP PENDLETON MARINE CORPS BASE

OCEANSIDE, CALIFORNIA



Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible] Acres

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: Provides housing, training facilities, logistical support and administrative support to Fleet Marine Force Units.

Contaminants: [illegible]

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	57	High:	40	Not Evaluated:	97
RCRA Corrective Action:	113	Medium:	3	Not Required:	59
RCRA UST:	30	Low:	70		
Total Sites:	200				

NPL

Sites Response Complete: 49

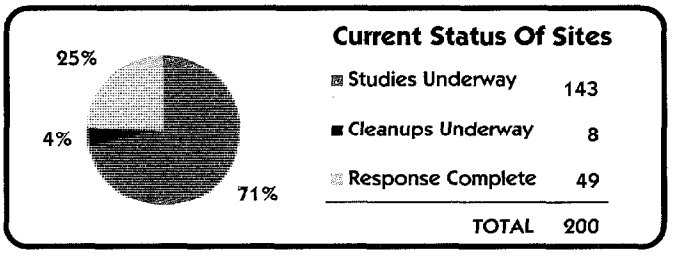
EXECUTIVE SUMMARY

The Camp Pendleton Marine Corps Base (MCB) is located midway between Los Angeles and San Diego. It is bordered by the City of San Clemente to the north, the City of Oceanside to the south, and the City of Fallbrook to the east. The base has served as a training base since its establishment in 1941. Environmental contamination is associated with maintenance operations for vehicles and equipment used in carrying out its mission, and support facilities such as gas stations, hospitals, laundries, pest control areas, and hobby shops. These operations have generated hazardous wastes including waste oils, contaminated fuels and other petroleum products, cleaning solvents, and pesticide rinseate. Site types include landfills, surface impoundments, pesticide storage areas, fire training areas, vehicle maintenance areas, and underground storage tanks (USTs). Camp Pendleton was included on the National Priorities List (NPL) in November 1989 after the herbicide 2,4,5-TP (Silvex) was detected in two groundwater wells used to supply water. A Federal Facilities Agreement (FFA) was signed with EPA and California regulatory agencies in October 1990.

Adjacent lands are residential, rural, and agricultural. A majority of the surrounding land is undeveloped. The Pacific Ocean is due west of the base. Hydrogeology at MCB Camp Pendleton is conducive to contaminant migration. Base personnel obtain drinking water from wells located on the base. The nearest well is within 1,320 feet of one of the disposal areas. Precipitation runs off to several nearby creeks and rivers. These creeks and rivers are used for recreational activities and some empty into coastal wetlands. There are also a number of endangered, threatened, or rare species on the base. The MCB is located on a site which has significant archaeological and historical value. Three sites located on the base are included in the National Register of Historic Places. One of these sites has also been designated a National Historical Landmark.

A total of 200 sites were found at the MCB: 113 RCRA sites, 30 UST Sites, and 57 CERCLA sites. The Remedial Investigation/Feasibility Study (RI/FS) phase was completed at two CERCLA sites in FY95, 8 CERCLA sites in FY96 and is underway for the remaining 43 CERCLA sites. Remedial Design (RD) has been completed for two sites and is underway at three sites. Remedial Action (RA) is underway at one site and is underway at two sites. Study is underway for 30 UST sites. RI/FSs will be completed at 32 CERCLA sites in FY97.

The base has an active Technical Review Committee (TRC). A Community Relations Plan (CRP) and Information Repositories were established in FY92.



CAMP PENDLETON MCB
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Groundwater is shallow, averaging 7-14 feet deep, and soils are permeable: Conditions that facilitate movement of contaminants into groundwater. The base is wholly dependent on groundwater to meet all on-base water demands, including the potable supply. The nearest well is within 1,320 feet of one of the disposal areas. Surface runoff drains to several creeks and rivers which eventually discharge to the Pacific Ocean. The San Margarita River, Las Flores Creek, and San Mateo Creek empty into coastal wetlands within two miles of Camp Pendleton. Surface waters within three miles downstream are used for recreational activities.

NATURAL RESOURCES - Within base boundaries are two natural wetland habitats which are protected by state and county agencies. These two critical habitats, vernal pools and coastal marshes, once common in Southern California, have decreased due to extensive development.

A number of species (plants, reptiles, birds, and mammals) observed on base have been listed as endangered, threatened, or rare. Most of the rare, threatened, and endangered species found on the base are located within marshlands situated at the mouths of the Santa Margarita River, Las Flores Creek, and San Mateo Creek. In addition, the coastal beaches are also suited for these species. The Santa Margarita River is a major nesting habitat for two endangered avian species, the California Least Tern which nests in the marshland and the Least Bell's Vireo which nests in the willow thickets adjacent to the Chappo Area.

RISK - The DOD Relative Risk Ranking was applied to 135 sites at MCB. Forty sites were ranked as high relative risk. These sites were ranked as high primarily due to known soil and groundwater contamination.

REGULATORY ISSUES

The installation has initiated partnering relationships with state and federal regulatory agencies. Cleanup decisions are made in advance through discussions with the regulatory agencies to minimize the document review process. For example, in FY96 the FFA project team met several times over a six month period. The outcome of these meetings was a shift in investigative paradigms from a traditional RI/FS approach to a remediation based, action oriented IR approach. During this period, the team identified five removal actions, reached closure of six sites, decreased the IR schedule by two years, and reduce the investigation budget by $3 million.

Also, during this period of time, the project team re-evaluated the removal designs for Sites 3 and 6. The team decided to apply an innovative stabilization technology to both sites. The team also decided to reduce the impacted area of the sites due to potential impacts to habitat.

NATIONAL PRIORITIES LIST - In 1980, two water supply wells near Site 3 were found contaminated with the Herbicide 2,4,5-TP (SILVEX). MCB Camp Pendleton obtains its entire domestic and agricultural water supply from groundwater basins within its boundaries and this potential for groundwater contamination was the primary reason for placement on the NPL. MCB Camp Pendleton was included on the NPL on 21 November 1989 based on a Hazard Ranking System score of 33.79.

LEGAL AGREEMENTS - A Federal Facility Agreement (FFA) was signed by the Department of the Navy, EPA Region IX, the California Department of Toxic Substances Control, and the California Regional Water Quality Control Board, San Diego Region, in October 1990. The agreement established lead and support agency roles, work schedules, and regulatory review turnaround times for key project milestones.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Restoration Advisory Board (RAB) has not been established yet for this base. Marine Corps base will establish a RAB if the public indicates an interest in establishing one. A Technical Review Committee (TRC) was formed in November 1991. The base has an active TRC attended by the base communities, local agencies, and other interested members of the public.

COMMUNITY RELATIONS PLAN - A Community Relations Plan was completed in February 1992. Several Fact Sheets have been released and distributed.

INFORMATION REPOSITORY - An Information Repository and an Administrative Record were established in November 1991. The information from the Administrative Record is contained in the Information Repository.

HISTORICAL PROGRESS

FY84

Sites 1-8 - An Initial Assessment Study (IAS), equivalent to a PA, identified eight potentially contaminated sites. Site 1 consists of nine refuse burning grounds (Sites 1000-1008) and Site 2 consists of six mess hall grease disposal pits (Sites 2000-2005) scattered throughout the base.

FY88

Sites 3-5, 8 and 9 - A Site Inspection (SI) was completed in FY88. Site 9 was added during the SI at the request of the Department of the Navy to meet the requirements of the California Toxic Pits Control Act.

FY90

Site 4 - In response to a California Regional Water Quality Control Board, San Diego Region letter dated August 14, 1989, sampling and analysis were conducted in July 1990 at a concrete-lined surface impoundment in the vicinity of the MCAS Drainage Ditch. Results indicated the presence of petroleum hydrocarbons in sludge and acetone in liquid. Site 4 was expanded to include the concrete-lined surface impoundment.
Sites 19 and 21 - On March 23, 1990 and on June 19, 1990 the California Regional Water Quality Control Board, San Diego Region, listed the 31 Area LCAC-5 Two Surface Impoundments (Site 19) and the 14 Area Unlined Surface Impoundment (Site 21), respectively, as toxic pits and required the Department of the Navy to "cease discharge" and to prepare Work Plans for removal of liquid and sludge in compliance with the Toxic Pits Control Act. The Work Plans were submitted in August 1990 for regulatory agency review and approval.

FY91

Sites 8 and 20-26 - Additional investigation during FFA negotiations, involving review of existing reports and interviews with base personnel, identified seven additional CERCLA sites (Sites 20-26) and expanded Site 8 to include Las Flores Creek.

FY93

Sites 49-157 - A RCRA Facility Investigation (RFI) was completed in June 1993 for 109 sites (Sites 49-157). Twenty-eight sites were later deleted from the program due to lack of contamination.

FY94

Site 5 - A Remedial Design (RD) was completed.

CAMP PENDLETON MCB
HISTORICAL PROGRESS

FY95

Sites 3-6, 9 and 24 - An RI/FS was completed.
Sites 7, 8, 10, 14, 16-20, 22, 27-48, 1000-1008 and 2000-2005 - RI/FSs were ongoing.
Sites 3 and 6 - Remedial Design (RD) was completed at the pest control washrack and the scrap yard.
Sites 1-61 - RI/FSs were completed at Group A sites and are ongoing at Groups B, C, and D sites.
Sites 4, 4A, 9 and 24 - The draft OU1 Interim Record of Decision (ROD) was completed.
Sites 19 and 21 - A Removal Action was completed at the two surface impoundment sites to remove liquids, sludge, and liners.
Sites 3 and 6 - Removal Action planned at the pest control wash area and the scrap yard site were not initiated due to funding problems, a change in treatment standards, and selection of another technology after completion of the treatability study.
UST 1 - Interim Remedial Actions consisting of soil removal and bioremediation were initiated. Vapor extraction was initiated at nine other UST sites.

PROGRESS DURING FISCAL YEAR 1996

FY96

Sites 23, 25, and 26 - Completed PA/SI
Sites 4, 4A, 9 and 24 - The first Record of Decision was signed by the FFA parties. This is a no-action ROD
Sites 3, 6 and 7 - An Engineering Evaluation/Cost Analysis (EE/CAs) and Action Memorandums were completed.
Site 7 - Completed RD
Sites 3 and 6 - Begin Interim Removal Actions
Sites 8, 14 and 43-48 (OU2) - Completed FS.
Sites 4, 4A, 9 and 24 - Completed Final ROD
Site 19 - Completed 2 IRAs
Site 5 - Remedial Action to remove contaminated soil was completed at the fire training areas.
Sites 11-13 and 15 - Completed RFAs
Sites 5, 11-15, 23, 25, 26 and 44-48 - Designated RC
Continued partnering with state and federal regulatory agencies
OU1 - Signed ROD on Dec. 95
Due to technical changes to the scope, two IRAs were not finished in FY96 as planned but will finished in FY97.
Due to concerns the Federal Facilities Assessment (FFA) had with the RI/FS, the interim ROD at OU2 was not completed.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 29, 30, 35, 1003 and 1004 - Scheduled to complete EE/CA.
Sites 1-3,10,16-20, 27, 32-34, 36, 37-42, 1000-1002, 1005-1008, 2000 and 2003-2006 - Scheduled to complete RI/FSs at Group D sites
Sites 3, 5, 6, 8, 14, 19, 20, 22, 31, 43-45 and 2001 - Scheduled for Record of Decision
Sites 9, 19, 20, 27, 28, 31, 1006-1008, 2000, 2001 and 2004 - Designated RC
Site 7 - Completed Remedial Action.
UST 1 - Scheduled to complete Implementation of corrective action
UST 13 - Completed IRA

FY98

Sites 18, 33, 34 and 37-42 - Completed RI/FS
Sites 2, 16, 22, 1001, 1004, 1005 and 2005 - Designated RC
Sites 7, 10-13, 15-18, 21, 23, 25-30, 32-42, 46-157, 1000-1008, 2000 and 2002-2005 - Complete Record of Decision
Sites 3, 6, 29, 30, 35, 1003 and 1004 - Complete removal actions
Sites 3, 6, 8, 14, 19, 20, 22, 31 and 43-45 - Begin Removal Action
Sites 8 and 22 - Complete RA

CAMP PENDLETON MCB
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	22	3						
RI / FS	2	8	32	9	2			
RD	1	1			4	1		15
RAC		1	1	2			3	16
RAO								2
IRA	6(8)	1(2)		7(7)	4(4)	2(2)	2(2)	7(8)
RC	1	10	12	7	3	3	3	18
Cumulative % RC	2%	19%	40%	53%	58%	63%	68%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	36	4			1			72
RFI / CMS								
DES								1
CMI								75
CMO								
IRA								1(1)
RC	34	4						75
Cumulative % RC	30%	34%	34%	34%	34%	34%	34%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA					3	1	2	23
CAP								
DES					1	3	3	20
IMP			1		1		4	24
IMO					2		1	20
IRA			1(1)			3(6)	5(6)	28(49)
RC						1	1	28
Cumulative % RC	0%	0%	0%	0%	0%	3%	7%	100%

CENTERVILLE BEACH NAVAL FACILITY

CENTERVILLE BEACH, CALIFORNIA

Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible] Acres

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: Commissioned in 1958 for oceanographic research.

Contaminants: Solvents, POLs, heavy metals, PCBs

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	7	High:	1	Not Evaluated:	4
RCRA Corrective Action:	0	Medium:	1	Not Required:	0
RCRA UST:	3	Low:	4		
Total Sites:	10				

Sites Response Complete: 0

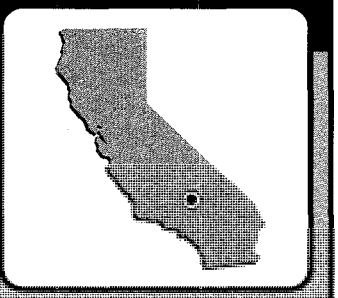
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	2	4						
RI / FS			1			1	3	2
RD								5
RAC								4
RAO								
IRA			1(1)		1(1)			1(1)
RC						1	1	5
Cumulative % RC	0%	0%	0%	0%	0%	14%	29%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP	2							1
DES			2	1				
IMP				1	1			1
IMO								3
IRA	1(1)							
RC								3
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

CHINA LAKE NAVAL AIR WEAPONS STATION

CHINA LAKE, CALIFORNIA



Engineering Field Division/Activity: EFAWEST

Major Claimant: COMNAVAIRSYSCOM

Size: 500,160 Acres

Funding to Date: $35,317,000

Estimated Funding to Complete: $115,390,000

Base Mission: Navy research, development test and evaluation center for air warfare systems and missile weapon systems; national range facility for parachute test and evaluation.

Contaminants: Acid asbestos, heavy metals, POLs, paint, PCBs, industrial sludge and wastewater, pesticides, plating waste, unexploded ordnance, solvents, explosive chemicals.

Number of Sites:

CERCLA:	79
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	85

Relative Risk Ranking of Sites:

High:	26	Not Evaluated:	8
Medium:	3	Not Required:	45
Low:	5		

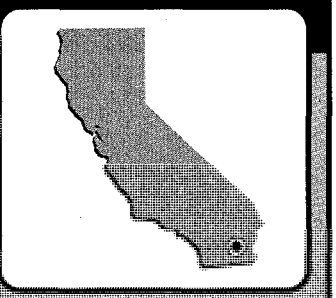
Sites Response Complete: 46

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	44	32	1	1				
RI / FS		1	3	8	2	2	6	6
RD				3	2	3	1	11
RAC						3		16
RAO								11
IRA			10(10)	3(3)	4(4)			
RC	29	15	8	3		2	2	20
Cumulative % RC	37%	56%	66%	70%	70%	72%	75%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP	4	2	1					
DES	1							3
IMP			5					2
IMO								5
IRA		1(1)						
RC	2		2					5
Cumulative % RC	22%	22%	44%	44%	44%	44%	44%	100%

CHOCOLATE MOUNTAIN AERIAL GUNNERY RANGE
NILAND, CALIFORNIA



Engineering Field Division/Activity: SWDIV

Major Claimant: CNO

Size: 460,000 Acres

Funding to Date: $156,000

Estimated Funding to Complete: $4,200,000

Base Mission: Provides MCAS Yuma with a safe and controlled environment of ground targets for inert/live aerial gunnery, air-to-ground bombing and strafing training by Marine Corps and Navy units. The 35A Zone is used for desert training and readiness operations.

Contaminants: Paint, POLs, solvents, acid, ash

Number of Sites:

CERCLA:	7
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	7

Relative Risk Ranking of Sites:

High:	0	Not Evaluated:	7
Medium:	0	Not Required:	0
Low:	0		

Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI				1				6
RI / FS								1
RD								1
RAC								
RAO								
IRA	1(2)			1(1)				5(7)
RC								7
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

CONCORD NAVAL WEAPONS STATION
CONCORD, CALIFORNIA

Engineering Field Division/Activity: EFA WEST

Major Claimant: COMNAVSEASYSCOM

Size: 13,023 Acres

Funding to Date: $40,000,000

Estimated Funding to Complete: $62,419,000

Base Mission: Ships, receives, inspects, and classifies munitions (tidal area); serves as munitions storage and weapons maintenance, inspection and testing facility (inland area).

Contaminants: Heavy metals, PCBs, volatile and semi-volatile organic compounds

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	36	High:	16	Not Evaluated:	9
RCRA Corrective Action:	10	Medium:	4	Not Required:	21
RCRA UST:	3	Low:	2		
Total Sites:	52				

NPL

Sites Response Complete: 21

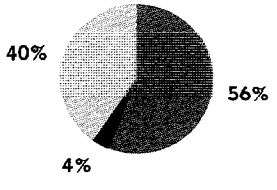
EXECUTIVE SUMMARY

Concord Naval Weapons Station (NWS) is about 35 miles northeast of San Francisco, California. It is surrounded by the city of Concord to the west and south (population 116,000); the city of Bay Point to the east (population 17,000) and the small town of Clyde (population 600) to the north. It is the major Naval munitions facility on the west coast and, as an ocean terminal facility, is used to transship ordnance from trucks and railcars to ships and vice versa. The base operations include shipping, receiving, inspecting, storing and maintaining munitions. Past operational practices such as improper disposal of paints and solvents, spent ordnance, treated wood, household/industrial waste, the open burning of various munitions and spills or leaks from fuel storage tanks have contributed to sources of contamination.

The environmental investigations at Concord are divided into three geographical areas; Inland, Tidal and Litigation. The Litigation Area, located in a tidal area, was purchased by the Navy in the 1970's to provide a buffer zone around the munitions handling operations. The Litigation Area is so named because of the legal actions conducted by the Navy in the late 1980's to recover Remedial Action (RA) cleanup costs from the adjacent and former property owners. Twenty three (23) sites in the Tidal and Litigation Areas were ranked as high relative risk primarily because of heavy metals contamination.

The Tidal and Litigation Areas include wetlands that provide habitat for several endangered and threatened species, including the Salt Marsh Harvest Mouse and the California Clapper Rail. The sites in these areas are subject to tidal inundation, have no containment measures and have a direct interconnection to Suisun Bay. Suisun Bay lies immediately to the north of NWS and is commonly used for water sports and fishing.

Concord NWS was placed on the National Priorities List (NPL) primarily because of surface water pathway conditions at the Tidal and Litigation Areas. As a result of its recent listing on the NPL, negotiations on a Federal Facility Agreement (FFA) may begin with EPA once proposed changes in regulatory responsibilities associated with Superfund are resolved. In the meantime, Concord NWS is under a Federal Facility Site Remediation Agreement (FFSRA) with the State of California, which was signed in 1992, and which contains newly negotiated (1995) sites and schedules. A Site Management Plan is currently being prepared to compliment the FFSRA.



Current Status Of Sites

Studies Underway	29
Cleanups Underway	2
Response Complete	21
TOTAL	52

A Restoration Advisory Board (RAB) was formed in July 1995 and has 30 active members. Community members have shown a high level of interest in the Installation Restoration Program (IRP), and are providing valuable insight and comments on the IRP documents under preparation. Four committees have been formed. These committees include a procedures committee, a public relations committee, a documents review committee and a finance committee.

Nine sites in the Inland and Tidal Areas are in the Remedial Investigation/ Feasibility Study stage (RI/FS). Fourteen sites are Response Complete (RC). Seven Litigation Area Sites recently underwent a Remedial Action - four in 1994 and three in 1996. These seven sites are undergoing post-remediation Long Term Monitoring (LTM).

Two removal actions will be completed in FY97 for one Inland and one Tidal Area Sites. The third LTM event of the Litigation Area Sites will begin in the spring of FY97. The Navy is also conducting Site Inspections (SIs) at 24 Solid Waste Management Units (SWMUs). A RCRA Facility Confirmation Report will be completed in FY97 for the SWMUs. As part of the Navy's goal to expedite the investigation process, the Navy is conducting Corrective Actions (CAs) at three of these sites so that an extensive Remedial Investigation (RI) would not be required.

At four Tidal Area Sites, the final RI Report, including the human health and qualitative ecological risk assessment, is expected to be completed in FY97. The draft RI report was completed in FY96, but further analysis is required to finalize the report. Based on results of the RI fieldwork, the planned phase 1B RI and quantitative ecological risk assessment will not be required, and the sites will proceed directly to the feasibility study (FS) phase.

For four Inland Area Sites, the final RI/FS reports are expected to be completed and a Record of Decision (ROD) signed in FY98. The fifth Inland Area Site will begin a phase 2 RI in FY97 to evaluate groundwater contamination, and the FS will begin.

CONCORD NWS EXECUTIVE SUMMARY

In FY94 and FY95, risks to human health and the environment were reduced due to an RA for the Litigation Area Sites. Cleanup consisted of excavating and disposing of 43,500 cubic yards of soil contaminated with heavy metals that exceeded hazardous waste levels. The sites were then graded and revegetated. The Department of Navy (DON) prosecuted claims to recover the costs of cleanup from 14 defendants and to require the owners of six contaminated properties adjacent to the installation to clean up their properties concurrent with the DON's cleanup. A LTM plan for soil, water, and biota is in effect to evaluate the success of the remedial action and restoration.

RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Concord NWS is bound on the north by Suisun Bay and on the south and west by the city of Concord. Soil and sediment are contaminated with metals and volatile organic compounds. Surface water is the pathway of greatest concern due to the direct interconnection of the Tidal and Litigation Areas to Suisun Bay and the lack of containment measures. The surface water runoff from Concord NWS is primarily to the north from the Inland and Tidal Areas, through the wetlands, into Suisun Bay.

Groundwater at Concord NWS is not used for drinking water due to its high Total Dissolved Solids (TDS) content. However, potable water wells available for use in drought years are located downgradient of the Inland Area Sites and could be affected by groundwater contamination. The groundwater pathway is currently being evaluated as part of the RI for the Tidal and Inland Area Sites.

NATURAL RESOURCES - Suisun Bay is a transition zone between saltwater and freshwater ecosystems and is interconnected to the Concord NWS wetland areas. This area contains a diverse population of fish and other aquatic wildlife. The Bay is also used for recreation. The upland and wetland areas at Concord NWS provide habitat for numerous flora and fauna and federal and state designated threatened and endangered species. These include the Salt Marsh Harvest Mouse, California Clapper Rail, California Black Rail, Tule Elk and the figwort family of plants including the Delta Tule Pea and Soft Bird's Beak.

RISK - A baseline human health risk assessment and an ecological risk assessment is currently being prepared for the Tidal and Inland Areas as part of the RI. At the Litigation Area, an ecological assessment is being conducted in response to the concerns of the regulatory agencies that the RA cleanup levels specified in the 1989 ROD do not adequately protect flora and fauna. The Litigation Area ecological assessment is being conducted in coordination with the ongoing LTM program that was specified in the ROD for the Litigation Areas.

Sixteen sites are ranked as high relative risk in the DOD Relative Risk Ranking system at Concord NWS primarily because of threatened and endangered species in the sensitive wetland areas and recreational users in adjoining Suisun Bay. The close proximity of NWS to the Contra Costa County Water Wells surrounding Mallard Reservoir has also contributed to the high relative risk ranking. Risks to human health and the environment have been reduced due to a remedial action for the Litigation Area Sites. This action removed 43,500 cubic yards of metals-contaminated soil which exceeded hazardous waste levels. At the Inland and Tidal areas, the Navy is planning removal or RCRA Corrective Actions to bring contaminants to safe levels which will reduce immediate threats to human health and the environment and allow several sites to be closed out, rather than requiring the sites to undergo additional investigations.

RESTORATION PROJECTS - The RA for the Litigation Area Sites consisted of excavating contaminated soils, backfilling with clean wetland soils and restoring the excavated areas. The restoration activities were designed to enhance the wetland habitat for the two endangered species of concern, the Salt Marsh Harvest Mouse and the California Clapper Rail. During the RA, elevations were lowered in several areas to enhance the wetland area. In addition, "refugial mounds" were constructed to provide refuge for the Salt Marsh Harvest Mouse during periods of high tide. The excavated areas were revegetated with native species of wetland plants harvested from local areas as well as nursery-grown stock. A LTM plan is in effect to measure the success of the restoration.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - Concord NWS was placed on the NPL on December 16, 1994, primarily because of conditions at the Tidal and Litigation Area Sites. The Hazard Ranking System (HRS) Score of 50.00 was driven by the surface water pathway, since these sites are subject to tidal inundation and have no containment measures such as runoff management structures. The Tidal and Litigation Areas have a direct interconnection to Suisun Bay.

LEGAL AGREEMENTS - A Federal Facilities Site Remediation Agreement (FFSRA) was signed by the DON, the California Department of Toxic Substances Control and the California Regional Water Quality Control Board, San Francisco Bay Region, on September 29, 1992. The agreement established a schedule for investigation and remediation for the Tidal Area and Inland Area Sites. The Litigation Area Sites were excluded from the agreement because the sites had already proceeded to cleanup.

Negotiations with EPA Region IX and the State of California for an FFA may begin once proposed changes in regulatory responsibilities associated with Superfund are resolved. In the meantime, a Site Management Plan is being prepared to compliment the FFSRA.

In FY91, the DON prosecuted claims to recover the costs of cleanup for the Litigation Area Sites from 14 defendants and to require that the owners of six contaminated properties adjacent to the sites to clean up their properties concurrent with the DON's cleanup. The DON entered into seven Consent Decrees with the adjacent property owners and recovered costs for cleanup.

PARTNERING - A partnering meeting in FY93 between the Navy and contractors helped the RA project team set goals for the RA at the Litigation Area Sites. The environmental work at Concord has required close coordination with federal and state regulatory agencies to ensure protection of endangered and threatened species. The result has been the generation of analytical data by the EPA that will be used to augment the Navy's RI sampling and analysis results. The EPA has performed chemical and biological analyses on samples collected in the Tidal Area to determine appropriate reference levels for metals. The EPA is also performing chemical and biological analyses on samples collected along the boundary of the Tidal Area Landfill to evaluate whether landfill leachate is migrating off-site. The EPA is analyzing split ecological samples using standard Contract Laboratory Program (CLP) procedures, where the Navy analyzed samples using Low Detection Limit (LDL) analytical methods. Also, the project team has worked together to revise the investigative approach for the landfill site to include a presumptive remedy, which will reduce the costs for the RI/FSs.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) held one meeting in 1990 and a draft charter was prepared. No other meetings were held, but copies of environmental reports were sent to TRC members to review. The TRC was

CONCORD NWS RELEVANT ISSUES

converted to a Restoration Advisory Board (RAB) in FY95. A public notice was issued inviting members of the communities to participate in the RAB. In April and May 1995 the Navy conducted site tours for 150 community members. The tour was followed by a question and answer session led by the Navy and regulatory agencies. The first RAB meeting was held on July 20, 1995. The Navy and regulatory agencies have given technical presentations during the monthly RAB meetings. Community RAB members are reviewing draft RI Reports and providing input and comments. There are 30 active RAB members.

COMMUNITY RELATIONS PLAN (CRP) - A CRP was completed in May 1989. An updated CRP was completed in July 1995, and a final updated CRP was issued in February 1996.

INFORMATION REPOSITORY - An Information Repository was established at the Central Contra Costa Public Library. An Administrative Record was established in 1985 and is maintained at the Naval Facilities Engineering Command, Engineering Field Activity, West in San Bruno, California. A copy of the Administrative Record documents is contained in the Information Repository.

HISTORICAL PROGRESS

FY83

An Initial Assessment Study (IAS) identified 28 potentially contaminated sites at Concord NWS. Fifteen sites were recommended for no further study. Thirteen sites were recommended for further investigation.

FY85

Sites 3, 4, 25 and 26 - A Confirmation Study (CS) addressed these sites and recommended further investigation.
Sites 5, 6, 13 and 16 - A CS addressed these sites. No further action was recommended.

FY86

Sites 3-6, 25 and 26 (Litigation Area Sites) - A final Remedial Investigation/Feasibility Study (RI/FS) was completed. Ten Remedial Actions(RAs) alternatives were identified.
Site 14 - An investigation was completed and slightly elevated levels of arsenic, chromium and lead were found in groundwater. However, it was later determined the elevated levels were naturally occurring and not from a source of contamination.

FY87

Site 27 - Petroleum products and solvents were reportedly disposed on the ground surface. The site was identified after the completion of the IAS and was added to a subsequent Site Inspection (SI).
Site 28 - A source of heavy metals was found during litigation proceedings with Potentially Responsible Parties (PRPs) involving other sites and this site was added to an ongoing Remedial Investigation (RI).

FY88

Sites 3-6, 25, 26 and 28 (Litigation Area Sites) - A revised final RI was completed and found elevated concentrations of arsenic, cadmium, copper, lead, selenium and zinc in soil. A second revised Feasibility Study (FS) was completed.
Sites 3, 26 and 28 - Clam bioassay test results indicated a potential for cadmium, lead and zinc to move into surface waters at these sites. Plant and earthworm bioassays indicated movement of arsenic, cadmium, copper, lead, selenium and zinc into plants and soil-dwelling organisms that have potential toxicological impacts and potential contamination of species higher on the food chain, such as birds and mammals, with heavy metals. The soil of the Tidal Area is generally underlain with clay silts of low permeability that impede contaminant movement downward. Groundwater contamination was considered unlikely, but groundwater studies were included in the RI/FS.

FY89

Sites 3-6, 25, 26 and 28 - An RA plan was completed and identified several alternatives for each site. A Record of Decision (ROD) signed in April 1989, specified the excavation of contaminated soil from the area in each site designated for active remediation, disposal of contaminated soil in an existing Class I landfill, restoration of the excavated area and operation and maintenance, including monitoring. In addition to these actions, liming was specified for low pH soil at Site 6.

FY91

Sites 3-6, 25, 26 and 28 (Litigation Area Sites) - The DON prosecuted claims to recover the costs of cleanup for these sites from 14 defendants and to require the owners of six contaminated properties adjacent to the sites to clean up their properties concurrent with the DON's cleanup.

FY92

Sites 3-6, 25, 26 and 28 - A Remedial Design (RD) was completed for these sites.
SWMUs - Forty-nine Solid Waste Management Units (SWMUs) were identified in the RCRA Facility Assessment (RFA) prepared by California EPA as part of the RCRA Part B permit. Twenty four SWMUs were proposed for RCRA Corrective Action.
UST 1 - There were three tanks which were removed using Concord NWS funding.

FY93

Sites 8, 14, 19, 23A, 23B and 24B - An SI found no evidence of previously reported contaminants: No munitions-filled railcars reported to have been buried at Site 8. No volatile or semi-volatile organic compounds or petroleum hydrocarbons were found in the groundwater samples from Site 14. No evidence of culverts, outfalls, or contamination sources along the suspected 2,000 ft length of Site 19. No indication of explosive activities or explosive chemicals in the soil at Explosive Ordnance Disposal (EOD) Sites 23A and 23B. No evidence of firing range activities or elevated metals soil concentrations at Site 24B.
Sites 13, 17, 22, 24A and 27 - An SI recommended further investigation of soil and groundwater at Site 13, groundwater at Site 17 and soil at Sites 22, 27 and 24A.
Site 13 - The SI recommended removal of Napalm thickener.
Sites 1, 2, 9 and 11 - An SI addressed these sites and found volatile and semi-volatile organic compounds and metals in soil and groundwater and xylene, arsenic and mercury in sediment. Further investigation recommended.
UST 1 - An Initial Site Characterization (ISC) to define the extent of gasoline contamination in soil was completed.

FY94

Sites 6, 25, 26 and 28 (Litigation Area Sites) - An RA was completed at four (of seven) Litigation Area Sites and consisted of excavating and disposing of 22,700 cubic yards of soil contaminated with arsenic, cadmium, lead, selenium, copper and zinc and then grading and revegetating the sites. LTM is in effect to evaluate the success of the cleanup. Initiated RFA confirmation sampling at 24 SWMUs.

FY95

Sites 3-5 (Litigation Area Sites) - An RA was 95% completed for these three Litigation Area Sites. Cleanup consisted of excavating and disposing of 20,800 cubic yards of soil contaminated with arsenic, cadmium, lead, selenium, copper and zinc and then grading and revegetating the sites. Some regrading and planting remains, to complete the RA. LTM began and is scheduled to continue for a minimum of 30 years, as required by the

CONCORD NWS
HISTORICAL PROGRESS

ROD to confirm that site contaminant levels continue to be below concentrations which require further remediation.
Site 14 - The three abandoned wells comprising this site were properly closed and sealed to prevent them from serving as future contaminant pathways to the aquifers below. The Well Closure Report was completed.

PROGRESS DURING FISCAL YEAR 1996

FY96

Sites 1, 2, 9 and 11 (Tidal Area Sites) - Interim Draft RI Report (Phase 1) was completed, including the draft qualitative ecological assessment and human health risk assessment.
Sites 13, 17, 22, 24A and 27 (Inland Area Sites) - Interim Draft RI Report (Phase 1) was completed.
Sites 3-5 (Litigation Area Sites) - The RA was completed.
Sites 3-6, 25, 26 and 28 (Litigation Area Sites) - The first-year LTM Report for these recently remediated sites was completed, and the second-year LTM event began.
Site 16 - Supplemental SI completed.
SWMUs 13, 16 and 40 - Corrective Actions (CA) were initiated for these three SWMUs.
Continued RFA confirmation sampling at 24 SWMUs.
Issued final Community Relations Plan.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 1, 2, 9 and 11 (Tidal Area Sites) - The RI Report is expected to be completed. The Feasibility Study (FS) will begin.
Site 11 - Field sampling, EE/CA, and AM, to support planned removal action, will be completed.
Sites 13, 17, 22, 24A and 27 (Inland Area Sites) - The RI report is expected to be completed.
Site 22 - The Phase 2 RI will begin.
Sites 13, 17, 24A and 27 - The FS will begin and is expected to be completed in FY98.
Site 13 - A napalm removal is expected to begin and be completed.
Sites 3-6, 25, 26 and 28 (Litigation Area Sites) - A Qualitative Ecological Risk Assessment (QEA) is expected to be completed. The QEA will be used to determine if the remedial action has removed significant risks to ecological receptors. Results of the QEA will be used to further refine the LTM program and to evaluate the monitoring data. The second-year LTM Report is expected to be completed, and the third-year LTM event will begin.
SWMUs - An RFA Confirmation Report to confirm the presence of contamination at each SWMU will be completed and forwarded to the federal and state regulatory agencies in response to the state issued RFA. SWMUs requiring further corrective action will be identified for placement in a regulatory program for continued investigation and remediation. Corrective action for SWMUs 13, 16 and 40 is expected to be completed.

FY98

Site 1 - The FS is expected to be completed for this landfill site. Proposed Plan and ROD process will begin.
Site 2, 11, 13 and 24A - Removal action will begin and is expected to be completed.
Sites 13, 17, 24A and 27 - The proposed plan and ROD are expected to be completed.
Site 22 - The Phase 2 RI report is expected to be completed, and the FS will begin.
Sites 3-6, 25, 26 and 28 (Litigation Area Sites) - The third-year LTM Report is expected to be completed, and the fourth-year LTM event will begin.

CONCORD NWS
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	28	1						
RI / FS	7			5	3	1		
RD	7			1	1	5		2
RAC	4	3				3	4	1
RAO								1
IRA	1(1)			4(4)				
RC	16	5		1		3	4	1
Cumulative % RC	53%	70%	70%	73%	73%	83%	97%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA			19					
RFI / CMS						3	2	
DES							1	4
CMI								5
CMO								4
IRA			3(3)					
RC			14					5
Cumulative % RC	0%	0%	74%	74%	74%	74%	74%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	1							
CAP		2			1			
DES						1		
IMP				2				1
IMO								3
IRA								
RC								3
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

CORONA NAVAL ORDNANCE CENTER NAVAL WARFARE ASSESSMENT DIVISION

CORONA, CALIFORNIA

Engineering Field Division/Activity: SWDIV

Major Claimant: COMNAVSEASYSCOM

Size: 120 Acres

Funding to Date: $50,000

Estimated Funding to Complete: $0

Base Mission: Provides materials and services to support ordnance systems

Contaminants: POLs

Number of Sites:

CERCLA:	1
RCRA Corrective Action:	0
RCRA UST:	1
Total Sites:	2

Relative Risk Ranking of Sites:

High:	0	Not Evaluated:	0
Medium:	0	Not Required:	2
Low:	0		

Sites Response Complete: 2

PROGRESS AND PLANS

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

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP	1							
DES								
IMP								
IMO								
IRA								
RC	1							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

CORONADO NAVAL AMPHIBIOUS BASE
CORONADO, CALIFORNIA

Engineering Field Division/Activity: SWDIVLAV
Major Claimant: CINCPACFLT
Size: 185 Acres
Funding to Date: $2,854,000
Estimated Funding to Complete: $12,139,000

Base Mission: Provides facilities and services for support of amphibious, unconventional, in-shore, inshore, and special warfare

Contaminants: Paint, solvents, unexploded ordnance, ash, blasting grit, PCBs, heavy metals

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	6				
RCRA Corrective Action:	0	High:	5	Not Evaluated:	0
RCRA UST:	1	Medium:	0	Not Required:	0
Total Sites:	7	Low:	0		

Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	2		4					
RI / FS					3			2
RD					2			2
RAC								1
RAO								5
IRA				1(2)	1(3)			2(5)
RC								6
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA			1					
CAP								1
DES								1
IMP								1
IMO								1
IRA								1(3)
RC								1
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

CROWS LANDING NAVAL AUXILIARY LANDING FIELD
CROWS LANDING, CALIFORNIA

Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible] Acres

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: Provides practice field for Naval planes from Naval Air Station Moffett Field, Naval Air Station Lemoore, and Naval Air Station Alameda; provides maintenance support to aircraft.

Contaminants: POLs, solvents, heavy metals, pesticides, scrap metal

Number of Sites:
CERCLA: 8
RCRA Corrective Action: 0
RCRA UST: 1
Total Sites: 9

Relative Risk Ranking of Sites:
High: 3 Not Evaluated: 1
Medium: 2 Not Required: 0
Low: 1

BRAC II

Sites Response Complete: 2

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	8							
RI / FS			2	4				
RD				2				3
RAC	1							5
RAO								3
IRA	1(1)							
RC	2			1				5
Cumulative % RC	25%	25%	25%	38%	38%	38%	38%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP		1						
DES				1				
IMP								1
IMO								1
IRA		1(1)						
RC								1
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

DIXON NAVAL RADIO TRANSMITTING FACILITY

DIXON, CALIFORNIA

Engineering Field Division/Activity: [illegible]

Major Claimant: COMNAVCOMTELCOM

Size: [illegible] Acres

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: Provides transmitter support for Naval Communication Station, Stockton

Contaminants: Liquid waste, solvents, heavy metals, PCBs, POLs

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

Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI			4					
RI / FS								
RD								
RAC								
RAO								
IRA			1(1)	1(1)				
RC			3	1				
Cumulative % RC	0%	0%	75%	100%	100%	100%	100%	100%

EL CENTRO NAVAL AIR FACILITY
EL CENTRO, CALIFORNIA

Engineering Field Division/Activity: SWDIV

Major Claimant: CINCPACFLT

Size: 43,127 ACRES

Funding to Date: $10,457,000

Estimated Funding to Complete: $17,815,000

Base Mission: Maintains and operates facilities, provides services and material to support operations of aviation activities, carrier air-wing flights and other activities.

Contaminants: Acid, asbestos, ash, plating wastes, POLs, PCBs, solvents, heavy metals

Number of Sites:

CERCLA:	17
RCRA Corrective Action:	0
RCRA UST:	4
Total Sites:	21

Relative Risk Ranking of Sites:

High:	12	Not Evaluated:	3
Medium:	1	Not Required:	0
Low:	5		

Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	15							
RI / FS				3	1		1	10
RD		1			4			7
RAC			1		3	1		7
RAO						2	1	2
IRA			1(2)	2(2)	1(1)	2(4)	1(1)	9(10)
RC			1		1	2	1	12
Cumulative % RC	0%	0%	6%	6%	12%	24%	29%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	2							
CAP								4
DES	1							2
IMP								4
IMO								
IRA								
RC								4
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

EL TORO MARINE CORPS AIR STATION

IRVINE, CALIFORNIA

Engineering Field Division/Activity: SWDIV

Major Claimant: CNAL

Size: 4,800 Acres

Funding to Date: $37,901,000

Estimated Funding to Complete: $117,864,000

Base Mission: Marine Corps primary jet fighter facility on the West Coast; provides materiel and support for aviation activities of the Marine Corps; provides housing for Marine Corps personnel

Contaminants: POLs, PCBs, pesticides/herbicides, trichloroethylene, volatile organic compounds

Number of Sites:	
CERCLA:	24
RCRA Corrective Action:	1
RCRA UST:	18
Total Sites:	43

Relative Risk Ranking of Sites:			
High:	20	Not Evaluated:	1
Medium:	5	Not Required:	0
Low:	17		

NPL | BRAC III

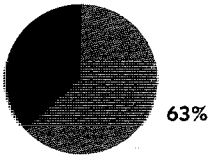
Sites Response Complete: 0

EXECUTIVE SUMMARY

Marine Corps Air Station (MCAS) El Toro is located in Orange County, California about eight miles southeast of the City of Santa Ana and 12 miles northeast of the City of Laguna Beach. MCAS El Toro served as the center for Marine aviation operations on the Pacific Coast. Past operations that contributed to contaminated sites on the facility include; aircraft maintenance, vehicle maintenance, degreasing processes, painting, fuel storage, wash racks, aircraft refurbishing, sewage treatment, solid waste incineration and disposal, and fire-fighting training. During routine water quality monitoring in 1985, the Orange County Water District (OCWD) discovered the organic solvent TCE in an irrigation well located about 3,000 feet west of the Station. Subsequent investigations by OCWD concluded that the organic solvent TCE and other volatile organic compounds (VOCs) detected in groundwater had originated at MCAS El Toro. Past operations and disposal practices are believed to have contaminated the groundwater in the vicinity of the Station. As a result of these findings the Station was placed on the National Priorities List (NPL) in February 1990. A Federal Facility Agreement (FFA) for MCAS El Toro was signed in October 1990.

Most of the land northwest of MCAS El Toro is used to grow agricultural crops. Land to the south and northeast has been developed as commercial, light industrial, and residential. Surface runoff and infiltration go to storm drainage channels and naturally occurring washes, sometimes crossing agricultural land, and eventually draining to San Diego Creek which feeds the Upper Newport Bay Ecological Reserve, a coastal wetlands. Contaminants can potentially migrate to agriculture and drinking water wells located downgradient from El Toro.

The Technical Review Committee (TRC) was converted to a Restoration Advisory Board (RAB) in January 1994. The RAB consists of over 50 members who meet on a bi-monthly basis. A Community Relations Plan (CRP) was completed and two information repositories were established in FY91. A total of six fact sheets have been released.



Current Status Of Sites

Studies Underway	27
Cleanups Underway	16
Response Complete	0
TOTAL	43

Currently, 27 sites are in the study phase of which 24 are CERCLA sites. Twenty-two CERCLA sites were evaluated during the Phase I Remedial Investigation (RI), which was completed in May 1993. Site 23, the wastewater treatment plant sewer lines, was included in the RCRA Facility Assessment (RFA)/Confirmation Study completed in August 1993; the site was confirmed a no-action site and was dropped from the El Toro environment program. Two additional sites (Sites 24 and 25) were established for investigation in Phase II, bringing the total number of CERCLA sites to 24. The final work plan for the Phase II Remedial Investigation/Feasibility Study (RI/FS) was prepared in July 1995, and Phase II field work continued through June 1996. All RCRA Solid Waste Management Units (SWMUs) are consolidated into five groups; inactive SWMUs are in the RCRA Facility Investigation (RFI) phase. The 405 Underground Storage Tanks (USTs) are consolidated into 18 groups of sites. Draft RIs will be completed for 14 CERCLA sites in the first quarter of FY97. Draft Record of Decision (RODs) will be submitted for five sites in FY97 and nineteen sites in FY98. Not all 22 sites completed RI/FSs in FY96, as planned, due to the BRAC Cleanup Team (BCT) refocusing program priorities on groundwater, the VOC Source Area, and landfills.

In 1993, MCAS El Toro was included in the Base Realignment and Closure (BRAC III) program. Operational closure date is targeted for July 1999. Approximately 63% of the property has been classified as requiring no further remediation before transfer. However, due to the distribution of contaminants, very few if any property is available for transfer. MCAS El Toro has proposed a settlement agreement with the OCWD for a multi-purpose project which would include OCWD's planned Irvine Desalter project, as well as a remedial alternative which includes a natural attenuation component to mitigate the VOC contamination in groundwater. No agreement was reached with the OCWD during FY96. MCAS El Toro is also considering a Department of the Navy (DON) stand alone project which would involve control of groundwater contaminant migration and cleanup of contaminated groundwater by pump-and-treat and reinjection at the VOC Source Area. This issue is still to be resolved and has delayed the ROD and Remedial Design (RD) for Site 18 (Regional Groundwater).

A success story is the UST Tiger Team which was formed to address UST compliance and closure issues. The team consists of representatives from the El Toro Environmental and BRAC Offices, Engineering and Planning Departments, and the Naval Facilities Engineering Command, Southwest Division. The Tiger Team removed 41 inactive USTs in 1995 and 56 in 1996; the removal of the other 35 USTs anticipated to be removed in FY96 will be completed in FY97. More than 200 USTs have been removed at El Toro to date. The Station has received letters confirming regulatory closure on 160 USTs.

EL TORO MCAS RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Under MCAS El Toro are well-draining silty clay loams and fine sandy loams with moderate to high infiltration rates. Downgradient, in the Irvine Groundwater Subbasin, groundwater is used for irrigation. Contaminants can potentially migrate to drinking water wells in the middle aquifer several miles downstream from El Toro. Surface drainage near MCAS El Toro generally flows southwest. Off station drainage from the hills and upgradient irrigated farmlands combine with on-station runoff and flows into four main drainage channels. After passing through light industrial areas in the City of Irvine, all four drainages become confluent with San Diego Creek southwest of the station. San Diego Creek feeds the Upper Newport Bay Ecological Reserve, a coastal wetlands.

NATURAL RESOURCES - Approximately 75% of the native habitats of MCAS El Toro have been cleared for agriculture, housing, and station operations. Native vegetation and animal species are primarily condensed in an approximately 1,200-acre area located in the northeast portion of the station. The natural habitat located in this portion of the station is used by many wildlife species. The area is heavily used by numerous wintering avian species, including neotropical birds and birds of prey. In addition to bird species, reptiles and mammals are also present in the natural area as well as a smaller number of amphibian species. Only one species, the California gnatcatcher, is listed as threatened under the Federal Endangered Species Act.

The Upper Newport Bay Ecological Reserve, into which the San Diego Creek flows, was established in 1975 to preserve and enhance the saltwater marsh ecosystem. Eight species classified by California as either rare or endangered are dependent on the Upper Newport Bay. A series of marshy wildlife refuges are located immediately adjacent to San Diego Creek. Many plant and animal species settle in this wildlife refuge. The reserve is more than 10 miles from MCAS El Toro's four main drainage channels.

RISK - Baseline Human Health Risk Assessments and Ecological Risk Assessments are being conducted at each site as part of the Remedial Investigations (RIs). In the Department of Defense (DOD) Relative Risk Site Evaluation Model twenty sites were ranked as high relative risk.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - MCAS El Toro was included on the National Priorities List (NPL) on 21 February 1990 based on a Hazard Ranking System (HRS) score of 40.83. The NPL listing was due to the presence of volatile organic compound (VOC) contamination in the groundwater.

LEGAL AGREEMENTS - A Federal Facility Agreement (FFA) between the Department of the Navy (DON), the EPA, the California EPA (Cal-EPA) Department of Toxic Substances Control (DTSC), and the California Regional Water Quality Control Board (CRWQCB), Santa Ana Region, was signed in October 1990. The agreement established lead and support agency roles, general scopes of work, schedules, and regulatory review turnaround times for key project milestones and specified that investigations begin with RIs and proceed to Records of Decision (RODs). The Installation Restoration Program (IRP) sites were grouped into three Operable Units (OUs); OU1 includes VOC-contaminated regional groundwater, on- and off-Station (Site 18); OU2A includes sites believed to be contributing to the regional VOC plume emanating from the southwest portion of the station (Sites 24 and 25); OU2B is station landfills (Sites 2 and 17); OU2C is station landfills (Sites 3 and 5); OU3 includes all remaining CERCLA sites (Sites 1, 4, 6-16 and 19-22).

In 1985, the OCWD discovered the organic solvent TCE in two off-site wells and initiated an investigation to determine the source and extent of contamination. In July 1987, the CRWQCB, Santa Ana Region, issued a Cleanup and Abatement Order that required MCAS El Toro to submit a Plan of Action (POA) to address off-site groundwater contamination, this became the Regional Groundwater Investigation - Site 18.

PARTNERING - The BRAC Cleanup Team (BCT) has established a partnering agreement and team charter that incorporates the latest and most efficient management techniques to coordinate installation restoration (IR) activities. Team building seminars were held in October 1994 and May 1996. Examples of efficient management techniques and team building include; setting some agency review times shorter than required under the FFA; concurrent document review among BCT members to improve formal draft FFA submittals; and withdrawal of portions of sites from CERCLA at any time in the process if the data supports a CERCLA petroleum exclusion.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in 1990 and converted to a Restoration Advisory Board (RAB) in January 1994. The RAB consists of over 50 members who meet on a monthly basis. All RAB meetings are open to the public. Technical presentations to assist RAB members in understanding complex environmental issues are provided on a bi-monthly basis.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was completed in April 1991 and the first Fact Sheet was completed in November 1991. The CRP was revised in March 1996. A total of six fact sheets have been released, and Fact Sheets 7 and 8 were being planned during the last quarter of FY96. Twenty-four public meetings have been held (includes RAB meetings) through FY96.

INFORMATION REPOSITORY - In 1991, an Information Repository was established at the Heritage Park Regional Library in Irvine. The Administrative Record was also established in 1991. Administrative Record files are located at the El Toro BRAC Environmental Office and at Southwest Division (SWESTDIV), Naval Facilities Engineering Command (NAVFAC) in San Diego, California.

BASE REALIGNMENT AND CLOSURE

BRAC - In 1993, MCAS El Toro was included in the Base Realignment and Closure (BRAC III) program. The closure date is scheduled for July 1999.

BRAC CLEANUP TEAM - A BRAC Cleanup Team (BCT) was established in October 1993. The BCT consists of representatives from Cal-EPA DTSC, EPA Region IX, and the United States Marine Corps/Navy (USMC/Navy).

DOCUMENTS - The latest BRAC Cleanup Plan (BCP) update was completed in March 1996. The BCP will be updated again in March 1997. The Environmental Baseline Survey (EBS) was completed in April 1995. In the EBS, the Environmental Condition of Property was assessed according to Department of Defense (DOD) and American Society for Testing and Materials (ASTM) guidelines and the results are shown in the chart below. The final EBS identified 63% of the property as Category 1. EPA and Cal-EPA DTSC have given 100% concurrence.

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
2,982 acres	5 acres	5 acres	0 acres	0 acres	1,084 acres	662 acres

LEASE/TRANSFER - It is anticipated that the Finding of Suitability to Transfer (FOST) or Finding of Suitability to Lease (FOSL) activities will start in 1997.

EL TORO MCAS
RELEVANT ISSUES

REUSE - The County of Orange and Cities of Irvine and Lake Forest formed the El Toro Reuse Planning Authority (ETRPA) in March 1994. In January 1995, the County withdrew from the ETRPA to pursue formation of a new reuse committee. In April 1995, the County of Orange was recognized as the new Local Redevelopment Authority (LRA). A draft reuse plan was completed during August 1996. The final reuse plan is scheduled to be completed during December 1996. In the absence of a reuse plan for the Station, reuse parcels have been identified according to the Station's existing land use presented in the MCAS El Toro Master Plan. Voters have passed two measures which proposed to convert the installation into a commercial airport.

FAST TRACK INITIATIVES - The MCAS El Toro team has implemented various fast track procedures such as using mobile laboratories for accelerated analytical turnaround times, and in-field decision making. Current removal actions are using industrial cleanup standards and the team will consider using industrial cleanup standards for final remedies. The team has used the latest immunoassay field screening kits to reduce analytical costs while maintaining Data Quality Objectives (DQOs). In addition, the team continues to evaluate other opportunities and methods to accelerate cleanup such as presumptive remedies, removal actions, and new technologies that may be applicable for MCAS El Toro site specific conditions.

HISTORICAL PROGRESS

FY82

Site 1 - An Interim Remedial Action (IRA) was completed in FY82 with the incineration of excess ordnance compounds at the Explosive Ordnance Disposal Range.

FY86

Sites 1-17 - An Initial Assessment Study (IAS) (equivalent to a Preliminary Assessment (PA)), completed in May 1986, identified 17 potentially contaminated sites at MCAS El Toro. Seven sites (Sites 6-8, 10, 12, 13 and 15) were found not to pose a threat to human health or the environment, and No Further Action (NFA) was recommended for these sites. Nine sites (Sites 1-3, 5, 9, 11, 14, 16 and 17) were recommended for further investigation. Remedial measures were recommended for Site 4.
Site 18 - A Regional Groundwater Investigation was added after an investigation by the Orange County Water District (OCWD) determined that the organic solvent (TCE) and other volatile organic compounds (VOCs) detected in groundwater outside the Station had originated at MCAS El Toro.
Sites 19-23 - The EPA's review of the IAS and further investigations by the Navy resulted in five additional sites being recommended for further action. JP-5 jet fuel spills and leaks occurred from fuel bladders at the Aircraft Expeditionary Refueling Site (Site 19); waste oils, solvents, and waste solvent sludge at the Hobby Shop Building 626 (Site 20); spills and leaks from stored drums of chemicals at the Material Management Group Building 320 (Site 21); JP-5 spills and leaks from fuel bladders at the Tactical Air Fuel Dispensing System (TAFDS) (Site 22); and industrial wastes containing heavy metals around abandoned-in-place sewer lines from the old Wastewater Treatment Plant (WWTP) (Site 23).
Sites 1-23 - Meetings between the state, the EPA and the Department of the Navy (DON) in September 1986 resulted in these sites being recommended for further investigation in the Installation Restoration Program (IRP) reopening Sites 6-8, 10, 12, 13 and 15 which were previously recommended for NFA.

FY88

UST Group 18 - As a result of a refueling system upgrade, Underground Storage Tank UST 398 was investigated in 1988. As part of the system upgrade, a Soil Characterization Study was conducted at the Tank 398 site and petroleum hydrocarbon contamination was identified in soil below the tank. The Orange County Health Care Agency was notified and a report of an unauthorized leak was submitted by the DON in September 1988. The County directed MCAS El Toro to conduct an investigation to determine the extent of contamination.
Site 1 - An IRA consisting of access control was installed in July 1988 at the Explosive Ordnance Disposal Range and is expected to be in place until FY01.

FY89

Site 18 - An IRA was implemented at the Regional Groundwater Investigation Site that involved retrofitting perimeter monitoring well pumps, conducting a treatability study to determine the feasibility of using activated carbon to remove contaminants from groundwater, and constructing an activated carbon treatment plant. The plant began operation in June 1989 and was used to treat the organic solvent TCE-contaminated groundwater pumped from three existing wells to below detection limits. System operation stopped in 1993 on approval of the Santa Ana Region, California Regional Water Quality Control Board (CRWQCB) since the site was being handled in an ongoing Remedial Investigation/Feasibility Study (RI/FS).
UST Group 18 - A Preliminary Site Assessment was conducted to determine the lateral and vertical extent of soil contamination at the site.

FY90

Site 18 - A Site Inspection (SI) was completed at the Regional Groundwater Investigation Site and found significant levels of the organic solvent TCE in shallow groundwater at the base boundary and limited contaminant migration off site. In April 1989, the OCWD also completed an off-site groundwater investigation and documented the existence of a large dilute plume of the organic solvent TCE in groundwater that extended over three miles northwest from the base.

FY92

UST Group 18 - A Site Assessment was completed. Significant concentrations of petroleum hydrocarbons, benzene, toluene, ethylbenzene, and xylene (BTEX) were found in groundwater.

FY93

SWMU 1 - An RCRA Facility Assessment (RFA) was completed. A Visual Site Inspection, completed in August 1991, identified 289 potential solid waste management units (SWMUs) at MCAS El Toro, including approximately 30 sites that the CRWQCB, Santa Ana Region, had requested be further investigated. One hundred and fifty-seven SWMUs were recommended by the DON for further investigation. Field work was initiated in September 1992. The RFA was completed in March 1993. SWMUs of concern have been grouped into SWMU 1 for corrective measures.
Site 18 - Completed IRA consisting of activated carbon treatment plant.

FY94

Initial BRAC Cleanup Plan (BCP) developed.
Site 2 - Construction was completed at the Magazine Road Landfill involving the installation of slope stabilization.
UST Group 18 - Planning for free product recovery began.

FY95

Update of the BRAC Cleanup Plan (BCP).
USTs 1-17 - Planning began for remediation of various UST sites by ex-situ and in-situ methods.
UST Group 18 - Construction of free product recovery system began.
UST Groups 1-17 - Forty-one inactive USTs were removed.

EL TORO MCAS
PROGRESS DURING FISCAL YEAR 1996

FY96

Community Relations Plan (CRP) and BRAC Cleanup Plan (BCP) updated.
OUs 2A, 2B and 2C - RI reports were completed and draft feasibility studies were submitted in accordance with the FFA.
OU1 - Draft final interim action feasibility study (IAFS) was submitted for comment.
UST Group 18 - Operation of the free product recovery system continued (approximately 6,000 gallons recovered to date).
207 USTs were removed.
UST Groups 1 and 18 - Soil Vapor Extraction (SVE) systems installed and operated at UST group 18 (Tank 398) and UST group 1 (Tank Farm 2) sites.
Various UST Groups 1-17 - Treated approximately 1,000 tons of hydrocarbon impacted soil at the station bioremediation facility.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Site 4 - PA/SI will be completed.
Sites 11, 12 and 19 - RI/FS will be completed.
Site 11 - Complete RD.
Site 19 - Complete IRA.
OU1 (Site 18) - A proposed plan will be completed.
OU2A (Site 24) - SVE pilot system. A proposed plan will be completed for the groundwater portion. An interim ROD for the vadose zone will be signed.
Various UST Groups 1-17 - Continue treatment of hydrocarbon impacted soil at the station bioremediation facility.
UST Groups 1, 8, 15 and 18 - Complete RDs.
UST Group 18 - Continue operation of the free product recovery system. Continue operation of the SVE systems installed at Tank Farm 2.
Various UST Groups 1-17 - Anticipate regulatory closure of 80 USTs.

FY98

OUs 1, 2A, 2B and 2C - RODs will be completed. RD will be started.
OU3 (Sites 2-10, 13-15, 17, 18, 20-22, 24 and 25) - An RI/FS will be completed.
OU3 (Sites 4, 6, 8-13, 15, 16, 20, 21 and 22) - Proposed Plans and RODs will be completed.
Sites 18, 19, 22 and 24 - Complete RD.
Sites 19 and 11 - Complete IRA.
Sites 4, 6, 7, 9, 10, 13-15 and 20 - Expect Response Complete.
SWMU 1 - Complete RFI/CMS and Design.
UST Group 1 - Complete UST inventory (equivalent to an SA).
UST Groups 3-5, 7, 9, 10,13, 14, 16 and 17 - Complete Design.
UST Group 3 - Complete Corrective Action Implementation.
UST Group 18 - Complete interim removal.
Various UST Groups 1-17 - Anticipate regulatory closure of 80 UST sites.
Various UST Groups 1-17 - Continue treatment of hydrocarbon impacted soil at the station bioremediation facility.
UST Group 18 - Continue operation of the free product recovery system.

EL TORO MCAS
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	1		1					
RI / FS			3	19	1	1		
RD			1	4	3			5
RAC					2	1	3	7
RAO								2
IRA	1(1)		1(1)	2(2)		5(6)	3(5)	5(10)
RC				9		4	1	10
Cumulative % RC	0%	0%	0%	38%	38%	54%	58%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	1							
RFI / CMS				1				
DES				1				
CMI						1		
CMO								
IRA								
RC						1		
Cumulative % RC	0%	0%	0%	0%	0%	100%	100%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA				1			1	
CAP								
DES			4	10	3	1		
IMP				1	12	4	1	
IMO						1		13
IRA				1(1)	2(2)	5(5)	3(3)	7(7)
RC						2		16
Cumulative % RC	0%	0%	0%	0%	0%	11%	11%	100%

FALLBROOK NAVAL ORDNANCE CENTER, PACIFIC DIVISION DETACHMENT

FALLBROOK, CALIFORNIA

Engineering Field Division/Activity: SOUTHDIV

Major Claimant: COMNAVSEASYSCOM

Size: 8,853 Acres

Funding to Date: $0

Estimated Funding to Complete: $7,397,000

Base Mission: Naval fleet and marine corps missiles and conventional ammunition; maintains facilities of an launched missiles

Contaminants: POLs, heavy metals, unexploded ordnance, solvents, PCB, chlorine, acid, ordnance compounds, used PCBs, refuse, refuse with hazardous waste

Number of Sites:

CERCLA:	11
RCRA Corrective Action:	0
RCRA UST:	2
Total Sites:	13

Relative Risk Ranking of Sites:

High:	0	Not Evaluated:	3
Medium:	5	Not Required:	0
Low:	3		

Sites Response Complete: 2

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	1							
RI / FS								10
RD								9
RAC								
RAO								
IRA								9(10)
RC	1							10
Cumulative % RC	9%	9%	9%	9%	9%	9%	9%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	2							
CAP	1					1		
DES								1
IMP	1							1
IMO								1
IRA	1(2)							
RC	1							1
Cumulative % RC	50%	50%	50%	50%	50%	50%	50%	100%

IMPERIAL BEACH OUTLYING LANDING FIELD

IMPERIAL BEACH, CALIFORNIA

Engineering Field Division/Activity: SWDIV

Major Claimant: CINCPACFLT

Size: 450 Acres

Funding to Date: $339,000

Estimated Funding to Complete: $5,000,000

Base Mission: Support helicopter training in conjunction with NAS North Island

Contaminants: POLs, PCBs, inert material, blasting grit, solvents

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	5				
RCRA Corrective Action:	0	High:	0	Not Evaluated:	5
RCRA UST:	0	Medium:	0	Not Required:	0
Total Sites:	5	Low:	0		

Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI								5
RI / FS								2
RD								4
RAC								3
RAO								1
IRA				1(1)				1(1)
RC								5
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

LEMOORE NAVAL AIR STATION

LEMOORE, CALIFORNIA

Engineering Field Division/Activity: EFAWEST

Major Claimant: CINCPACFLT

Size: 39,173 Acres

Funding to Date: $13,700,000

Estimated Funding to Complete: $28,797,000

Base Mission: Maintains and operates facilities and provides services and materials to support operations of aviation activities

Contaminants: Heavy metals, vinyl chloride, volatile and semi-volatile organic compounds

Number of Sites:

CERCLA:	17
RCRA Corrective Action:	0
RCRA UST:	2
Total Sites:	19

Relative Risk Ranking of Sites:

High:	10	Not Evaluated:	0
Medium:	1	Not Required:	3
Low:	5		

Sites Response Complete: 3

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	15							
RI / FS		4	6	7				
RD				2	5			
RAC					1	1	2	3
RAO								7
IRA	1(1)		2(2)	2(3)				
RC		3	5	2				7
Cumulative % RC	0%	18%	47%	59%	59%	59%	59%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP		1						
DES				1				
IMP		1		1				
IMO								2
IRA								
RC								2
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

LONG BEACH NAVAL COMPLEX
LONG BEACH, CALIFORNIA

Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible]

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: Provided support and supplies for assigned surface craft and ships; shipbuilding; research and test work; training; and hospital and clinical services.

Contaminants: Chlorinated solvents, solvents, acid, blasting grit, paint, heavy metals, industrial wastewater, industrial round waste, asbestos, PCBs, pesticides

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	24	High:	5	Not Evaluated:	1
RCRA Corrective Action:	0	Medium:	9	Not Required:	8
RCRA UST:	2	Low:	5		
Total Sites:	26				

BRAC II, IV

Sites Response Complete: 1

EXECUTIVE SUMMARY

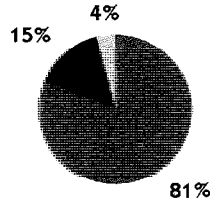
Long Beach Naval Complex (LBNC) includes Naval Shipyard (NSY) Long Beach and its four associated housing areas (Los Alamitos, Palos Verdes, San Pedro, and Whites Point), Naval Station (NS) Long Beach and its two associated housing areas (Savannah/Cabrillo and Taper Avenue), and Hospital (NAVHOSP) Long Beach.

NS and NSY are located on the south side of Terminal Island within the boundaries of the cities of Los Angeles and Long Beach. The NAVHOSP is located in the northeast corner of the City of Long Beach. Palos Verdes, San Pedro, and Taper Avenue housing areas are located in southwestern Los Angeles County within the community of San Pedro in the City of Los Angeles. Whites Point housing is located south of San Pedro and Taper Avenue housing within the community of San Pedro in the City of Los Angeles. Los Alamitos housing is located east of Orange County in the City of Los Alamitos, and Savannah/Cabrillo housing is located in the northeast corner of the City of Long Beach. LBNC has been an industrial facility for over fifty years. Typical operations that contributed to contaminated sites at NS include: laundry and dry cleaning, steam plant operations, air compressor operations, boat working, wet paper destruction and paint bucket cleaning. Typical operations that contributed to contaminated sites at NSY include: ship repair and maintenance, vehicle maintenance and repair, utility maintenance and operation, dip tanks, boiler repair and maintenance, vapor degreasing, machine shops, pipe-fitting, electrical shops, painting, abrasive blasting, weapons system shops, and petroleum product and hazardous material storage. Previous operations that contributed to contaminated sites at San Pedro and Palos Verdes housing areas include: disposal of ships wastes, drilling mud and construction debris, fuel storage, and fire fighter training. Primary sites of concern are disposal pits into which all types of wastes were disposed of. The only operations that contributed to contaminated sites at NAVHOSP are generation of medical wastes and gasoline underground tanks.

Currently, there are eight sites at NSY, seven sites at NS, and eight sites at the housing areas in the study phase. All of these are non- NPL sites; however, the CERCLA process is being followed. At the NSY, RI/FS is underway at six sites (Sites 8-13). SI has been completed at one site (Site 6B). One site (Site 7) is managed under the NS. At the NS , two RI/FSs are underway at seven sites (Sites 1-6A and Site 7). Corrective measures are underway at the NS NEX Gas Station. At the housing areas, EE/CA is underway for four sites (Site 2, 5, 11, and 12). One site (Site 7) is a newly identified AOC and a PA is underway. At the NAVHOSP, petroleum hydrocarbon contamination was found in groundwater at one UST site. The BRAC Cleanup Team agreed that natural attenuation was the best remedial action. Site closure was successfully obtained after three rounds of groundwater monitoring.

The NAVHOSP, and NS and its associated housing were identified for closure in BRAC II. The NSY and its Associated Housing were identified for closure in BRAC IV. The NS and its housing areas were closed 30 September 1994. NAVHOSP activities ceased 31 December 1993 and was officially closed 31 March 1994. Both NS and NAVHOSP are now in caretaker status. The NSY and its housing areas are scheduled to be closed in September 1997.

Site 7 (NS and NSY), Harbor Sediments, presents the biggest challenge for cleanup at LBNC. The initial estimate of $1.2 billion to complete closure of the site has since been reduced to $200 million. Another critical issue is the designation of groundwater underlying LBNC as Beneficial Use for drinking water. This designation requires that groundwater be cleaned up to Maximum Contaminant Levels (MCLs). The Regional Water Quality Control Board agreed with the Navy that the most appropriate beneficial use of groundwater would be for aquatic purposes and that Ocean Plan standards were more appropriate than MCL's.



Current Status Of Sites

Studies Underway	21
Cleanups Underway	4
Response Complete	1
TOTAL	26

LONG BEACH NAVAL COMPLEX
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Land use in the vicinity of LBNC is port-related, commercial, or industrial. Most of NS and NSY are built on manmade land constructed of hydraulic fill which is isolated hydrogeologically and varies in thickness, but is typically less than 200 feet. The Mole, upon which Sites 1-4 are located, is a large U-shaped breakwater constructed in 1944 which forms the West Basin of the Long Beach Harbor. Potential for contaminant migration off-base is low. Groundwater movement is influenced by tides, has low velocity, and is also brackish and unusable. Surface drainage is discharged through storm drains to the West Basin of the Long Beach Harbor. Land use in the vicinity of Los Alamitos is a mixture of residential, commercial, and agricultural. Land use in the vicinity of Whites Point housing is primarily residential and commercial.

The San Pedro, Palos Verdes, and Taper Avenue housing areas are bounded residential, commercial, and industrial areas. These three housing areas are adjacent to the Defense Fuel Support Point (DFSP), an operating facility whose primary mission is to receive, store, and distribute fuels for ships, aircraft, and other vehicles in support of military bases. The DFSP facility is surrounded by the housing areas. Regional surface drainage flows via ravines and large culverts into Los Angeles Harbor. Prior to 1971, surface drainage was to Harbor Lake. After 1971, Harbor Lake Dam was constructed. A small percentage of the potable water used within a 4-mile radius of the housing areas comes from groundwater.

NATURAL RESOURCES - The Terminal Island area is highly industrialized. There is little or no natural terrestrial habitat within the Naval Complex. The NSY is mostly paved; the NS does include some landscaped areas between the buildings. The harbor is an important nesting and feeding area for many coastal migratory birds. The black-crowned night-heron has established an extensive rookery in several trees on the NS. This bird is considered a sensitive migratory bird and is afforded protection under the Migratory Bird Treaty Act. The California brown pelican and least tern, both Federal endangered species, use the NS and surrounding waters as foraging and resting areas.

At the NAVHOSP, there are no rare, threatened, or endangered plant or animal species.

The San Pedro, Palos Verdes, and Taper Avenue housing areas consist almost entirely of graded and previously cleared land. The developed areas on and around the sites are landscaped with lawns and non-native shrubs and trees. At one site there is a small area which is inhabited by the California Gnatcatcher, a threatened species The Defense Fuel Support Point facility is a habitat for the San Pedro Blue Butterfly which is endangered.

RISK - The DOD Relative Risk Site Evaluation Model ranked three sites at NS and two sites at NSY as high relative risk. The high ranking was due to contaminated soil and groundwater. A Baseline Risk Assessment was completed for Sites 1-6A in June 1995. A Risk Assessment was completed for Site 7 as a part of the draft RI report in February 1996. A Draft Baseline Risk Assessment was completed for Sites 8-13 in April 1996.

REGULATORY ISSUES

PARTNERING - A partnering agreement was developed at the BRAC Cleanup Plan (BCP) strategy camp on 16 November 1994.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - NS and NSY formed a joint Technical Review Committee (TRC) in July 1992. The TRC met quarterly. The TRC was converted to a RAB in April 1994. The RAB meets at least once every other month. Four workshops have been held to inform RAB members.

A RAB was formed for San Pedro/DFSP in FY95 and meets quarterly. The first RAB meeting was attended by several hundred people concerned about the reuse of Taper housing. After explaining the intent and purpose of the RAB to the community, the RAB has gained widespread community support. The RAB is composed of 13 community members.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was completed in August 1993 for NS and NSY. Four Fact Sheets have been released. A public meeting was held in July 1993. The CRP will be updated by NSY in FY97. A CRP for the housing areas in San Pedro was published and two Information Repositories were established in May 1994. Three Fact Sheets have been released.

INFORMATION REPOSITORY - The Information Repository for NS and NSY was set up in FY93 at the Long Beach Public Library. An Administrative Record was also established in FY93 and is on file at SWDIV. Information Repositories for the housing areas in San Pedro are located at San Pedro Public Library and Miraleste Branch of the Palos Verdes Public Library.

BASE REALIGNMENT AND CLOSURE

BRAC - In March 1992, NS and NAVHOSP Long Beach were identified in the Base Realignment and Closure Act (BRAC)of 1990 (BRAC II). NSY Long Beach and Associated Housing were identified in BRAC of 1995 (BRAC IV).

BRAC CLEANUP TEAM - A BCT was formed in November 1993 for NS and NAVHOSP. The same BCT covers the NSY and Associated Housing. The BCT is composed of the BRAC Environmental Coordinator, Cal-EPA Department of Toxic Substances and Control (DTSC) representative, and an US EPA representative. The BRAC Cleanup Plan (BCP) Project Team consists of a variety of technical, operational, reuse, and administrative specialists. The BCT has been instrumental in accelerating the cleanup process through various partnering efforts such as discussion workshops and telephone conferences, and the development of a partnering agreement. The BCT has also been available during field operations to make real time decisions.

DOCUMENTS - The BCP was completed in March 1994 and updated in 1995 and 1996. A revised final Environmental Baseline Survey (EBS) was completed in April 1994 for NS and NAVHOSP. Cal-EPA DTSC did not concur with the Community Environmental Response Facilitation Act (CERFA) clean acreage identified in the final EBS for NS because they felt the groundwater was not fully characterized. The groundwater is currently being addressed in the RI/FS. A draft EBS for the NSY was issued in July 1996 and is currently under review by the regulatory agencies. A separate EBS was completed for NSY housing areas in August 1996.

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
135 acres	0 acres	0 acres	65 acres	0 acres	778 acres	351 acres

LONG BEACH NAVAL COMPLEX
RELEVANT ISSUES

LEASE/TRANSFER - Three Findings of Suitability to Transfer (FOSTs) and two Finding of Suitability to Lease (FOSLs) have been completed. A portion of Savannah/Cabrillo housing was transferred in July 1994, the remaining housing will be transferred in FY97. The NAVHOSP Parcel B was reverted to the City of Long Beach in October 1995, and Parcel A is expected to transfer to the City in FY97. Two leases were executed with the City of Los Angeles and City of Long Beach in FY96for the NS Site 6A parcels. Another lease will be executed with the City of Long Beach for the NS Mole in FY97. The Taper Avenue housing property is expected to be transferred in FY97. A FOSL for the entire NS will be prepared in FY97.

REUSE - The City of Long Beach Naval Properties Reuse (NPR) Committee developed a draft Reuse Plan and submitted it to the City Council for approval in July 1993. The draft final Reuse plan was submitted by City Council to the Navy in August 1993 and included recommendations for all NS properties that are within the City of Long Beach. The Long Beach LRA submitted a final redevelopment plan to the Navy and HUD in August 1995. HUD approved the plan on 28 October 1995. The Los Angeles LRA plans to submit the redevelopment for Taper Avenue Housing and Site 6A parcel plan to the Navy and HUD in FY97. The City of Long Beach Economic Development Commission Shipyard Reuse Advisory Committee submitted recommendations for the surplus of NSY property to the City Council on July 2, 1996. The final Comprehensive Reuse Plan was submitted by the City Council to the Navy and HUD in July 1996. HUD approval is expected in FY97.

FAST TRACK INITIATIVES - The following five DOD initiatives are being implemented at the Naval Complex: (1) identification of clean parcels, (2) partnering, (3) overlapping phases of the cleanup process, (4) improved contract procedures, and (5) interfacing with the Reuse Plan.

HISTORICAL PROGRESS

FY83

Sites 1-7 (NS) and 8-12 (NSY) - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), identified 12 sites. Site 7 was originally split into NS Harbor Sediments (Site 7A) and NSY Harbor Sediments (Site 7A), but it is presently being addressed as one site under the NS IR Program.

FY89

Sites 1-7 (NS) and 8-13 (NSY) - A RCRA Facility Assessment (RFA) was completed as part of a Part B permit application. Thirteen potential solid waste management units (SWMUs) were identified. The first 12 SWMUs were the same as Sites 1-12 identified in the IAS. One additional site, Site 13 - the Tank Farm near Building 303, was identified on the NSY.

FY90

Sites 2, 5, 11, 12, 31 and 32 (San Pedro/DFSP) - A PA was completed in August 1990 for Sites 2, 5, 11, and 12 at San Pedro, and Sites 31 and 32 at DFSP. All six sites were recommended for SI.

FY92

NAVHOSP - A PA identified no potentially contaminated sites; therefore, no further action was recommended.
Site 6 (San Pedro/DFSP) - A Federal Facility Preliminary Assessment Report was completed by US EPA and identified one additional site at DFSP, Site 6. A SI was recommended for Site 6.

FY93

Sites 1-7 (NS) and 8-13 (NSY) - A Site Inspection (SI) identified potential contaminants in the soil. The report recommended further investigation at Sites 1-13.

FY94

Site 6B (NSY) - This site was not included in the 1983 IAS due to a real estate transaction which occurred at the time the IAS was conducted. A PA for Site 6B completed in October 1993 recommended a limited soil and groundwater investigation.
Site 6A (NS) - A Removal Site Evaluation (RSE) was completed to support an interim lease to the Port of Los Angeles. The RSE concluded that no action for the surface soil was needed and the site was suitable for industrial use.
Sites 8 and 13 (NSY) - The final RI/FS Work Plan was completed and approved. Implementation of field works was delayed due to lack of funding.
Site 11 (NSY) - An Interim Remedial Action (IRA) which involved a protective covering to prevent off-site migration and reduce potential long-term risks was completed. An IRA which involved relocation of sandblast grit, placement of a Gunite cap and revegetation of the hillside was completed.
UST 1 (NAVHOSP) - A removal action to remove tanks and contaminated soil was completed.
Sites 2, 5, 6, 11, 12, 31 and 32 (San Pedro/DFSP) - A SI completed in November 1993 recommended further investigation for all these sites.

FY95

Site 7 (NS) - A revised Risk Assessment Work Plan and Sampling and Analysis Plan were completed and approved. Field work began.
Sites 8 and 13 (NSY) - RI Field works began.
Site 12 (NSY) - An IRA which involved asphalting of a dirt parking lot was completed.
Sites 2, 5, 11 and 12 (San Pedro) - A RSE completed in September 1995 recommended remedial action for these sites.
Site 7 (San Pedro) - A new Area of Concern (AOC) was identified in the September 1995 RSE. A PA will be prepared to address this AOC.

PROGRESS DURING FISCAL YEAR 1996

FY96

Sites 1 - 6A (NS) - Final RI report was issued. It is anticipated that regulators approval of the final RI report in FY97.
Site 3 (NS) - Final EE/CA and Action Memorandum were issued. Removal of arsenic contaminated soils completed.
Site 6B (NSY) - A Final SI completed. The regulatory agencies concurred with the no-further-action recommendation for soils. However, since the underlying groundwater may have beneficial uses, a focused FS was recommended.
Site 7 (NS) - Draft RI report was issued. Extensive comments received. Regulators do not agree with the no action recommendation (leaving the sediments in place). Navy is working with regulators to resolve comments.
Sites 8 - 13 (NSY) - Draft RI report was issued. Regulators request the risk assessment include an unpaved scenario to account for NSY closing and building that may be torn down with open space left behind. This effort requires recalculating all the risk data.
Sites 4 (NS), 2 and 11 (San Pedro) - Complete RI/FS.

Long Beach Naval Complex
PROGRESS DURING FISCAL YEAR 1996

UST 1 (NAVHOSP) - An Initial Site Characterization to determine the extent of soil and groundwater contamination was completed. Three rounds of groundwater monitoring required by the Regional Water Quality Control Board were completed. Site closure was received.
Sites 2, 5, 11 and 12 (San Pedro) - A draft EE/CA was issued. Comments were received from the regulators requesting groundwater information.
Sites 6, 31 and 32 (DFSP) - A draft RSE Work Plan was completed. Comments received from regulators.
A draft EBS for the NSY issued in July and is currently under review by the regulatory agencies. A separate EBS was completed for NSY housing areas.

The NAVHOSP Parcel B was reverted to the City of Long Beach.
Two leases have been executed with the City of Los Angeles and City of Long Beach.
Completed investigation of UST 1 at Naval Hospital,
Transferred Parcel B to the city
Completed FOSL for NS
Completed FOST for Parcel A at Naval Hospital
FSs for six sites at NS was initially agreed to by regulators; decision later reversed and proceeded to Removal Action.
Completion of a RI/FS for harbor sediments, cleanup of NEX Gas Station at NS, and design and initiation of a corrective action was delayed due to longer time required for document review by regulators.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 1 - 6A (NS) - Implement a 1 -year groundwater monitoring program.
Sites 1 - 6A (NS) - Complete ROD by.
Site 6A (NS) - Initiate off-site groundwater investigation.
UST 1 (NS) - Complete design.
Sites 1-3, 5, 6, (NS), 9, 12, 13 (NSY), 5 and 7 (San Pedro) - Complete RI/FSs.
Site 4 (NS) - Complete RD.
Sites 2, 5, 11 and 12 (San Pedro) - Finalize EE/CA. Complete remedial action.
Sites 6, 31 and 32 (DFSP) - Finalize EE/CA Work Plan. Implement field works.
Site 7 (San Pedro) - Complete a PA/SI for this new AOC.

FY98

Sites 1- 6A (NS) - Continue groundwater monitoring efforts until November 1998. Issue final report.
Site 6A (NS) - Complete RD and ROD.
Site 3 (NS) - Complete an IRA and the RA.
Site 1 (NS) - Complete long term operations.
Site 3 and UST 1 (NS) - Response complete.
Sites 6-8 and 10 (NSY) - Response complete.
Site 7 (NS) and Sites 6-8, 10 and 11 (NSY) - Finalize RI. Complete FS. Complete ROD.
Sites 8 -13 (NSY) - Continue groundwater monitoring program and complete. Issue final report. Complete RODs.
UST 1 (NS) - Complete soil vapor extraction remediation and product extraction.
Sites 2, 5, 11 and 12 (San Pedro) - Complete ROD.

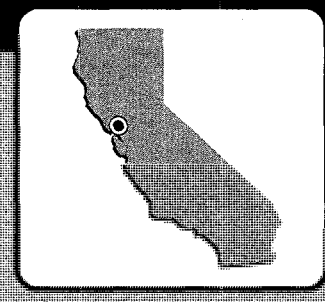
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	14	1	1					3
RI / FS		3	10	7	1			3
RD			1	1	5			4
RAC				1	2	1	2	4
RAO				1	1		1	4
IRA	1(2)		4(4)	1(1)			1(1)	3(3)
RC			4	5	2	1	3	9
Cumulative % RC	0%	0%	17%	38%	46%	50%	63%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA		1						
CAP								
DES			1					
IMP				1				
IMO				1				
IRA								
RC		1		1				
Cumulative % RC	0%	50%	50%	100%	100%	100%	100%	100%

MARE ISLAND NAVAL SHIPYARD

VALLEJO, CALIFORNIA



Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible]

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	28	High:	19	Not Evaluated:	3
RCRA Corrective Action:	0	Medium:	5	Not Required:	0
RCRA UST:	8	Low:	0		
Total Sites:	36				

BRAC III

Sites Response Complete: 0

EXECUTIVE SUMMARY

The Mare Island Naval Shipyard (NSY) is located about 25 miles northeast of San Francisco and lies on a peninsula in San Francisco Bay. This Navy yard was established in 1854. The shipyard launched 513 vessels, ranging from landing crafts to battleships and more recently, nuclear submarines. Its activities have included repair and maintenance of sea vessels, logistics support, refueling operations, dry-docking and ordnance operations. These past activities resulted in spills and disposal of contaminants such as heavy metals, volatile organic compounds, the chemical additive PCB, pesticides, petroleum hydrocarbons and lead oxide into the environment. A Federal Facility Site Remediation Agreement (FFSRA) was signed in FY92. The Navy changed its operational processes to prevent further contamination. The shipyard operationally closed 1 April 1996 and is currently under the caretakership of Engineering Field Activity West.

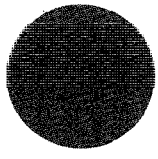
The base is surrounded on the west and south sides by the waters of San Francisco Bay, on the east side by Mare Island Strait and on the north side by marshlands. Adjacent to the northwest boundary are the marshlands of the San Pablo Bay Wildlife Refuge. The City of Vallejo is located across the Mare Island Strait. Groundwater is designated for beneficial use; however, neither the shipyard nor adjacent communities use groundwater and the impermeable Bay Mud protects most of the deeper aquifer, which is the only useable aquifer. Contaminants can enter the Bay waters or marshlands via surface runoff or the groundwater system. Contaminants pose a threat to humans via contact.

There are 35 existing Installation Restoration (IR) or Group 1 sites. In addition, there are 32 Group 2 and four Group 3 identified Areas of Concern (AOC) to investigate. Group 2 AOC are sites that warrant further investigation as recommended by the respective Preliminary Assessment (PA) and/or Site Investigation (SI) reports. Group 3 AOC were identified through the Environmental Baseline Survey (EBS), meetings with the BRAC Cleanup Team (BCT), and input from the Restoration Advisory Board (RAB) members. Management of IR Sites 1 through 24 has been divided into three Operable Units (OUs) based on the type and/or location of the contaminant, and known information. OU 1 is IR Site 22, OU 2 consists of IR Sites 8, 10, 11, 13, 16, 18, and 23; OU 3 consists of IR Sites 1-7, 9, 12, 14, 15, 17, 19, 20, 21 and 24.

The Phase II Remedial Investigation (RI) Report for OU 1 was issued on 10 January 1996; the draft OU 2 RI report was issued 3 June 1996, with the final report scheduled to be issued 24 January 1997; the draft OU 3 RI report is scheduled to be issued 24 December 1996 and the final report to be issued 25 May 1997. The draft OU 3 Human Health Risk Assessment is scheduled to be issued 24 March 1997. IR Site18 and IR Site 23 were transferred to the UST Removal Program. The Ecological Risk Assessment (ERA) for the 28 IR sites and offshore Unexploded Ordnance (UXO) removal actions requires additional site investigation which are scheduled to commence in September 1997 and continued through May 1998. The Field Sampling and Analysis Plan (FSAP) for the Group 2 and 3 combined SI and RI was awarded 29 March 1996 with a scheduled completion date of 14 May 1997, and field and lab activities completing by November 1997. Also in 1997, the CLEAN contractor will begin feasibility studies for Installation Restoration and preliminary design for the facility landfill.

Removal Actions are scheduled for IR Sites 8, 10, 11, 16 and 18 in FY97. Intrusive investigations are planned for the following UXO areas: Uplands Magazine, South Shore Area, and the Western Magazine Area. These actions are being prepared and will be executed by SSPORTS Detachment Vallejo (former Shipyard workers). SSPORTS will also provide community relations and RAB support.

Current Status Of Sites



Studies Underway	36
Cleanups Underway	0
Response Complete	0
TOTAL	36

100%

MARE ISLAND NSY
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Mare Island NSY is enclosed by San Francisco Bay waters on the south (Carquinez Strait), east (Mare Island Strait) and west (San Pablo Bay) sides. Technically, it is not an island, but a peninsula attached to the mainland by diked wetlands and marshlands on the north end. The base is hydraulically isolated from the mainland. There are no flowing streams on base since watershed areas are small and rainfall is insufficient. The west side is mostly wetlands. Approximately 3,800 acres are wetlands, including dredge spoils, ponds and tidal marshlands. The average annual rainfall is 17.41 inches. Groundwater is not used as drinking water; water is purchased from the local municipality. Contaminant migration on the land surface ultimately moves to Mare Island Strait or San Pablo Bay via surface channels, storm drains, or non-channelized flow through the marshlands. Contaminant migration via groundwater flow discharges into Mare Island Strait or San Pablo Bay. The "Bay Mud," which is not readily permeable, overlies most of the only useable aquifer, thus minimizing the possibility of contaminating the aquifer. The Regional Water Quality Control Board (RWQCB) has concurred that all shallow aquifers are unsuitable for use as potable water.

NATURAL RESOURCES - The San Pablo Bay National Wildlife Refuge (11,790 acres of open water and tidal wetlands) lies immediately adjacent to the base at its northern boundary. Ducks, terns, loons, grebes and cormorants depend on this refuge. It is home to the endangered California clapper rail, salt marsh harvest mouse and depleted subspecies of Samual's song sparrow. There are no known endangered, rare, or threatened plant species on the base. A juvenile dungeness crab nursery is located in San Pablo Bay. The waters south of Mare Island NSY are an important recreational fishing area and migration route for steelhead trout, striped bass, sturgeon, American Shad and Chinook and Coho salmons.

RISK - Twenty-six of the sites are ranked high relative risk in the DOD Relative Risk Ranking System. Over half of these sites are contaminated with metals and petroleum products. Slightly less than half are contaminated with the chemical additive PCB. Since the majority of these sites are slated for reuse, the potential exists for human contact. In general, there are no drinking water sources downgradient from these sites; however, the groundwater has been identified as "potentially useable for potential beneficial use." Because of the proximity of San Francisco Bay, contamination of the Bay is possible. The environmental baseline survey was completed in February 1995. Five hundred acres were designated to be uncontaminated according to the guidelines in the Community Environmental Response Facilitation Act (CERFA).

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - The shipyard is not listed on the NPL. The shipyard was evaluated and received a score high enough to be included on the NPL; however, the State of California determined the shipyard should remain under the regulatory oversight of the State of California.

LEGAL AGREEMENTS - A Federal Facility Site Remediation Agreement (FFSRA) was signed in September 1992. A revised schedule for submitting required documents was approved in June 1995. The BRAC Cleanup Team (BCT) and project team members have met in the latter part of FY96 to review the cleanup schedules. As a result, a revised FFSRA is planned to be executed by the end of 1996.

PARTNERING - The BCT negotiated a Memorandum of Understanding (MOU) with the City of Vallejo, the Fish and Wildlife Service and the Navy. The MOU outlined the requirements for the cleanup program and drafted a Habitat Conservation Plan.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in FY90 and was converted to a RAB in FY94. The 25-member RAB includes representatives from the Navy, regulatory agencies and the community. The RAB meetings are held on the fourth Thursday of each month from 1900 to 2100. The meeting venue is the John F. Kennedy Library in Vallejo.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was completed in FY92 and updated in FY94. Fact sheets are prepared and display poster boards are provided to keep the local residents informed of cleanup progress.

INFORMATION REPOSITORY - The administrative record and information repository were established in FY90. The repository is located at the JFK Library in downtown Vallejo. Public access to the information is during normal library business hours. A copy of the Administrative Record documents are contained in the Information Repository.

BASE REALIGNMENT AND CLOSURE

BRAC - The Base Realignment and Closure (BRAC) Commission recommended closure of the shipyard, relocating the Combat Systems Technical Command to Dam Neck, Virginia. The shipyard closed 1 April 1996 and is currently under EFA West caretakership.

BRAC CLEANUP TEAM - The BCT, formed in October 1993, has accelerated the cleanup process by designating investigation areas based on geologic and hydrogeologic conditions, physiographic features and environmental characteristics. This effort has reduced the number of RDs and RAs. The BCT also initiated removal actions to address lead contamination.

DOCUMENTS - The BRAC Cleanup Plan (BCP) was completed in FY94, with the second edition completed 21 August 1995. The most recent (third) edition was completed 16 July 1996.

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
143 acres	0 acres	0 acres	0 acres	0 acres	1,507 acres	3,996 acres

REUSE - The land reuse plan was prepared in FY94. Its implementation is occurring as lease and transfer documents are completed. Reuse includes open recreational area, office/light industry, residential, heavy industry, historic districts and neighborhood centers.

FAST TRACK INITIATIVES - The activity is utilizing a strategic accelerated cleanup model to expedite the cleanup process. Shipyard personnel are performing some of the removal actions. The BCT has accelerated the cleanup process based on physical and environmental characteristics. This reduced the amount of RDs and RAs.

MARE ISLAND NSY
HISTORICAL PROGRESS

FY83

Sites 1-15 - Completed a Preliminary Assessment (PA).

FY88

Site 5 - Completed a Site Inspection (SI) phase. A Remedial Investigation/Feasibility Study (RI/FS) underway.
Site 22 - An RI/FS underway.
Sites 1, 2, 6-8, 10, 13, 16, 18, 20 and 24 - RI/FS underway.
Sites 4 and 11 - RI/FS underway.
Site 23 - RI/FS underway.
Sites 3, 9, 12, 14, 15, 19 and 21 - RI/FS underway.

FY90

UST-18 - Completed a PA.

FY91

Sites 1-3, 7, 9, 10-15 and 20 - Completed an SI.
Sites 17-19 and 21-23 - Completed a PA and an SI.

FY93

Site 8 - Completed an IRA (waste removal - soil with heavy metals).
USTs 1-6 - Completed an IRA (waste removal - drums, tanks, bulk containers with petroleum products).

FY94

Site 7 - Two removal actions were begun. One to remove soil containing acids, sludge and heavy metals which was to be completed in FY96. The second was to remove drums, tanks and bulk containers containing acids, petroleum product sludge and heavy metals with completion expected in FY96.
Site 20 - Two removal actions were started. One was to remove soils contaminated with acid, petroleum products, the chemical additive PCB and heavy metals with completion expected in FY96. The second action removed drums, tanks and bulk containers containing acid, petroleum products, the chemical additive PCB and heavy metals with completion expected in FY95.
Site 22 - A removal action was completed.
Site 24 - A removal action was completed to remove soils contaminated with heavy metals.
USTs 1-7 - Completed a PA.

FY95

Site 3 - A removal action is underway to treat groundwater to remove petroleum floating free product. It is expected to be completed in FY00.
Site 7 - A removal action is underway to remove acids, petroleum products and heavy metals from the groundwater. It should be completed in FY99.
Site 13 - A removal action is underway to remove soils contaminated with the chemical additive PCB and will be done sometime in FY97.
Site 15 - A removal action is underway to remove soils with petroleum products, solvents and heavy metals with completion expected in FY96.
Site 20 - A removal action is underway to remove acids, petroleum products and heavy metals from the groundwater. This will be completed in FY99.
USTs 1-7 and 18 - A Corrective Action Plan is underway. Expected completion FY98.

PROGRESS DURING FISCAL YEAR 1996

FY96

Site 1 - Progressed with a presumptive remedy (landfill cap) for the old facility landfill.
Site 3 - Continued a time-critical removal action to remove petroleum floating free-product.
Site 5 - An ordnance removal action for this site was initiated.
Sites 7, 15, 19 and 20 - Completed IRA.
Site 10 - Started removal action to remove soils contaminated with the chemical additive PCB.
Site 22 - Progressing with a No Further Action ROD at this site.
Site 26 - Completed PA/SI.
Ordnance sites - An ordnance magnetometer search was completed for potential ordnance.
DRMO Scrapyard - Completed the radiological removal actions.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Site 3 - Begin non-time critical removal action to remove contaminated soil and install a groundwater collection trench system.
Site 4 - Begin non-time critical removal action to remove abrasive sandblast grit. Begin feasibility study for this site.
Sites 8, 9, 11 and 16 - Begin removal actions to remove soils contaminated with PCBs and/or lead.
Sites 22, 23 and 24 - Scheduled to completed RI/FS phase.
Sites 22 and 26 - Response Complete (RC) expected.
Conduct Basewide groundwater monitoring.
Intrusive investigations for UXO: Uplands Magazine (Area E), South Shore Area (Area G), Western Aboveground Magazine (Area I).
Conduct EE/CA for Mare Island and Carquinez Straits Offshore areas, dredge ponds, Fleet Reserve Pier, Ordnance Production Areas and Site 4.
Conduct field Sampling and Site Investigations field work for the Eco Risk Assessment at multiple sites on and offshore.
Area A - Begin the accelerated investigation for this area.
Begin Feasibility Study and Technology Memo for the facility landfill.
USTs 2, 3, 4, 6, 7 and 18 - Scheduled to complete Corrective Action Plan (CAP).

FY98

Sites 8, 10 and 13 - Scheduled to complete IRAs.
Continue field Sampling and Site Investigations field work for the Eco Risk Assessment at multiple sites on and offshore.
USTs 1 and 5 - Scheduled to complete CAP.
USTs 3-7 and 18 - Scheduled to complete Design (DES) phase.

MARE ISLAND NSY
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	22	1						
RI / FS			3		11	9	4	1
RD							7	11
RAC								18
RAO								6
IRA	5(5)	4(4)		3(3)	7(9)	5(5)		2(3)
RC			2		5	2		19
Cumulative % RC	0%	0%	7%	7%	25%	32%	32%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	8							
CAP			6	2				
DES				6	2			
IMP					7			1
IMO								8
IRA	6(6)							
RC								8
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

MIRAMAR NAVAL AIR STATION
SAN DIEGO, CALIFORNIA

Engineering Field Division/Activity: SWESTDIV
Major Claimant: CINCPACFLT
Size: 23,413 Acres
Funding to Date: $5,924,000
Estimated Funding to Complete: $6,033,000

Base Mission: Provides facilities, services and materials to support operations of aviation activities

Contaminants: Heavy metals, POLs, volatile organic compounds

Number of Sites:

CERCLA:	14
RCRA Corrective Action:	0
RCRA UST:	1
Total Sites:	15

Relative Risk Ranking of Sites:

High:	0	Not Evaluated:	1
Medium:	4	Not Required:	9
Low:	1		

Sites Response Complete: 9

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	9		1					3
RI / FS	1		1					
RD								2
RAC		4						1
RAO								
IRA		5(5)		1(1)				1(1)
RC	4	5	2					3
Cumulative % RC	29%	64%	79%	79%	79%	79%	79%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								1
CAP								
DES								
IMP								
IMO								
IRA			1(2)					
RC								1
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

MOFFETT FIELD NAVAL AIR STATION
MOFFETT FIELD, CALIFORNIA

Engineering Field Division/Activity:
Major Claimant:
Size:
Funding to Date:
Estimated Funding to Complete:

Base Mission: Provided support for anti-submarine warfare training and patrol squadrons; served as headquarters for Commander, Patrol Wings of Pacific Fleet.

Contaminants: Volatile and semi-volatile organic compounds, POLs, heavy metals, PCBs, battery acid, benzene, toluene, ethylbenzene, xylene, polychlorinated aromatic hydrocarbons

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	22	High:	21	Not Evaluated:	1
RCRA Corrective Action:	0	Medium:	0	Not Required:	12
RCRA UST:	12	Low:	0		
Total Sites:	34				

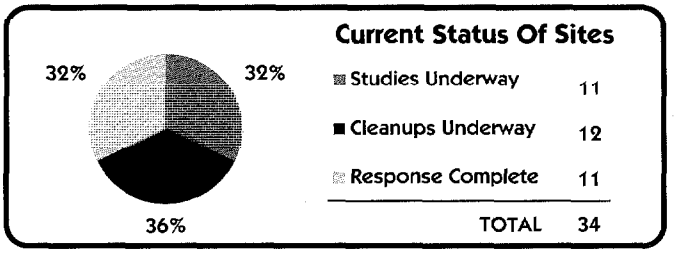
NPL | BRAC II

Sites Response Complete: 11

EXECUTIVE SUMMARY

Moffett Field Naval Air Station is located 35 miles south of San Francisco, California. Moffett Field was commissioned by the Navy in 1933 to support the West Coast dirigibles (blimps) of the lighter-than-air program. Since 1962, the Navy used the station to support anti-submarine warfare training and patrol squadrons. Moffett Field was closed as an active military base in July 1994 and was transferred to the National Aeronautics and Space Administration (NASA). Three squadrons were decommissioned and the remaining squadrons were transferred. Although NASA currently operates the Ames Research Center at Moffett Field, the Navy remains responsible for cleanup of Navy-related contamination. In April 1994, an Environmental Baseline Survey (EBS) was completed, that identified only 7 of the 2,200 acres as Community Environmental Response Facilitation Act (CERFA) clean. Regulatory agencies have concurred on the CERFA clean acreage. Wastes were generated at Moffett Field by aircraft maintenance activities, squadron operations, fuel management, fire fighter training, and other general facility operations. Wastes were disposed of in unlined ponds, landfills, and onto the ground. Leaks from Underground Storage Tanks (USTs) and fuel spills have contributed to environmental problems. Site types include landfills, USTs, a burn pit, ditches, holding ponds, French drains, maintenance areas, and spill sites. The most significant restoration activities involve the investigation and cleanup of four inactive landfills; a groundwater contamination plume under the eastern portion of the facility; UST and fuel handling facilities; and the Navy's contribution to a regional groundwater contamination plume under the western portion of the facility. The primary contaminates of concern are : chemical additive PCBs, petroleum products, the pesticide DDT, chlorinated cleaning solvents, and heavy metals. The base was listed on the National Priorities List (NPL) in 1987. A Federal Facility Agreement (FFA) was signed in September 1990.

Moffett Field is located next to the San Francisco Bay, a highly sensitive ecological area. State and local governments and the public have expressed strong interest and have provided significant comments on cleanup activities at Moffett Field. Landfills located in sensitive ecological and recreation areas, contaminated potential drinking water sources, and the desire for a reuse plan that includes residential, recreational, and industrial areas have resulted in newspaper articles, news stories, public meetings and intensive regulatory agency involvement.



A Technical Review Committee (TRC) was converted to a Restoration Advisory Board (RAB) in October 1994. The RAB meets monthly. Fact sheets are distributed regularly and public meetings with community members are also held. A Community Relations Plan was completed in October 1988 and an Information Repository has been established at the local community library.

At the end of FY96, 11 of the 34 IR sites at Moffett Field were in the Study Phase, 12 were in the Cleanup Phase, and 11 were Response Complete (RC). The Remedial Investigation/Feasibility Study (RI/FS) phase will be completed for all CERCLA sites in FY98.

In FY97, Final Remedial Actions (FRAs) will be initiated for the Site 2 landfill, Site 28 (Westside Aquifers), and Site 26 (Eastside Aquifers). Site 1 landfill is awaiting FRA funding. The landfill caps will prevent leachate generation, and the pump and treat systems at Sites 26 and 28 will prevent migration of the plumes into the San Francisco Bay.

Moffett is currently re-evaluating petroleum sites under the new State "low risk (RBCA) evaluation" criteria to possibly close out Sites 5, 8, 9, 12, 14, 15, 16, 17, 19 and 20 without any further action. In addition, the "IRON CURTAIN" innovative technology is being tested. This technology has very low Operation and Maintenance (O&M) costs and detoxifies the ground water of chlorinated solvents. The BRAC Cleanup Team (BCT) has expedited many cleanup actions at Moffett Field. Tank and sump removals, groundwater treatment, and soil treatment are the primary areas of restoration at Moffett Field. To date, 106 tanks and sumps have been removed by the Navy. All remaining tanks were transferred with the base to NASA.

Remediation of the RCRA USTs is ongoing. The Site Assessments (SA) are complete and there are several projects scheduled for FY97-98, but the majority of the remediation will occur in FY02 or later. All the USTs are currently expected to achieve Response Complete (RC) in FY02 or later.

MOFFETT FIELD NAS
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Moffett Field is located adjacent to the San Francisco Bay. The majority of groundwater under Moffett Field is considered a potential drinking water source. However, concentrations of naturally occurring metals in groundwater exceed acceptable state and federal risk levels. A plume of volatile organic compound (VOC) contamination in the groundwater from a site located near Moffett Field, known as the Middlefield-Ellis-Whisman (MEW) site, has migrated under the western portion of the facility. Contamination from Moffett Field has commingled with the regional MEW plume. There is also a VOC groundwater contamination plume under the eastern portion of the facility. Additionally, several small petroleum-contaminated groundwater plumes exist on both the eastern and western portions of the facility. Complex geology, including sand channels and silt and clay deposits, complicate cleanup activities.

NATURAL RESOURCES - Threatened or endangered species known or potentially occurring at Moffett Field include the California Brown Pelican, American Peregrine Falcon, Black-Shouldered Kite, California Clapper Rail, Western Snowy Plover, California Least Tern, Salt Harvest Mouse, and Marsh Gum Plant.

RISK - A phased Site-Wide Ecological Assessment (SWEA) is being conducted in accordance with EPA and state guidelines at Moffett Field. Phase I identified chemicals of potential concern, receptors, and habitats. It was determined that the current ecological receptors in Operable Unit (OU) 5 groundwater areas do not appear to be at risk from OU 5 contaminants. Phase II (being finalized) characterizes ecological effects and risks to receptors.

Under the Department of Defense (DOD) Relative Risk Ranking System, 21 sites at Moffett Field received a high relative risk ranking primarily due to VOCs in groundwater, soil, and sediments. Potential human receptors include current and future occupational and recreational users, and future residential occupants. The most significant risk reduction activities involve the investigation and cleanup of four inactive landfills; a groundwater contamination plume under the eastern portion of the facility; Underground Storage Tank (UST) and fuel handling facilities; and the Navy's contribution to a regional, multiple responsible party, groundwater contamination plume under the western portion of the facility. Risk reduction actions include construction of drainage controls and a groundwater collection trench, a monitoring well system, construction of multi-layered caps and gas vents, removal of USTs, a bioventing treatment system, a pilot scale Soil Vapor Extraction (SVE) system, construction of a Recirculating In-Situ Treatment (RIST) system, soil excavation and treatment, groundwater treatment, and Operation and Maintenance (O&M) of installed remedies.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - Moffett Field was listed on the National Priorities List (NPL) in July 1987 with a Hazard Ranking Score (HRS) of 32.90.

LEGAL AGREEMENTS - The Navy and regulatory agencies signed a Federal Facility Agreement (FFA) in September 1990. The FFA documents the Navy agreement to undertake, seek funding, implement, and report on investigations and cleanup actions for the following current OUs and sites at Moffett Field:

OU 1 - Sites 1 and 2 (landfills)
OU 2 - (East) Sites 3, 4, 6, 7, 11, 13 and the eastern portion of Site 10 (soils)
OU 2 - (West) Sites 8, 16, 17, 18 and the western portion of Site 10 (soils)
OU 5 - East Side Aquifers, Site 26
OU 5 - West Side Aquifers, Site 28
OU 6 - Wetlands, Sites 25 and 27
Petroleum Sites - Sites 5, 9, 12, 14, 15 and 19
Station-Wide Sites 20-24

The Navy was identified as a principle responsible party to the MEW regional groundwater plume, but was not a signatory to the MEW Record of Decision (ROD), signed in May 1989. The Navy has agreed to follow provisions of the MEW ROD for the regional groundwater plume and at sites that overlie the plume (both on the western portion of the facility). No Further Action (NFA) was agreed to by the regulatory agencies for OU 2 - East, Sites 16 and 17 (OU 2-West), and all of Site 10. These sites fall under the MEW ROD.

PARTNERING: In addition to monthly RPM meetings, the BCT meets quarterly for "off-site" "long-term planning meetings" to frankly discuss overall program issues and air concerns. These meetings have built such a high trust between the BCT members that the cleanup decisions are made much faster and cheaper.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - The Technical Review Committee (TRC), formed in FY89, was converted to a Restoration Advisory Board (RAB) in FY94. Many of the former TRC members are now in the RAB. The RAB has 45 members who meet monthly to discuss cleanup program documents and issues. The RAB has many subcommittees.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was prepared in FY89 to provide guidance for community relations activities during the Remedial Investigation/ Feasibility Study (RI/FS) process at Moffett Field. Public meetings have been held. Fact sheets and proposed plans have also been distributed to the public.

INFORMATION REPOSITORY - An Information Repository has been established at the Mountain View City Library. A copy of the Administrative Record documents are contained in the Information Repository.

BASE REALIGNMENT AND CLOSURE

BRAC - The Base Realignment and Closure (BRAC) commission recommended NAS Moffett Field for closure in 1991. Ownership of Moffett Field was officially transferred in July 1994 to the National Aeronautics and Space Administration (NASA). Naval Air (NAVAIR) Manor, a former off base officer's housing complex, will be transferred in FY97. The cleanup of contamination, as a result of Navy's past practices, remains the Navy's responsibility.

BRAC CLEANUP TEAM - The Moffett Field BRAC Cleanup Team (BCT) has been established. The BCT includes representatives of the EPA and California EPA.

DOCUMENTS - The first edition of the BRAC Cleanup Plan (BCP) was issued on 29 April 1994. The second edition of the BCP was issued on 28 February 1995. In FY96, an environmental business plan, which is an abbreviated version of the BCP was issued. Revisions are expected annually.

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
2,230 acres	69 acres	166 acres	49 acres	93 acres	409 acres	81 acres

LEASE/TRANSFER - A Finding of Suitability for Transfer (FOST) was completed for NAVAIR Manor in FY96.

REUSE - Moffett Field was transferred to NASA in July 1994. NAVAIR Manor will be transferred in FY97.

Other fast-track initiatives include negotiating alternate petroleum cleanup levels that meet site beneficial uses and risk scenarios and coordinating cleanup designs during investigations. In addition, the BCT is working on incorporating the updated petroleum regulations toward a fast-track ROD for petroleum sites.

MOFFETT FIELD NAS
HISTORICAL PROGRESS

FY84

Sites 1-13 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), was completed for both the NAS Moffett Field and Naval Auxiliary Landing Field (NALF) Crows Landing. A total of 13 potentially contaminated sites were identified: Sites 1-9 at NAS Moffett Field and Sites 10-13 at NALF Crows Landing. Sites 1-9 were recommended for further investigation. NALF Crows Landing is not a contiguous part of NAS Moffett Field and is not addressed in this narrative.

FY86

Sites 1-10 - A Confirmation Study (CS) (equivalent to a Site Inspection (SI)) was completed for Sites 1-9 and for a new Site 10 (Chase Park Area).

FY90

Site 9 - An Interim Remedial Action (IRA) that involved the removal of tanks was completed.
Sites 5, 12 and 15 - These sites were identified in the IAS under CERCLA regulations. Since contamination consisted solely of petroleum products, these sites were switched to the Underground Storage Tank (UST) program. Site 5 had a PA and an SI completed.
Sites 11-19 - The Department of the Navy (DON) identified Sites 11-19 at NAS Moffett Field. These new sites are unrelated to the NALF Crows Landing Sites 11-13 identified in the IAS. No PA or SI was conducted for these new sites; however, based on sampling data from other sources, all sites were moved into the ongoing Remedial Investigation/Feasibility Study (RI/FS).
Site 20 (Wetland Areas) OU 6 - This new site was identified and placed into the ongoing RI/FS. This site has outfall areas of groundwater and surface water that lead to marshlands, wetlands, storm water retention ponds, and a slough. The contaminants of concern (solvents, fuels, and the chemical additive PCB) probably came from many sites on the installation.
UST 2 - Initial Site Characterization (ISC) was completed and all 14 tanks were removed.
UST 3 - This UST site consists of six tanks at various locations. An ISC was completed.
UST 6 - This UST site consists of two tanks at the Shenadoah Housing Unit. An ISC was completed.

FY91

Sites 16-18 - Three IRAs involving groundwater remediation was completed.
UST 5 - Four leaking tanks at the NEX Gas Station were removed. Soil and groundwater sampling and contaminated soil and groundwater remediation is planned.

FY92

Site 19 - This site was originally identified during the RI/FS phase under CERCLA and was transferred to the UST program.
Sites 21-23 - These three sites were identified during Stage I of a Remedial Investigation (RI). An SI was completed. Potential contaminants include spilled solvents at Site 21, surface disposal of solvents at Site 22, and the chemical additive PCB and paint in the landfill at Site 23.
All Sites - A PA investigation was underway at all buildings at the installation that were likely to have generated or handled hazardous waste.

FY93

OUs 1 and 5 - The RI was completed.
OU 2 (Sites 8 and 14-18) - The RI was completed, following informal dispute resolution. The Remedial Design (RD) phase was started.

FY94

Site 12 - A removal action was completed that involved the excavation and treatment of petroleum-contaminated soil using catalytic oxidation.
Site 18 - An IRA to remove contaminated soil was completed. Recommendations for subsequent Remedial Actions (RAs) will be incorporated into the regular phases of the Installation Restoration Program (IRP).
Site 20 (Wetland Areas) OU 6 - The RI phase was completed.

FY95

Completed Phase I Ecological Assessment.
Sites 1 and 2 - Completed the Feasibility Study (FS) phase.
Sites 3, 4, 6, 7, 11, 13 and portion of 10 - Completed no action Record of Decision (ROD).
Site 5 - Designed and constructed bioventing pilot test. Remove inactive USTs.
Site 9 - Designed and constructed Soil Vapor Extraction (SVE) pilot test.
Site 14 - Designed and constructed Recirculating In-Situ Treatment (RIST) pilot test at two USTs.
Site 18 - Soil excavation and treatment RA was completed.
Sites 21-23 - An RI was completed.
Site 24 - An SI was completed.
OU 6 (Wetlands) - An RI was completed.
OU 5 (East Side Aquifers) - An FS was completed.

PROGRESS DURING FISCAL YEAR 1996

FY96

Continued Phase II Ecological Assessment, completion delayed to FY97 due to discussions between the Navy and regulators as to the level of Ecological Assessment necessary.
Site 2 - Completed RD for constructing multi-layered caps and gas vents.
Site 5 - Bioventing pilot test and full scale design was completed. Negotiation for No Further Action (NFA) begun. Removal of inactive USTs was completed.
Site 9 - Negotiation for NFA began.
Site 14 - Closure report for two USTs completed and a RIST pilot test at remaining two USTs was installed. Negotiation for NFA is in progress. Completed RA.
Site 15 - Negotiation for NFA began.
Site 18 - Completed RA and reached RC.
Sites 21-23 - An FS is in progress, completion delayed to FY97 due to request for extension from both the EPA and the RAB.
Investigation of fuel transfer pier was completed. Negotiation for NFA is in progress.
OU 6 (Wetlands) - An FS is in progress, completion delayed to FY97 due to additional ecological assessment issues which require resolution prior to finalizing remedy alternative section of FS.
OU 5 (East Side Aquifers) - A ROD was signed 6/28/1996 and the groundwater extraction and treatment is in the RD phase.
Sites 26 and 27 - Completed RI/FS
West Side Aquifers - Pilot scale permeable reaction cell was installed with successful preliminary results and the groundwater extraction and treatment system design was completed.
Site 28 - Completed RD.
USTs 2 and 3 - Completed Site Assessment (SA) and completed IRA.
Issued an Environmental Business Plan.
Completed FOST for NAVAIR manor.

MOFFETT FIELD NAS
PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Complete Phase II Ecological Assessment.
Sites 1 and 2 - A ROD will be completed.
Site 1 - Complete RD for landfill cap. Await FRA funding.
Site 2 - Initiate FRA construction.
Site 5 - Negotiation for NFA will continue.
Site 9 - Complete IRA. Negotiation for NFA will continue.
Site 14 - RIST system O&M will continue. Negotiation for NFA will continue.
Site 15 - Negotiation for NFA will continue.
Site 19 - Negotiation for NFA will continue.
Sites 20 and 21 - Negotiation for NFA will continue.
Sites 22, 23 and 25 - The RI/FS phase will be completed.
Site 24 - Complete soil treatment for high speed refueling hydrants or there will be NFA.
Site 25 - Achieve RC.
Site 27 - Complete RD.
OU 5 - Begin construction of groundwater extraction and treatment RD phase and begin O&M.
OU 6 - Completion of soil excavation RD phase is planned.
West Side Aquifers - Continue pilot scale permeable reaction cell testing. Construction for groundwater extraction and treatment system is expected and O&M will begin.
UST 6 - Complete Design (DES) phase.
UST 7 - Complete IRA.
Transfer NAVAIR manor.

FY98

Station-wide - ROD planned for completion.
Sites 1 - RA to begin.
Site 5 - In situ treatment will continue or there will be NFA.
Site 9 - In situ treatment will continue or there will be NFA.
Sites 9 and 21 - Complete RD if necessary (NFA not issued).
Site 14 - RIST treatment will continue or there will be NFA.
Sites 15, 20 and 24 - Complete Corrective Action Plan (CAP).
Sites 12 and 19 - Complete DES phase.
Site 21 - Complete RI/FS if necessary (NFA not issued).
Sites 22 and 23 - Complete RD. RA phase will be begin.
Site 24 - In situ treatment will continue or there will be NFA.
Site 26 - Complete RA.
OU 5 - Groundwater extraction and treatment O&M will continue.
OU 6 - Completion of soil excavation RA phase is planned.
West Side Aquifers - Pilot scale permeable reaction cell testing and groundwater extraction and treatment system O&M are expected to continue.
UST 6 - Complete Implementation (IMP) phase.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	19							
RI / FS	16	2	3	1				
RD	4	2	2	4				
RAC	2	2		1	2	1	1	4
RAO								4
IRA	4(5)		1(1)					
RC	10	1	1		1		1	8
Cumulative % RC	45%	50%	55%	55%	59%	59%	64%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	7	2						
CAP	4			3				4
DES			1	2	1			7
IMP				1		1		10
IMO								7
IRA	4(4)	2(2)	1(1)					
RC						1		11
Cumulative % RC	0%	0%	0%	0%	0%	8%	8%	100%

MONTEREY NAVAL POST GRADUATE SCHOOL

MONTEREY, CALIFORNIA

Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible]

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

Number of Sites:

CERCLA:	2
RCRA Corrective Action:	0
RCRA UST:	1
Total Sites:	3

Relative Risk Ranking of Sites:

High:	0	Not Evaluated:	1
Medium:	0	Not Required:	2
Low:	0		

Sites Response Complete: 2

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	2							
RI / FS	1							
RD	1							
RAC	1							
RAO								
IRA	1(1)							
RC	2							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	1							
CAP				1				
DES					1			
IMP							1	
IMO								1
IRA								
RC								1
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

NORTH ISLAND NAVAL AIR STATION

SAN DIEGO, CALIFORNIA

Engineering Field Division/Activity: SWDIV

Major Claimant: CINCPACFLT

Size: 3,592 Acres

Funding to Date: $46,191,000

Estimated Funding to Complete: $101,879,000

Base Mission: Maintains and operates facilities and provides services and materials to support operations of aviation activities.

Contaminants: Heavy metals (arsenic, chromium, copper, lead), PCBs, volatile and semi-volatile organic compounds.

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	1				
RCRA Corrective Action:	17	High:	12	Not Evaluated:	1
RCRA UST:	3	Medium:	3	Not Required:	2
Total Sites:	21	Low:	3		

Sites Response Complete: 2

EXECUTIVE SUMMARY

Naval Air Station (NAS) North Island is located at the northern end of the peninsula that forms the San Diego Bay and borders the city of Coronado. NAS North Island was established in 1917 as a flight school on the north side of the island and co-existed on North Island with the U.S. Army's Rockwell Field (located on the south side of the island). The Navy took full control of the island in 1939. In the late 1930s and in the 1940s the island was expanded through a program of dredge and fill until it took the form it has today. NAS North Island is home to two major aircraft carriers, the USS Kitty Hawk and the USS Constellation, as well as the Third Fleet flagship USS Coronado. The base is home to the Navy's only deep submergence vehicles which are used in a variety of research projects, and rescue and recovery operations. Waste generation operations at NAS North Island that contributed to contaminated sites on the facility center around maintenance and repair of aircraft. In the past, liquid wastes were disposed of in the storm drain system which emptied into San Diego Bay and contributed to heavy metal contamination of near shore bay sediments. Other primary sites of concern include a storage site where transformers containing oils with the chemical additive PCB leaked, and a marsh, surface disposal areas, pits, and landfills where liquid and solid wastes were disposed. A Federal Facilities Compliance Agreement and a Cleanup and Abatement Order were issued in FY88 for the Industrial Waste Treatment Beds (Site 11). NAS North Island was issued a RCRA Hazardous Waste Facility Permit in FY89 and is expecting the permit to be reissued in FY96. As a result of the permit, all CERCLA sites must now comply with both RCRA and CERCLA requirements.

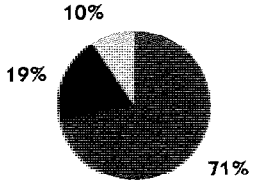
NAS North Island is bordered on the north and west by San Diego Bay and on the south by the Pacific Ocean. The east side of the base borders the City of Coronado which is predominantly residential. Presently, most of the surface drainage is controlled through storm drainage as the majority of the island is paved. The local community is concerned with the potential for contaminated groundwater to migrate toward the community and expressed a desire to see a groundwater monitoring program established along the common boundary. There is minimal potential for contamination in the groundwater to migrate off-base toward the city; however, contaminated groundwater is flowing into San Diego Bay.

A Restoration Advisory Board (RAB) was established in FY94. The RAB consists of approximately 15 community members and a like number of Navy personnel. The RAB meets on a monthly basis. A Community Relations Plan (CRP) was issued in November 1991 and a second CRP was completed in June 95. Two information repositories, one at the base library and the other at the Coronado Public Library were established in FY92.

Currently, the majority of the sites are in the RCRA Facility Investigation (RFI) or Corrective Measures Study (CMS) phase.

RFIs will have been completed at 15 sites and CMSs at 10 sites by the end of FY99. A final cleanup action is expected for approximately two-thirds of the sites.

NAS North Island is one of two installations in the Navy Environmental Leadership Program (NELP). The objective of NELP is to demonstrate innovative cleanup technologies and to help export successful technologies to other naval facilities. In addition, the EPA Superfund Innovative Technology Evaluation (SITE) Program is being used to do treatability studies at NAS North Island. The NELP and the SITE program have similar goals in terms of generating reliable performance and cost information on the technologies for use in evaluating cleanup alternatives for similarly contaminated sites.



Current Status Of Sites

Studies Underway	15
Cleanups Underway	4
Response Complete	2
TOTAL	21

NORTH ISLAND NAS
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - NAS North Island is bordered on the north and west by San Diego Bay and on the south by the Pacific Ocean. Due to the general lack of relief, and the relative small size of the island, there is no pronounced surface drainage pattern. Two sloughs along the south coastline are the only identifiable natural surface drainages on the island. Presently, most of the surface drainage is controlled through storm drainage as the majority of the island is paved. Due to a slight gradient and minimal groundwater movement, minor measurable migration of contaminants from waste disposal sites has been detected. Almost all of North Island is covered with soils with a relatively low permeability. In the past, fresh groundwater was reported to emanate from springs near the southern shore of North Island. Past data indicates the existence of a 60-foot thick aquifer. When the majority of North Island was paved, and the runoff directed to the sea through storm sewers, recharge to the water table was reduced. Since that time, the fresh water has been displaced by intruding sea water. Potable water supply for North Island has been piped in from San Diego since the early 1900s.

NATURAL RESOURCES - The San Diego Bay is a major spawning area for ocean fishes and an integral element in the interconnected food web of the adjacent ocean waters. The bay is also used for numerous recreational activities such as power boating, sailing, water skiing, fishing, swimming, claming, and wading. Numerous species of marine and shore birds frequent the shoreline and some inland areas of North Island. Most of the nesting birds and a large population of black-tailed jackrabbits inhabit the unpaved and relatively undisturbed areas near runways and along the shoreline. Over 15 bird species reportedly nest at NAS North Island including significant populations of black crown night heron, burrowing owl, western gull, and the endangered California least tern. The snowy plover, listed as rare, also inhabits the station.

RISK - Baseline Human Health Risk Assessments and Ecological Risk Assessments are being conducted on a site by site basis as part of the Remedial Investigation/Feasibility Study. Under the DOD Relative Risk Site Evaluation Model twelve sites were ranked as high relative risk) . The high ranking was due to contaminated soil or sediments for seven of the sites and contaminated groundwater for four of the sites.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - NAS North Island is currently not listed or proposed for listing on the National Priorities List (NPL).

LEGAL AGREEMENTS - In December 1989, a RCRA Hazardous Waste Facility permit was issued to NAS North Island. To expedite the cleanup process, the Department of the Navy and EPA negotiated language into the installation's RCRA permit to allow the Department of the Navy latitude in choosing CERCLA or RCRA to address the contaminated sites. The permit specifies that the Department of the Navy must meet RCRA Corrective Action requirements; however, the Navy may submit information developed under the Installation Restoration Program (IRP) provided the IRP information clearly indicates how the RCRA requirements are met. As a result of the RCRA permit, eleven of the 12 CERCLA sites have been transferred and will be tracked as RCRA Corrective Actions. However, the Defense Environmental Restoration Program (DERP) requires all DOD facilities to comply with CERCLA. In order to meet both regulatory requirements, one document is being prepared for each phase of work that meets the requirements of both programs.

PARTNERING - Two team-building sessions have been held with regulators: a two day session in 1991 and a two day session in 1993.

NAS North Island is one of two installations in the Navy Environmental Leadership Program (NELP) that was initiated in May 1993. The other NELP installation is Mayport NS. This program is designed to "showcase" an activity for total environmental management through the demonstration of new and innovative technologies and management techniques to achieve and maintain environmental compliance and facilitate restoration. A NAS North Island NELP Team was formed in June 1993 and consists of personnel from the activity, Naval Facilities Engineering Field Division Southwest, regulators, and a NELP contractor. The Team is in the process of developing a Management Action Plan (MAP) that will be used as an active tool to document the status of all environmental programs at the installation and to provide direction for future actions required to maintain regulatory compliance. The draft MAP was completed in February 1994. In addition, the Team is pursuing innovative cleanup technologies for the existing sites. The NELP contractor has provided an initial screening of new technologies specific to NAS North Island's sites. In addition, the EPA Superfund Innovative Technology Evaluation (SITE) program is being used to do treatability studies on removing the chemical additive PCB and groundwater remediation technologies. The NELP has brought two EPA SITE Technologies to North Island and is working on six others (some pilot studies and demonstrations have been conducted).

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - The Technical Review Committee (TRC) was formed in November 1990. The TRC was converted to a Restoration Advisory Board (RAB) in 1994. The RAB consists of approximately 15 community members and a like number of military-related personnel. The RAB functions well and participation is active. The RAB has been active in selection of technologies. In one instance the RAB objected to the selected technology and was instrumental in selecting an alternate technology which is now being implemented. NAS North Island has also been designated by the Chief of Naval Operations to be a pilot facility for RABs and to prototype a facility specific Pollution Prevention Plan.

COMMUNITY RELATIONS PLAN - The Community Relations Plan (CRP) was completed in November 1991 and rewritten in June 1995. Several Fact Sheets have been released each year.

INFORMATION REPOSITORY - Two Information Repositories, one at the base library and the other at the Coronado Public Library, were established and two public meetings were held in February 1992. Information from the Administrative Record was placed in the information repositories for public access.

NORTH ISLAND NAS
HISTORICAL PROGRESS

FY83

Sites 1-12 - Twelve potentially contaminated sites were identified during the Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), completed in September 1983.

FY85

Sites 1, 6, 9 and 10 - A Verification Study, equivalent to a Site Inspection (SI), was completed in March 1985. The SI found elevated levels of cadmium, copper, and lead at the Shoreside Sediments (Site 1); the chemical additive PCB in soil at the Heritage Park Public Works Salvage Yard (Site 6); organic halide contamination in soil at the Chemical Works Disposal Area (Site 9); and heavy metals in soil at the Defense Property Disposal Area (Site 10).

FY88

Site 11 - A Federal Facilities Compliance Agreement (FFCA) was issued in 1988, and a Cleanup and Abatement Order was issued in June 1988, for the Industrial Waste Treatment Beds (Site 11). The Site Characterization Study (SCS) for Site 11 began in December 1988 and was completed in January 1995. A Hydrogeologic Assessment Report, required under the California Toxic Pits Cleanup Act was completed in June 1988 and reported volatile organic compounds, cyanide, and metals contamination in soil.

FY89

SWMU 1002 - A RCRA Facility Assessment (RFA), completed in April 1989 by the California Department of Health Services, identified 81 potential solid waste management units (SWMUs) and three areas of concern (AOC) at NAS North Island. Of the three AOCs, only AOC 2, the Hazardous Waste Collection, Storage and Transfer Facility, was recommended for further action due to concerns about soil contamination. This is now identified as SWMU 1002.
SWMUs 1-12 - This sites are the same as CERCLA Sites 1-12.
SWMUs 8 and 13-81 - Recommended for no further action. SWMUs 13-81 are locations of suspected periodic waste disposal as identified by California DHS in the 1989 RFA.
Site 5 - Under California requirements, a Solid Waste Assessment Test (SWAT) and a Solid Waste Air Quality Assessment Test (SWAQAT) were completed in December 1988 for the Golf Course Garbage Disposal Area (Site 5). The SWAT found volatile organic compound contamination in the groundwater.
Site 6 - An interim measure which consisted of covering the site with plastic weighted down with sand was completed at the Seaview Heritage Park Salvage Yard.

FY90

UST 4 - Site Assessment performed.

FY91

SWMUs 82 and 83 - After completion of the RFA, two additional SWMUs, SWMU 82 and 83, were identified in FY91. SWMU 82, Bldg. 472 Sump, is now identified as part of the Industrial Waste Treatment System and will be handled under RCRA closure. SWMU 83, the Old Circular Runway, required further investigation.
UST 5 - Site Assessment performed

FY92

SWMU 83 - RCRA Facility Investigation (RFI) was completed at SWMU 83. No further action was recommended. This site is expected to be closed upon approval of the new RCRA permit in FY96.
Sites 4 and 6 - Two separate removal actions involving the installation of fencing to restrict access to the sites were completed at Site 4 in August 1992 and at Site 6 in September 1992.

FY93

SWMU 1002 - RFI was completed at SWMU 1002. No further action was recommended. This site is expected to be closed after approval of the new RCRA permit in FY96.

FY94

Sites 2-4, 7 and 12 - An SI was begun in September 1991 for Sites 2, 3, and 12 and another SI was begun in December 1991 for Sites 4 and 7. Both SIs were completed in December 1993 and the five sites were recommended for further action.
UST 1 - Underground Storage Tank (UST) 1 includes nine leaking USTs which are being addressed under the RCRA Corrective Action Program. These USTs were identified as potential SWMUs 112-114 and 126-131 - and the investigation was conducted as a Phase I RFI to meet state requirements. The Phase I RFI involved sampling to characterize the nature and extent of contamination and was completed in FY94.
UST 2 - UST 2 involved 15 abandoned USTs that were leaking petroleum. The investigation of UST 2 was completed in FY94. All tanks were either removed or closed in place by April 1994. Contaminated sites identified at the time the USTs were pulled are being cleaned up in conjunction with the work for UST 1.
UST 3 - Site Assessment performed

FY95

Site 1 - A bioassay, and sampling and analysis work plan for the Shoreside Sediment outfalls was completed.
Sites 2, 3, 5, 6, 7, 9, 10 and 12 - RFIs were underway.
Sites 9 and 11 - Corrective Measures Studies (CMSs) were underway.
Site 11 - Completed SCS
Sites 4, 6 and 10 - Time-critical removal actions were underway for washing the soil containing the chemical additive PCB under a Remedial Action Contract (RAC).
Site 10 - An emergency removal action was taken for radiation contaminated slag located on the bay shoreline.
Sites 4, 6 and 10 - Completed the removal action to excavate and treat soil contaminated with the chemical additive PCB on-site.

PROGRESS DURING FISCAL YEAR 1996

FY96

Sites 2, 3, 7, 8 and 12 - Completed RFAs
Site 1 - Started work on RFI for outfalls 1-8 and 16. A draft RFI report is expected in December 1996 for regulatory review and comment.
Site 2 - An IRA was conducted to remove contaminated material. A second IRA was conducted to eliminate exposure to incinerator ash by capping a portion of the Old Spanish Bight Landfill. The removals were completed in March 1996.
Sites 9 and 11 - Began field operations for non-time critical removal actions using soil vapor extraction for chlorinated hydrocarbons.
UST 6 - Identified Sept. 1996, removal in progress, estimate finish in 2006. This UST group includes about 10 miles of abandoned pipeline which was never identified by the base, and possible as many as 50 abandoned tanks. UST 06 will get new work in 1997 in a records search.
Site 10 - RFI/CMS completed.
Sites 8 and 12 - Response Complete. No further action proposed by Navy.

NORTH ISLAND NAS
PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 1, 5 and 10 - Scheduled to complete Corrective Measures Studies (CMSs).
Site 11 - As part of the industrial waste treatment plant, Site 11 will undergo RCRA closure and post-closure monitoring will be required through FY02. Based on preliminary results from the Site Characterization Study, the site is expected to require corrective action as part of the closure.
Site 10 and UST 1 - Will complete Corrective Measures Implementation.
UST 6 - Will conduct records search.
UST 4 - Will complete Remedial Action Operations.
Site 1 - Complete time-critical removal action (IRA) for outfalls 9 through 15. Potential removal action for contaminated slag.
Sites 4 and 6 - Scheduled to complete two IRAs at Site 4 and one at Site 6.
Sites 2, 3, 4, 6, 7 and 12 - RODs expected.
Sites 3 and 10 - Response Complete.

FY98

Site 11 - Will complete RFA.
Sites 1, 5, 9, 10 and 11 - Will complete and sign RODs.
Sites 4, 6, 9, 11 and SWMU 78 - Will complete RFI/CMS.
UST 01 - Will complete LTO.
Sites 7, 9, 11 and UST 1 - Will complete IRAs; 3 at Site 7.
UST 4 - Will complete IRA. Response complete.
UST 2 - Will complete IRA and corrective action (IMP). Response will be complete
Sites 4, 6 and UST 1 - Response will be complete.

PROGRESS AND PLANS

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

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	9	5		1				
RFI / CMS		1	3	5	2		2	2
DES					3		1	2
CMI			2					3
CMO				1				2
IRA	4(7)	1(2)	3(4)	4(6)	1(1)			1(1)
RC		2	2	3	1		1	8
Cumulative % RC	0%	12%	24%	41%	47%	47%	53%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	1							1
CAP								
DES							1	1
IMP				1				1
IMO								
IRA	1(1)			1(1)				2(2)
RC				1				2
Cumulative % RC	0%	0%	0%	33%	33%	33%	33%	100%

NORTH ISLAND NAVAL DEPOT
SAN DIEGO, CALIFORNIA

Engineering Field Division/Activity: SWDIV

Major Claimant: COMNAVAIRPACOM

Size: (Combined with North Island NAS, California)

Funding to Date: (Combined with North Island NAS, California)

Estimated Funding to Complete: (Combined with North Island NAS, California)

Base Mission: Provides supply and support services to fleet units and shore activities

Contaminants: POLs

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

Sites Response Complete: 0

PROGRESS AND PLANS

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA			1					
RFI / CMS								
DES								
CMI			1					
CMO								
IRA								
RC			1					
Cumulative % RC	0%	0%	100%	100%	100%	100%	100%	100%

NOVATO DEPARTMENT OF DEFENSE HOUSING FACILITY
NOVATO, CALIFORNIA

Engineering Field Division/Activity: [illegible]
Major Element: [illegible]
Size: [illegible]
Funding to Date: [illegible]
Estimated Funding to Complete: [illegible]

Base Mission: Houses military and Coast Guard personnel.
Contaminants: Waste oils, waste paints, thinners, hydrocarbons.

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

BRAC III

Sites Response Complete: 0

PROGRESS AND PLANS

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA		1						
CAP			1					
DES			1					
IMP				1				
IMO							1	
IRA			1(1)					
RC							1	
Cumulative % RC	0%	0%	0%	0%	0%	0%	100%	100%

OAKLAND FLEET AND INDUSTRIAL SUPPLY CENTER
OAKLAND, CALIFORNIA

Engineering Field Division/Activity: [illegible]
Major Claimant: [illegible]
Size: [illegible] Acres
Funding to Date: [illegible]
Estimated Funding to Complete: [illegible]

Base Mission: Receives, stores, and issues military supplies and materials to fleet units and shore activities in the Pacific Basin

Contaminants: Paint, PCBs, acid, solvents, thinners, pesticides, asbestos, POLs

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	25	High:	12	Not Evaluated:	1
RCRA Corrective Action:	0	Medium:	3	Not Required:	12
RCRA UST:	3	Low:	0		
Total Sites:	28				

BRAC IV

Sites Response Complete: 12

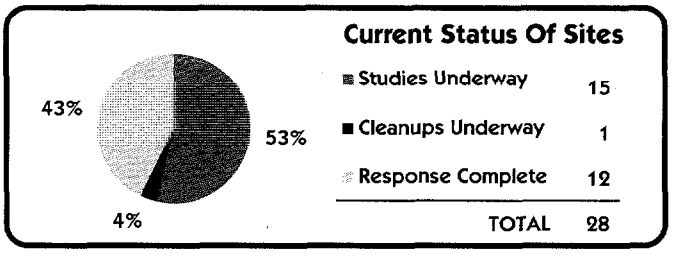
EXECUTIVE SUMMARY

The Oakland Fleet and Industrial Supply Center (FISC) is located on the eastern shore of the San Francisco Bay, within the Port of Oakland. The facility opened in 1941 and began support operations for World War II. Typical supply center operations that contributed to the contaminated sites on the facility include a hazardous waste storage yard, transformer storage area and other storage and maintenance areas. Primarily groundwater is affected, but there is also some soil contamination. Current operations at the facility include pollution prevention technologies to prevent further contamination. A Federal Facility Site Remediation Agreement (FFSRA) was signed by the Department of the Navy and the State of California on September 29, 1992. In September 1995, the Base Realignment and Closure (BRAC) Commission recommended closure of FISC. Closure plans are under development.

The area at FISC was originally created by placing dredged sand fill over the existing marshlands and bay mud. The groundwater from the facility is assumed to discharge into San Francisco Bay. The likely receptors for contaminants at Oakland FISC are the aquatic organisms in San Francisco Bay. The closing base is anticipated to remain an industrial area, not to be converted to housing, so the chance of human exposure to contaminants should remain low.

The Restoration Advisory Board (RAB) was formed April 5, 1995 and has 18 members. The two Information Repositories were established in March 1994 at FISC and the Oakland Main Public Library.

According to the 1988 Preliminary Assessment (PA), hazardous wastes have never been disposed at the facility, they have always been removed from the facility for disposal. There were no active or inactive landfills. No major hazardous waste spills had been reported and no industrial waste treatment was performed on-site. The PA, which was completed in FY 88 identified four potential sites, recommended that three sites be scheduled for a Site Inspection (SI) but all four of the original sites continued with an SI. Between FY 89 and 91, following the original PA, 17 new sites were identified and added to the program during additional PAs. In FY 93, four more sites were identified during an SI, but they were listed as Response Complete (RC), along with eight other sites, at the conclusion of the SI. In addition to the 12 sites listed as complete, 11 other sites have completed an SI. Two final sites will complete an SI in FY 97. Ten sites have been scheduled for a Remedial Investigation and Feasibility Study (RI/FS), all are scheduled for completion by FY99. Ten sites are scheduled to complete a Remedial Design (RD) in FY00, followed by a Remedial Action (RA) phase, to be completed in FY01. There are no RCRA Corrective Action sites at the installation. Three RCRA Underground Storage Tank (UST) sites were identified during an Initial Site Characterization (ISC) (equivalent to a PA) in FY89. A Site Assessment (SA) was completed for one UST site in FY96. All three sites are scheduled to undergo a Corrective Action Plan (CAP) phase in FY98, a Design (DES) phase in FY00 and an Implementation (IMP) phase in FY01. Completion of cleanup for the UST sites is concurrent with Long Term Monitoring (LTM), which continues through FY03.



Emergency removal actions were completed at numerous sites for the cleanup and removal of contaminated sludge and sediment inside storm drains and catch basins in FY95. The contaminated media was put into containers and disposed of at an appropriate off-site facility. Contaminants of concern were SVOCs and metals. A Time Critical Removal Action (TCRA) was completed for removal of contaminated soil and sandblasting grit on one site. A Remedial Action Plan (RAP) an equivalent of a CERCLA Record of Decision (ROD) for the state of California was completed for 11 "no further action sites. Community relations efforts were also conducted for the RAP. The Phase 1, Remedial Investigation (RI) on 5 sites and Expanded Site Investigation on 7 sites were also completed.

Additionally, documentation for a TCRA for removal of contaminated soil, started in FY95 on 6 sites. Contaminants of concern are petroleum products, volatile and semi-volatile organic compounds, the chemical additive PCB and chemical solvents.

OAKLAND FISC
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - The area at FISC was originally created by placing dredged sand fill over the existing marshlands and bay mud on the eastern shore of the San Francisco Bay. The entire site is flat except where slopes have been accentuated by differences in the settling fill. The groundwater under the FISC is at a depth of 4 to 20 feet, and is assumed to flowing to the Oakland harbor and to San Francisco Bay.

NATURAL RESOURCES - The likely receptors for contaminants at Oakland FISC are the aquatic organisms in Oakland harbor. Since the base property is mostly paved, there is little chance for terrestrial animals or humans coming in contact with contaminants in water or soil. The base is anticipated to stay an industrial area, not to be converted to housing when it closed, so the chance of human exposure to contaminants should remain low.

RISK - A base-wide Ecological Risk Assessment (ERA) and Human Health Risk Assessment (HHRA) were partially completed in FY95. Final ERA and HHRA are planned in FY97, under Phase II of the RI/FS.

DOD's Relative Risk Ranking system was used to rank the risk factors for all the sites on the installation in FY95. Of the 28 sites (CERCLA and UST sites), 12 received a high risk ranking. All the sites were ranked high for groundwater contamination. There is a potential pathway for migration of petroleum products, volatile and semi-volatile organic compounds and the chemical additive PCB through the groundwater pathway into San Francisco Bay. Aquatic receptors are the concern, if the groundwater is proven to migrate off-base. Since the base is likely to remain an industrial setting, and is mostly paved, the likelihood of terrestrial animal or human receptors is low.

REGULATORY ISSUES

LEGAL AGREEMENTS - A Federal Facility Site Remediation Agreement (FFSRA) was signed by the Department of the Navy and the State of California on September 29, 1992. The FFSRA required the Navy to prepare a Scoping Document. The Scoping Document was completed on December 30, 1992 and recommended an Extended Site Inspection (ESI) for Sites 1, 4, 5 and 18-21 and an RI for Sites 2, 3 and 13-15. Thirteen sites (Sites 6-12, 16, 17 and 22-25) were recommended for no further action.

PARTNERING - A partnering arrangement has been in place since FY92 between Navy representatives, Department of Toxic Substances Control (DTSC) representatives and Regional Water Quality Control Board (RWQCB) representatives. The partnering arrangement has accelerated the progress of the Installation Restoration Program (IRP) at Oakland FISC.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - The Restoration Advisory Board (RAB) was formed April 5, 1995 and has 18 members. Meetings are held once every two months. The RAB has allowed a greater sharing of information about the IRP with the community.

TECHNICAL REVIEW COMMITTEE - The Technical Review Committee (TRC) was the first community involvement in the review of the activities in the IRP. TRC meetings were held every 3 months until the TRC was converted to the Restoration Advisory Board.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was finalized in November 1993.

INFORMATION REPOSITORY - An Administrative Record for Oakland FISC was established in FY92. A copy of the Administrative Record is housed in the installation's Information Repository, established in March 1994, and is also available for public viewing at the Oakland Public Library on 14th Street in Oakland, California.

BASE REALIGNMENT AND CLOSURE

BRAC - In September 1995, the Base Realignment and Closure (BRAC) Commission recommended closure of the Fleet and Industrial Supply Center (FISC), Oakland. The proposed closure date is September 1998. Closure plans are under development.

BRAC CLEANUP TEAM - A BRAC Cleanup Team (BCT) was established in February 1996. The BCT's 3 members include the BRAC Environmental Coordinator (BEC), a member from the State's Department of Toxic Substances Control (DTSC), and a member from the United States Environmental Agency (USEPA).

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
26 acres	52 acres	234 acres	78 acres	26 acres	52 acres	230 acres

REUSE - The City of Oakland Land Reuse Authority (LRA) has adapted the Port of Oakland Vision 2000. It is a plan to convert FISCO into a commercial land and water shipping facility.

LEASE/TRANSFER - The Navy has started leasing parcels to the Port of Oakland, under a special legislation, Public law (P.L.) 102-484. Through FY96, 138 acres in three parcels have been leased to the Port of Oakland.

HISTORICAL PROGRESS

FY88

Sites 1-4 - A Preliminary Assessment (PA), completed in March 1988, identified four sites with groundwater contaminated with petroleum products and soils contaminated with volatile organic compounds, the chemical additive PCB, pesticides, and fuels. The PA recommended three sites (Sites 1-3) for further study, but all four sites have gone on for further study.

FY89

USTs 1, 5 and 8 - Three RCRA Underground Storage Tank (UST) sites were identified during Initial Site Characterization (ISC) (equivalent to PA).

FY90

Sites 5-8 and 18-21 - Eight additional sites added to program and a PA was completed.

FY91

Sites 9-17 - Nine additional sites added to program and a PA was completed.

FY93

A Federal Facility Site Remediation Agreement (FFSRA) was signed by the Department of the Navy and the State of California on September 29,

OAKLAND FISC
HISTORICAL PROGRESS

1992. The purpose of the FFSRA is to ensure State and Federal cooperation in accelerating and streamlining the remediation process and to set deadlines for the execution of the IR work. California Department of Toxic Substances Control (DTSC) agreed on the final Scoping Report on December 1993. The report classified the 25 total remaining sites into 13 NFA sites, 7 ESI sites and 5 RI sites.

USTs 1 and 5 - Interim Remedial Actions (IRAs) for tank removal were complete.

FY94

An RI started on the 5 Sites 2, 3 and 13-15.

An ESI started on the 7 Sites 1, 4, 5 and 18-21.

USTs 1, 5 and 8 - Investigation (INV) phase started for UST 8. Corrective Action Plan (CAP) was started at USTs 1 and 5. UST 8 - IRA for tank removals was started. It will continue through FY03.

FY95

Completed an Emergency Removal Action for the cleanup and removal of contaminated sludge and sediment inside storm drains and catch basins at 10 Sites 1-4, 12, 13, 15, 18, 20 and 21.

Completed the ESI on 7 sites that started in FY 94. It recommended Site 5 for "no further action", Sites 4, 21 and 19 for removal action, and Sites 1, 18, 20 and 21 for inclusion in the Phase 2, RI/FS.

Completed the Phase 1 RI on 5 sites that started in 1994. It characterized the sites conditions and contaminant chemistry; recommended that all the 5 sites for Phase 2, RI/FS. It also completed a baseline HHRA, ERA, and a partial storm drain and sediment investigation.

Started documentation for a TCRA of contaminated soil on 6 Sites 1 - 4, 15 and 19. The Action Memorandum (AM), plans and specifications were completed.

Completed a RAP for 11 Sites 6-11, 16 and 22 - 25. As requested by the State, Site 12 was dropped out of the RAP due to possible contaminated groundwater migration from adjacent Site 13. It will be included in the Phase 2, RI/FS. Site 17 was also dropped out of the RAP due to an unexpected radiological survey issue the needs to be resolved. After the survey, this site will be a NFA in future RAP.

Completed TCRA for removal of soil contaminated with sand blasting grit on Site 15. The site will be included in the Phase 2, due to groundwater concerns.

UST 8 - As part of an on-going IRA, three known abandoned USTs and contaminated soil were removed.

Leased 104 acres to the Port of Oakland.

PROGRESS DURING FISCAL YEAR 1996

FY96

Completed construction of the TCRA project on Sites 1-4, 15 and 19; removed the following:
Site 1 - 30 cubic yards (cys) of soil contaminated with SVOCs, mercury and lead
Site 2 - 300 cys of soil contaminated with petroleum products and 75 cys with hazardous solvents
Site 3 - 450 cys of soil contaminated with lead and PCB
Site 4 - 540 cys of soil contaminated with PCB and pesticides
Site 15 - 25 cys of soil contaminated with petroleum products
Site 19 - 250 cys of soil contaminated with PCB.
Site 20 - completed IRA.
Completed SI on Sites 6-11, 16 and 22-25.
Sites 6-11, 16 and 23-25 - Achieved Response Complete (RC).
Completed SA on UST 8.

Leased 34 acres to the Port of Oakland in parcels 2 and 3.

The Phase II RI/FS is anticipated to start January 1997 and to be completed by December 1998. The RI/FS will group the 10 sites into 3 areas of investigation. It will provide the data gaps needed to complete the RI and FS reports and the basewide RAP/ROD for groundwater, soils and sediments onshore.

As a separate Operable Unit (OU), an RI for the off shore sediments along the harbor is scheduled to start by April 1997. The RI will be coordinated with the policies formulated by Biological Technical Advisory Group (BTAG) on sediments cleanup approach.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 1-4, 15 and 19 - Complete IRA.
Sites 4 and 19 - Complete PA/SI and achieve RC.

FY98

Sites 12, 14 and 18 - Complete RI/FS.
USTs 1, 5 and 8 - CAP phase will be complete.

OAKLAND FISC
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	12	11	2					
RI / FS				3	7			
RD						10		
RAC							10	
RAO								10
IRA	8(9)	1(1)	6(6)			1(1)		
RC	2	10	2			1		10
Cumulative % RC	8%	48%	56%	56%	56%	60%	60%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA		1						
CAP				3				
DES						3		
IMP							3	
IMO								3
IRA	2(2)							1(1)
RC								3
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

OAKLAND FLEET AND INDUSTRIAL SUPPLY CENTER ALAMEDA ANNEX
ALAMEDA, CALIFORNIA

Engineering Field Division/Activity:

Major Claimant:

Size: 87 Acres

Funding to Date:

Estimated Funding to Complete:

Base Mission: Receives, stores, and issues both hot-rack-furnished and ready-for-issue aviation materials.

Contaminants: Acids, asbestos, heavy metals, PCBs, volatile organic compounds

Number of Sites:

CERCLA:	6
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	6

Relative Risk Ranking of Sites:

High:	4	Not Evaluated:	0
Medium:	3	Not Required:	1
Low:	0		

BRAC IV

Sites Response Complete: 1

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	2	6						
RI / FS				7				
RD					2	1		1
RAC								4
RAO								3
IRA	1(1)	1(1)		1(1)				
RC	1			3				4
Cumulative % RC	13%	13%	13%	50%	50%	50%	50%	100%

OAKLAND NAVAL MEDICAL COMMAND, NORTHWEST REGION

OAKLAND, CALIFORNIA

Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible] Acres

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

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

BRAC III

Sites Response Complete: 0

PROGRESS AND PLANS

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	1							
CAP		1						
DES				1				
IMP						1		
IMO								
IRA				1(1)				
RC						1		
Cumulative % RC	0%	0%	0%	0%	0%	100%	100%	100%

PICO RIVERA MARINE CORPS RESERVE TRAINING CENTER

PICO RIVERA, CALIFORNIA

Engineering Field Division/Activity:

Major Claimant:

Size:

Funding to Date:

Estimated Funding to Complete:

Base Mission: Provides training for Marine Corps Reserve Personnel

Contaminants: PCBs

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

Sites Response Complete: 0

PROGRESS AND PLANS

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								1
CAP								
DES								
IMP								1
IMO								
IRA								
RC								1
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

POINT MOLATE NAVY FUEL DEPOT

RICHMOND, CALIFORNIA

Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Site: [illegible] Acres

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

Number of Sites:

CERCLA:	4
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	4

Relative Risk Ranking of Sites:

High:	3	Not Evaluated:	0
Medium:	1	Not Required:	0
Low:	0		

BRAC IV

Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	4							
RI / FS				1	3			
RD			1				2	1
RAC								3
RAO								3
IRA	1(1)		1(2)	2(2)	1(1)			
RC					1			3
Cumulative % RC	0%	0%	0%	0%	25%	25%	25%	100%

POINT MUGU NAVAL AIR WEAPONS STATION
POINT MUGU, CALIFORNIA

Engineering Field Division/Activity: SWDIV
Major Claimant: COMNAVAIRSYSCOM
Size: 4,500 Acres
Funding to Date: $79,976,000
Estimated Funding to Complete: $36,877,000

Base Mission: Performs development, test and evaluation, and follow-on engineering, logistic and training support for naval weapons systems; provides major range and technical support for fleet users.

Contaminants: Acid, ash, dredge spoils, hydrocarbons, sludge, wastewater, low-level radiation, paint, PCBs, pesticides, plating waste, POLs, waste with hazardous waste, chemical agents, heavy metals, solvents

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	18	High:	8	Not Evaluated:	8
RCRA Corrective Action:	0	Medium:	0	Not Required:	10
RCRA UST:	0	Low:	1		
Total Sites:	27				

Sites Response Complete: 10

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	8	2			1			7
RI / FS			2	1	1			4
RD					2			8
RAC								7
RAO								7
IRA			5(8)	2(5)		1(1)		1(1)
RC	1	1	1					15
Cumulative % RC	6%	11%	17%	17%	17%	17%	17%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	9							
CAP								
DES								
IMP								
IMO								
IRA				1(1)				
RC	8			1				
Cumulative % RC	89%	89%	89%	100%	100%	100%	100%	100%

POINT SUR NAVAL FACILITY
POINT SUR, CALIFORNIA

Engineering Field Division/Activity:
Major Claimant:
Size:
Funding to Date:
Estimated Funding to Complete:

Base Mission:
Contaminants:

Number of Sites:
CERCLA:
RCRA Corrective Action:
RCRA UST:
Total Sites:

Relative Risk Ranking of Sites:
High:
Medium:
Low:
Not Evaluated:
Not Required:

Sites Response Complete:

PROGRESS AND PLANS

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP				1				
DES					1			
IMP							1	
IMO								1
IRA								
RC								1
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

POMONA NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
POMONA, CALIFORNIA

Engineering Field Division/Activity: SWDIVDIV

Major Claimant: COMNAVSEASYSCOM

Size: 160 Acres

Funding to Date: $15,000

Estimated Funding to Complete: $0

Base Mission: Provides development, design, engineering, test, production and depot-level support of launch, command, subsystems and all launched weapons for the Naval Sea Systems Command.

Contaminants: PCBs

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	3				
RCRA Corrective Action:	0	High:	0	Not Evaluated:	0
RCRA UST:	0	Medium:	0	Not Required:	3
Total Sites:	3	Low:	0		

Sites Response Complete: 3

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	3							
RI / FS								
RD								
RAC								
RAO								
IRA								
RC	3							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

PORT HUENEME NAVAL CONSTRUCTION BATTALION CENTER
PORT HUENEME, CALIFORNIA

Engineering Field Division/Activity: SWDIV

Major Claimant: COMNAVFACENGCOM

Size: 33 Acres

Funding to Date: $23,733,000

Estimated Funding to Complete: $15,229,000

Base Mission: Provides support to Naval Construction Force, fleet units, and assigned organizational activities. Navy Civil Engineering Laboratory was closed under BRAC II.

Contaminants: Heavy metals (copper, lead), PCBs, pesticides, solvents and semi-volatile organic compounds

Number of Sites:

CERCLA:	23
RCRA Corrective Action:	0
RCRA UST:	4
Total Sites:	27

Relative Risk Ranking of Sites:

High:	6	Not Evaluated:	1
Medium:	9	Not Required:	5
Low:	6		

Sites Response Complete: 5

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	6	2	1	1				13
RI / FS			2	3	1			13
RD				2	1		1	13
RAC								1
RAO								
IRA					2(3)	1(1)		12(13)
RC	3		1		2	1		16
Cumulative % RC	13%	13%	17%	17%	26%	30%	30%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	2		1					
CAP				1				1
DES				1				1
IMP					1			1
IMO								
IRA	1(1)							
RC	2				1			1
Cumulative % RC	50%	50%	50%	50%	75%	75%	75%	100%

SALTON SEA TEST RANGE
IMPERIAL COUNTY, CALIFORNIA

Engineering Field Division/Activity: SWDIV

Major Claimant: COMNAVFACENGCOM

Size: 19,451 Acres

Funding to Date: $6,732,000

Estimated Funding to Complete: $12,930,000

Base Mission: Service as training facility for U.S. Navy, Army, and Marine Corps, formerly used by the Atomic Energy Commission for the Fat Man/Little Boy Project

Contaminants: Asbestos, depleted uranium, PCBs, solvents

Number of Sites:

CERCLA:	24
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	24

Relative Risk Ranking of Sites:

High:	0	Not Evaluated:	0
Medium:	9	Not Required:	15
Low:	7		

BRAC 1

Sites Response Complete: 15

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	4	15	5					
RI / FS	1	6	2				1	
RD								
RAC		1						
RAO								
IRA				1(1)				1(1)
RC	1	14	6	1				2
Cumulative % RC	4%	63%	88%	92%	92%	92%	92%	100%

SAN CLEMENTE ISLAND NAVAL AUXILIARY LANDING FIELD

SAN CLEMENTE ISLAND, CALIFORNIA

Engineering Field Division/Activity: SWDIV

Major Claimant: CINCPACFLT

Size: 30,000 Acres

Funding to Date: $3,461,000

Estimated Funding to Complete: $12,447,000

Base Mission: Shore bombardment area for Pacific fleet operations and training; research, development, testing and evaluation of missiles and missile systems; Navy and Marine training.

Contaminants: Ordnance compounds (perchlorate, explosives), heavy metals, POLs, solvents, chlorinated organic, explosive chemicals, mixed with radioactive waste, scrap metal

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	14	High:	2	Not Evaluated:	2
RCRA Corrective Action:	0	Medium:	9	Not Required:	0
RCRA UST:	4	Low:	3		
Total Sites:	18				

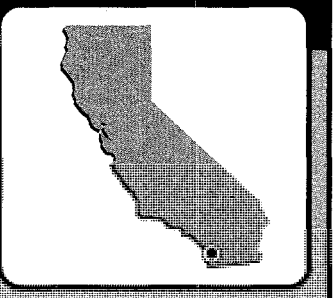
Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI						1		13
RI / FS								6
RD								11
RAC								3
RAO								
IRA								7(7)
RC								14
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								4
CAP								3
DES								3
IMP								1
IMO								
IRA	1(1)		1(1)					
RC								4
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

SAN DIEGO FLEET AND INDUSTRIAL SUPPLY CENTER
SAN DIEGO, CALIFORNIA



Engineering Field Division/Activity: SWDIV

Major Claimant: COMNAVSUPSYSCOM

Size: 219 Acres

Funding to Date: $1,474,000

Estimated Funding to Complete: $39,940,000

Base Mission: Provides petroleum products to support military activities in Southern California

Contaminants: Inert material, heavy metals, POLs, sludge

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	3	High:	2	Not Evaluated:	1
RCRA Corrective Action:	0	Medium:	1	Not Required:	0
RCRA UST:	1	Low:	0		
Total Sites:	4				

Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI		1						2
RI / FS								3
RD							1	2
RAC								3
RAO								
IRA								1(2)
RC								3
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA			1					
CAP								1
DES								
IMP								
IMO								
IRA			1(1)					
RC								1
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

SAN DIEGO FLEET ANTISUBMARINE WARFARE TRAINING CENTER PACIFIC
SAN DIEGO, CALIFORNIA

Engineering Field Division/Activity: SWDIV
Major Claimant: CNO
Size: 97 acres
Funding to Date: $157,000
Estimated Funding to Complete: $1,421,000

Base Mission: Provides CASW training for antisubmarine warfare

Contaminants: POLs

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

Relative Risk Ranking of Sites:
High: 1 Not Evaluated: 0
Medium: 0 Not Required: 0
Low: 0

Sites Response Complete: 0

PROGRESS AND PLANS

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

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA			2					
CAP								
DES								2
IMP						1		1
IMO								
IRA	1(1)				1(1)	1(2)		
RC						1		1
Cumulative % RC	0%	0%	0%	0%	0%	50%	50%	100%

SAN DIEGO FLEET COMBAT TRAINING CENTER PACIFIC
SAN DIEGO, CALIFORNIA

Engineering Field Division/Activity: SWDIV
Major Claimant: CNET
Size: 94 Acres
Funding to Date: $95,000
Estimated Funding to Complete: $979,000

Base Mission: Provides specified tactical combat training
Contaminants: Fuel products

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

Sites Response Complete: 0

PROGRESS AND PLANS

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

SAN DIEGO MARINE CORPS RECRUIT DEPOT
SAN DIEGO, CALIFORNIA

Engineering Field Division/Activity: SWDIV/SW

Major Claimant: CMC

Site: 400 Acres

Funding to Date: $[illegible]

Estimated Funding to Complete: $[illegible]

Base Mission: Provides basic training for Marine Corps recruits

Contaminants: Solvents, POLs

Number of Sites:

CERCLA:	2
RCRA Corrective Action:	0
RCRA UST:	5
Total Sites:	7

Relative Risk Ranking of Sites:

High:	1	Not Evaluated:	0
Medium:	1	Not Required:	5
Low:	0		

Sites Response Complete: 5

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	2							
RI / FS								
RD								
RAC								
RAO								
IRA								
RC	2							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	2		2					
CAP								
DES								
IMP	1		1	1				
IMO								2
IRA	1(2)	1(1)						
RC	3							2
Cumulative % RC	60%	60%	60%	60%	60%	60%	60%	100%

SAN DIEGO NAVAL COMMAND CONTROL AND OCEAN SURVEILLANCE CENTER

SAN DIEGO, CALIFORNIA

Engineering Field Division/Activity: SWDIV

Major Claimant: COMSPACEWARSYSCOM

Size: 600 Acres

Funding to Date: $11,456,000

Estimated Funding to Complete: $13,263,000

Base Mission: Provide new Research, Development, Test and Evaluation (RDT&E) center for command control communications, ocean surveillance, surface and air launched undersea weapons systems

Contaminants: Non-chlorinated solvents, POLs, other

Number of Sites:

CERCLA:	10
RCRA Corrective Action:	0
RCRA UST:	2
Total Sites:	12

Relative Risk Ranking of Sites:

High:	7	Not Evaluated:	5
Medium:	0	Not Required:	0
Low:	0		

Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI		1		3	1			5
RI / FS					2			8
RD					2			5
RAC						2		5
RAO								
IRA								
RC						2		8
Cumulative % RC	0%	0%	0%	0%	0%	20%	20%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA					1			1
CAP								2
DES								2
IMP								2
IMO								1
IRA						1(1)		1(1)
RC								2
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

SAN DIEGO NAVAL COMPUTER AND TELECOMMUNICATIONS STATION
SAN DIEGO, CALIFORNIA

Engineering Field Division/Activity:
Major Claimant:
Size:
Funding to Date:
Estimated Funding to Complete:

Base Mission:
Contaminants:

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

Sites Response Complete: 0

PROGRESS AND PLANS

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

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								1
CAP								
DES								
IMP								
IMO								
IRA								1(2)
RC								1
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

SAN DIEGO NAVAL IN-SERVICE ENGINEERING WEST
SAN DIEGO, CALIFORNIA

Engineering Field Division/Activity: SWDIV

Major Claimant: COMSPAWARSYSCOM

Size: 32 Acres

Funding to Date: $1,454,000

Estimated Funding to Complete: $12,140,000

Base Mission: Communication and electronic systems support to fleet

Contaminants: Volatile and semi-volatile organic compounds, heavy metals (lead, thallium cadmium), PCBs, POLs

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	9	High:	7	Not Evaluated:	1
RCRA Corrective Action:	0	Medium:	1	Not Required:	0
RCRA UST:	0	Low:	0		
Total Sites:	9				

Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI								2
RI / FS					2	1		6
RD				1	1	1	1	5
RAC						1	2	6
RAO							2	3
IRA						1(2)		1(2)
RC							2	7
Cumulative % RC	0%	0%	0%	0%	0%	0%	22%	100%

SAN DIEGO NAVAL MEDICAL CENTER
SAN DIEGO, CALIFORNIA

Engineering Field Division/Activity:
Major Claimant:
Size:
Funding to Date:
Estimated Funding to Complete:

Base Mission:
Contaminants:

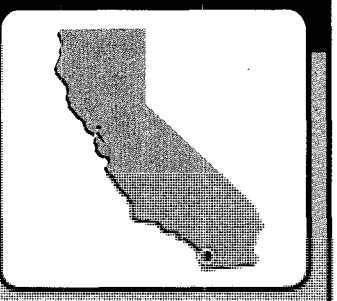
Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	1	High:	0	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	0	Not Required:	1
RCRA UST:	0	Low:	0		
Total Sites:	1				

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								
RD								
RAC								
RAO								
IRA								
RC	1							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

SAN DIEGO NAVAL STATION
SAN DIEGO, CALIFORNIA



Engineering Field Division/Activity: SWDIV
Major Claimant: COMPACFLT
Size: 1,197 Acres
Funding to Date: $92,553,000
Estimated Funding to Complete: $74,327,000

Base Mission: Provides logistical and personnel support to 25 major tenant commands; provides berthing and port services for ships; provides shore based training and shore activities for all ship crews.

Contaminants: PCBs, POLs, heavy metals, unexploded ordnance, solvents, plating waste, blasting grit, electronic, asbestos, POL sludge, paint, pesticides

Number of Sites:
CERCLA: 14
RCRA Corrective Action: 7
RCRA UST: 1
Total Sites: 22

Relative Risk Ranking of Sites:
High: 10
Medium: 4
Low: 3
Not Evaluated: 1
Not Required: 4

Sites Response Complete: 4

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	5		1	2			2	4
RI / FS					1			2
RD					1		2	4
RAC	1							
RAO							1	5
IRA	1(1)	2(2)	2(3)	1(1)	2(3)	1(1)	1(1)	7(8)
RC	3		1		2		1	7
Cumulative % RC	21%	21%	29%	29%	43%	43%	50%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	5							2
RFI / CMS		1	3					3
DES							1	3
CMI								
CMO								3
IRA				1(2)			1(1)	3(5)
RC		1	2	1				3
Cumulative % RC	0%	14%	43%	57%	57%	57%	57%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP								
DES								
IMP			1					
IMO								
IRA		1(2)						
RC			1					
Cumulative % RC	0%	0%	100%	100%	100%	100%	100%	100%

SAN DIEGO NAVAL SUBMARINE BASE
SAN DIEGO, CALIFORNIA

Engineering Field Division/Activity: SWDIV

Major Claimant: CINCPACFLT

Size: 900 Acres

Funding to Date: $698,000

Estimated Funding to Complete: $2,719,000

Base Mission: Operate shore facilities to support of the Atlantic Fleet, U.S. Pacific Fleet and to home port for ship battlegroup squadrons.

Contaminants: Propellant, inert material, PCBs, POLs, pesticides/herbicides, solvents, lead

Number of Sites:

CERCLA:	5
RCRA Corrective Action:	0
RCRA UST:	4
Total Sites:	9

Relative Risk Ranking of Sites:

High:	1	Not Evaluated:	7
Medium:	0	Not Required:	0
Low:	1		

Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI		1	1				1	2
RI / FS					1			4
RD								2
RAC						1		2
RAO								1
IRA			1(1)					
RC						1		4
Cumulative % RC	0%	0%	0%	0%	0%	20%	20%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA			1	3				
CAP								4
DES								1
IMP								1
IMO								1
IRA								1(3)
RC								4
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

SAN DIEGO NAVAL TRAINING CENTER
SAN DIEGO, CALIFORNIA

Engineering Field Division/Activity: SWDIV

Major Claimant: CNET

Size: 550 Acres

Funding to Date: $7,050,000

Estimated Funding to Complete: $40,593,000

Base Mission: Provides recruit training for enlisted personnel and primary, advanced, and specialized training for officer and enlisted personnel.

Contaminants: Fuel, pesticides, solvents, unexploded ordnance, POLs

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	5	High:	1	Not Evaluated:	7
RCRA Corrective Action:	0	Medium:	2	Not Required:	3
RCRA UST:	8	Low:	1		
Total Sites:	14				

BRAC III

Sites Response Complete: 3

EXECUTIVE SUMMARY

The San Diego Naval Training Center (NTC) lies on the northern arc of San Diego Bay. NTC is bordered by residential areas to the north, a boat channel and Lindbergh Field (San Diego International Airport) to the east, San Diego Bay and a commercial boat basin to the south, and residential areas to the west. Two man-made islands, Shelter Island and Harbor Island, also lie to the south of the complex. There are military, commercial, industrial, and recreational areas surrounding NTC. Past activities that contributed to contaminated sites at NTC are machine shop operations, plating shop operations, electronics training, dry cleaning training, fire fighting training, public works operations, pest control, painting, vehicle maintenance, medical and dental clinic operations, gas station operations, and photo lab operations. Contaminants include solvents, petroleum products, paint and pesticides. An inactive landfill and various areas with petroleum product contamination are the major areas of concern at NTC. Groundwater movement to the boat channel, bayfront areas near Harbor Island and the commercial boat basin may potentially contact humans through recreational activities or allow the pollutants to enter the wildlife food chain. The estuary and San Diego Bay are potential contaminant receptors. The 113 acre estuary, commonly referred to as The Boat Channel, bisects NTC. Since FY86, when an Initial Assessment Study was conducted, twelve sites have been identified with possible environmental concerns; five sites are being studied under CERCLA and seven sites are being studied under the Underground Storage Tank (UST) program.

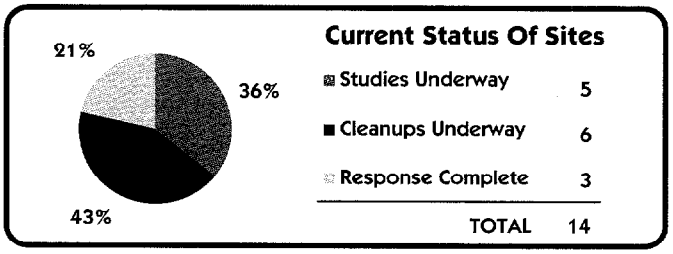
A twenty-five member Restoration Advisory Board (RAB), established in FY94, now meets bi-monthly. NTC has an extensive community relations program to establish and promote communication between the Navy and the community. Fact sheets that describe the sites that require cleanup were distributed. An Information Repository available to the public containing the Administrative Record was established in FY94 and is located at San Diego Central Library.

Fieldwork such as groundwater sampling and analysis, landfill gas sampling, and surface magnetic geophysical surveying for the Extended Site Inspection (ESI) began at Site 1, an inactive landfill, in FY95. Also in FY95, contaminated soil was removed and replaced with clean soil at Site 2, Site 8, and Site 9, all Underground Storage Tank (UST) sites. Contaminated soil was excavated during FY96 at Site 7, another UST site.

The Base Realignment and Closure (BRAC) Commission recommended closure of the NTC, and relocation of personnel, equipment, and mission support to other Naval training centers. The center will close June 30, 1997. Certain facilities and activities located on the installation will be retained to support other Naval activities in the area. The BRAC Cleanup Team (BCT) was established in FY94. Some NTC property is currently being leased. The Mayor of San Diego appointed a 26-member Reuse Planning Committee to guide the reuse planning process. Fast track cleanup initiatives such as concurrent phasing to accelerate the cleanup schedule are in use at NTC.

The Environmental Baseline Survey (EBS), completed in FY94, identified 85 Points of Interest (POIs) where hazardous substances or petroleum products have been stored. A revised Environmental Baseline Survey was completed in FY95. The BRAC Cleanup Plan (BCP) for the installation was also completed in mid-FY94. An updated BRAC Cleanup Plan was released in March 1995.

During FY95 the NTC Team categorized and evaluated POIs and identified an additional 7. POIs were broken up into four groups to facilitate action and early identification of potential problems. To date, 92 POIs have been identified. A POI Comprehensive report was completed in July 1996. Twenty three POIs were designated for further action. Through partnering with regulatory agencies, the Navy received concurrence letter from DTSC and U.S. EPA.



SAN DIEGO NTC
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - The majority of NTC is built on hydraulic fill material with moderate to high permeability. This may allow for contaminant migration to the boat channel. Overland surface runoff is collected by storm sewers that discharge into the boat channel. Groundwater is saline (salt water), not suitable for any potable, agricultural, or industrial use and occurs between 7 and 30 feet below ground surface (0 to 3 feet above mean sea level). Groundwater flow directions are assumed to be towards the estuary, the bayfront areas at Harbor Island, and the commercial boat basin. The discharge of polluted groundwater to the boat channel, bayfront areas near Harbor Island, and the commercial boat basin may potentially contact humans through recreational activities or allow the pollutants to enter the wildlife food chain. Drinking water is purchased from the San Diego County Water Authority.

NATURAL RESOURCES - NTC is adjacent to San Diego Bay, an important marine habitat. Sensitive wildlife habitats exist throughout San Diego Bay. No sensitive plant or animal habitats exist in the estuary at NTC. Numerous marine and shorebird species frequent the area. Large populations of rabbits and squirrels inhabit nearby undeveloped areas. The only endangered species found at NTC is the California least tern. The waterfront areas are used for commercial boating, recreational purposes such as sailing, water skiing, and recreational fishing, and wildlife habitat.

RISK - Human health and ecological risks were addressed in the Extended Site Inspection for Site 1, an inactive landfill, by September 1995. No other sites at NTC have had risk assessments performed yet. Using the DOD Relative Risk Ranking Site Evaluation Model, Site 12, Harbor Sediments, received a high risk ranking due to potential contamination of sensitive marine species. The remaining sites at NTC rank low (1 site), medium (2 sites), and not ranked (not ranked applies to the petroleum only sites) (7 sites).

RESTORATION PROJECTS - A portion of Site 1 encompasses a protected area for the California least tern, an endangered species. Sand was brought in to cover the area and enhance the habitat for the birds.

REGULATORY ISSUES

LEGAL AGREEMENTS - NTC is not listed on the NPL and there are currently no regulatory agreements in place.

PARTNERING - The NTC BRAC Cleanup Team and its core member team meet monthly during most of the year in round table type atmosphere. The purpose is to keep the team together and well informed in all aspects of all environmental sites, as well as up to date on reuse issues. In addition to the round table meetings, the 3 member BCT holds monthly teleconferences mainly to enhance timeliness of decision making and document reviews. A secondary benefit of these meetings is to identify potential upcoming challenges and to identify important agenda items for the round table meetings.

The Local Reuse Authority (LRA) is also involved in partnering sessions on a periodic basis. The frequency of these sessions is expected to increase as property transfer approaches.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Restoration Advisory Board (RAB) was created in January of 1994. The 25-member RAB meets monthly. The RAB facilitates the flow of information between the community and the BRAC Cleanup Team (BCT).

COMMUNITY RELATIONS PLAN - In FY92, the installation developed a Community Relations Plan (CRP). The CRP is used as a guide to better understand local concerns and identify the most effective ways to establish communication between the Navy and the community. An updated CRP was released in January 1995, and two fact sheets which describe the base conversion process and the Underground Storage Tank (UST) program were issued. Thirty-four community interviews were conducted to update the CRP and address community concerns.

INFORMATION REPOSITORY - An Information Repository was established in January 1994 to provide public access to the Administrative Record. The Administrative Record is the collection of official documents pertaining to the study and cleanup of sites. The Information Repository is located at the San Diego Central Library and an abbreviated repository is located at the San Diego City Library Point Loma Branch.

BASE REALIGNMENT AND CLOSURE

BRAC - NTC is slated for operational closure on June 30, 1997 as recommended by the Base Realignment and Closure (BRAC) Commission in 1993. Final property disposal is expected to take place in 1999. The BRAC Commission recommended closure of the NTC, and relocation of personnel, equipment, and mission support to other Naval training centers. Certain facilities and activities located on the installation will be retained to support other Naval activities in the San Diego area. Of the 552 total acres, 420 acres will be available for transfer.

BRAC CLEANUP TEAM - The BRAC Cleanup Team (BCT) was established in FY94. Members include the Navy, California EPA (Cal EPA), and EPA Region IX.

DOCUMENTS - The Environmental Baseline Survey (EBS), completed in FY94, identified 85 Points of Interest (POIs) where hazardous substances or petroleum products have been stored. A Site Specific EBS was completed in FY96. The BRAC Cleanup Plan (BCP) was also completed in FY94. The BCP is a dynamic planning document that reflects the current status of remedial actions, and the changes that affect the ultimate restoration and disposal of NTC. Updates of the BCP were released in March 1995 and March 1996.

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
276 acres	11 acres	0 acres	5 acres	83 acres	5 acres	171 acres

53% of the property is classified as suitable for transfer, and 47% is either undergoing remedial action or requires further evaluation.

LEASE/TRANSFER - The San Diego City Council is the Local Redevelopment Authority (LRA), the City and the Navy negotiated a master lease which serves as the principle lease instrument for the entire base; it was signed in March 1996. The property included in the original negotiation was a portion of NTC called Camp Nimitz (approximately 70 acres). Additional property has been added to the master lease by negotiating modifications to the original master lease. More property can be added as the LRA identifies interim uses. Property transfer is expected to begin in January 1998.

REUSE - The LRA is expected to complete the draft reuse plan on November 30, 1996. Development of the Reuse Plan, National Environmental Policy Act Environmental Impact Statement (EIS), and the California Environmental Quality Act Environmental Impact Report (EIR) are being worked on concurrently. Expected completion date for the EIS/EIR Record of Decision (ROD) is October 1997.

SAN DIEGO NTC
RELEVANT ISSUES

FAST TRACK INITIATIVES - Fast track cleanup initiatives at NTC include concurrent phasing to accelerate the cleanup schedule, contractor "over the shoulder" reviews to shorten document review time, team-building to enhance communication, weighing reuse options in appropriate restoration decisions, and active communication with other installations to achieve consistency and share information.

HISTORICAL PROGRESS

FY86

An Initial Assessment Study (IAS) was conducted; twelve sites were identified with possible environmental concerns; five sites are being studied under the CERCLA program and seven sites are being studied under the Underground Storage Tank (UST) program.

FY89

Basewide - Completed Historic Resources Inventory.

FY90

Basewide - Completed Natural Resource Management Plan.

FY91

Site 2 - Completed Site Assessment.
UST 3 - Completed Site Inspection Report.

FY92

Site 1 - Completed Solid Waste Water Quality Assessment Test.
UST 3 - Completed Phase I Investigation, Initiated Free product removal.
UST 7 - Completed Building 49 UST Studies and UST removal.
Basewide - Completed Community Relations Plan.

FY93

Site 1 - Completed Action Memo and Initiated Interim Removal Action.

FY94

Site 1 - Completed Air Solid Waste Assessment Test (SWAT).
UST 2 - Initiated Petroleum contaminated soil removal.
UST 3 - Completed Workplan for Extended Site Assessment.
Sites 4-6 - Initiated Preliminary Assessment (PA).
UST 7 - Initiated Extended Site Assessment (ESA).
UST 8 - Initiated UST removal.
UST 9 - Initiated Petroleum contaminated soil removal.
Basewide - Completed Comprehensive and CERFA Environmental Baseline Survey.

FY95

Site 1 - Initiated Fieldwork for the ESI.
Site 4 - The California Department of Toxic Substances Control (DTSC) reviewed the PA and determined no further action is required.
Sites 5 and 6 - Completed PA; DTSC recommended further study; SI initiated.
Site 14 - Initiated Preliminary Assessment/Site Assessment (PA/SA).
Basewide - Completed a Revised Community Relations Plan.
UST 7 - Completed Extended Site Assessment.
USTs 2, 8 and 9 - Completed petroleum contaminated soil removal; however, Site 8 requires additional action due to remaining benzene in the saturated and unsaturated zones.
BCP - Updated.

PROGRESS DURING FISCAL YEAR 1996

FY96

Site 1 - Completed ESI; Initiated EE/CA. The RI/FS, scheduled for completion in FY96, was delayed to FY97 in order to address regulatory comments.
UST 2 - Completed soil removal action. Confirmation groundwater sampling occurred and No Further Action (NFA) concurrence was given by regulatory agencies, therefore, no groundwater treatment needed.
USTs 2, 3, 8, 10 and 11 - Completed investigation phase (SA).
Sites 5 and 6 - Completed the SI. DTSC concurrence on No Further Removal Action Planned (NFRAP) (RC).
Initiated SA for the sediments within the Steam Tunnels (POI 38).
UST 7 - Completed IRA.
USTs 10 and 11 - Completed Corrective Action Plan and initiated cleanup.
Sites 12 and 14 - The Environmental Baseline Survey (EBS) identified these new sites. Site 12 is an area of contaminated sediments in the boat channel. Site 14 encompasses various Points of Interest (POIs) where storage of hazardous substances or petroleum products has or may have occurred. Each POI either has or will undergo study.
Site 14 - Completed PA/SA on a large list of the POIs. Many POIs received 'No Further Action' from the regulatory participants as a result of this important effort.
BCP - Updated
Master Lease - Negotiated and signed.
UST 9 - Response Complete.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Site 1 - Complete Remedial Design and initiate RA.
UST 8 - Complete Design and initiate RA, initiate ground water monitoring.
USTs 10 and 11 - Complete RA, Continue ground water monitoring.
Site 12 - Initiate RI/FS and RD.

FY98

Sites 12 and 14 - Proceed with IRA where necessary.
Sites 8 and 11 - Proceed with UST site operation and maintenance if necessary.

SAN DIEGO NTC
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	1	2	1					
RI / FS			2	1				1
RD			1	2				1
RAC								1
RAO					2			
IRA			1(1)				1(1)	1(1)
RC		2			1		1	2
Cumulative % RC	0%	33%	33%	33%	50%	50%	67%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	1	5						
CAP		2	1					
DES			1	2				1
IMP			2	1	1			1
IMO				3		1		1
IRA	3(3)	2(2)		1(2)	1(2)			
RC		1		4		1		2
Cumulative % RC	0%	13%	13%	63%	63%	75%	75%	100%

SAN NICOLAS ISLAND OUTLYING LANDING FIELD

SAN NICOLAS ISLAND, CALIFORNIA

Engineering Field Division/Activity: SWDIV

Major Claimant: COMNAVAIRPAC

Size: 13,370 Acres

Funding to Date: $5,419,000

Estimated Funding to Complete: $483,000

Base Mission: Serves as launch platform for short and medium range missile testing, and observation for missile testing and diverse test and research functions.

Contaminants: Unexploded ordnance, solvents, AOLs, PCBs, paint, pesticides, scrap metal

Number of Sites:

CERCLA:	7
RCRA Corrective Action:	0
RCRA UST:	13
Total Sites:	20

Relative Risk Ranking of Sites:

High:	0	Not Evaluated:	14
Medium:	0	Not Required:	6
Low:	0		

Sites Response Complete: 6

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI		5						2
RI / FS								
RD								
RAC			5					
RAO								
IRA								
RC			5					2
Cumulative % RC	0%	0%	71%	71%	71%	71%	71%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	6							7
CAP								
DES								
IMP								
IMO								
IRA								
RC	6							7
Cumulative % RC	46%	46%	46%	46%	46%	46%	46%	100%

SEAL BEACH NAVAL WEAPONS STATION
SEAL BEACH, CALIFORNIA

Engineering Field Division/Activity: SWDIV

Major Claimant: COMNAVSEASYSCOM

Size: 5,000 Acres

Funding to Date: $19,598,000

Estimated Funding to Complete: $7,645,000

Base Mission: Receives, stores, maintains and issues conventional ammunition and surface and air launched guided missiles, materials and provides ordnance systems component repair facility, ammunition, munitions and issues materials.

Contaminants: Ammunition, metals, heavy metals (chromium, lead), PCBs

Number of Sites:

CERCLA:	47
RCRA Corrective Action:	21
RCRA UST:	9
Total Sites:	77

Relative Risk Ranking of Sites:

High:	14	Not Evaluated:	8
Medium:	10	Not Required:	35
Low:	10		

Sites Response Complete: 35

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	17		2	22	3	1		2
RI / FS		1		8	5	3		9
RD						1	2	6
RAC			2					4
RAO								2
IRA	1(1)		3(3)	1(1)	3(3)		4(4)	4(5)
RC	11	1	2	15	1	2	4	11
Cumulative % RC	23%	26%	30%	62%	64%	68%	77%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	19				2			
RFI / CMS								1
DES								1
CMI								
CMO								
IRA		1(1)					1(1)	
RC	19				1			1
Cumulative % RC	90%	90%	90%	90%	95%	95%	95%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	2	1	1					
CAP	1	1	1	1				
DES								
IMP	1		1					
IMO								
IRA	4(4)	1(1)		2(3)	3(3)	1(1)		5(5)
RC	3	1						5
Cumulative % RC	33%	44%	44%	44%	44%	44%	44%	100%

SKAGGS ISLAND NAVAL SECURITY GROUP ACTIVITY

SKAGGS ISLAND, CALIFORNIA

Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible] Acres

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

Number of Sites:

CERCLA:	6
RCRA Corrective Action:	1
RCRA UST:	4
Total Sites:	11

Relative Risk Ranking of Sites:

High:	0	Not Evaluated:	11
Medium:	0	Not Required:	0
Low:	0		

Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	3	3						
RI / FS					4	1		1
RD						3		2
RAC							3	1
RAO								
IRA		2(2)	3(3)	2(2)				
RC					1		2	3
Cumulative % RC	0%	0%	0%	0%	17%	17%	50%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	1							
RFI / CMS					1			
DES						1		
CMI							1	
CMO								
IRA		1(1)						
RC								1
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA			1					
CAP	1	2	1					
DES		2						
IMP			2	2				
IMO								4
IRA	2(2)		2(2)	1(1)				
RC								4
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

STOCKTON NAVAL COMMUNICATION STATION

STOCKTON, CALIFORNIA

Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible] Acres

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: Manages, operates and maintains facilities, equipment and devices necessary to provide communications for the Command.

Contaminants: Acid, plating pit, industrial waste/oil, pesticides, PCBs, PCBs

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	71	High:	53	Not Evaluated:	1
RCRA Corrective Action:	0	Medium:	7	Not Required:	0
RCRA UST:	1	Low:	11		
Total Sites:	72				

Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI		56	15					
RI / FS			1	7	16	16	10	7
RD					5	14	10	21
RAC					1	4	7	35
RAO								19
IRA	7(14)	1(1)	12(15)	4(4)	3(4)	3(3)		5(6)
RC			14	1		3	9	44
Cumulative % RC	0%	0%	20%	21%	21%	25%	38%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP		1						
DES			1					
IMP				1				
IMO								1
IRA								
RC								1
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

SUNNYVALE NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT

SUNNYVALE, CALIFORNIA

Engineering Field Division/Activity: EFA WEST

Major Claimant: SSP

Size: 160 Acres

Funding to Date: $147,000

Estimated Funding to Complete: $0

Base Mission: Government Owned/Contractor Operated (GOCO) facility operated by Lockheed Missiles and Space Company, Inc., manufactures Naval Fleet Ballistic Missiles and provides assembly and testing of components.

Contaminants: Heavy metals (chromium, silver), volatile organic compounds, POLs, PCBs

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	16	High:	0	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	0	Not Required:	16
RCRA UST:	0	Low:	0		
Total Sites:	16				

Sites Response Complete: 16

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	16							
RI / FS	5							
RD								
RAC								
RAO								
IRA								
RC	16							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

TREASURE ISLAND NAVAL STATION

TREASURE ISLAND, CALIFORNIA

Engineering Field Division/Activity: EFA WEST

Major Claimant: COMNAVBASEPAC

Size: 717 Acres

Funding to Date: $[illegible]

Estimated Funding to Complete: $[illegible]

Base Mission: Provides services and materials in support of assigned forces and designated naval activities.

Contaminants: Asbestos, acids, barium, heavy metals, pesticides, PCBs

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	25	High:	16	Not Evaluated:	1
RCRA Corrective Action:	0	Medium:	5	Not Required:	4
RCRA UST:	3	Low:	0		
Total Sites:	31				

BRAC III

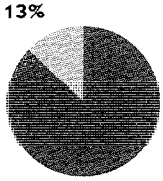
Sites Response Complete: 4

EXECUTIVE SUMMARY

The Naval Station Treasure Island (NAVSTA TI) is an island in the middle of the San Francisco Bay, midway between San Francisco and Oakland, California. The facility consists of two contiguous islands: the north island is named Treasure Island (TI) and the south island is named Yerba Buena Island (YBI). The sites of major concern at NAVSTA TI are Sites 6, 11, 14 and 22 which have soil and groundwater that are contaminated with petroleum products due to fuel storage and fire training activities. IR Site 11 is a former small landfill with multiple contaminants including petroleum products, volatile organic compounds, and metals. With few exceptions, contamination at most of the IR sites is the result of petroleum products originating from fueling operations. Two sites have chlorinated solvent contaminated groundwater. Numerous storage tanks and underground fuel lines exist, many of which have been gradually abandoned since the 1950s. The Navy has since changed its operational processes to prevent further contamination. NAVSTA TI is under a Federal Facilities Site Remediation Agreement (FFSRA) with the California Environmental Protection Agency, Department of Toxic Substances (DTSC) and the Regional Water Quality Control Board (RWQCB) which was signed on September 29, 1992.

NAVSTA TI is surrounded by the waters of San Francisco Bay. Potential receptors of soluble contamination would include flora and fauna using or inhabiting the surrounding waters. Currently, habitat for endangered or sensitive species on NAVSTA TI is very limited, although some have been observed at or near NAVSTA TI. There is limited potential for human contact with or consumption of groundwater since drinking water wells are not used on NAVSTA TI.

A Restoration Advisory Board (RAB) was formed in December 1993 and currently has 26 community members including environmental groups and individual community members, excluding regulators and Navy personnel. The RAB provides community advice on issues related to base closure and environmental restoration. A Community Relations Plan (CRP) has been written and two public information repositories have been established.



Current Status Of Sites

Studies Underway	27
Cleanups Underway	0
Response Complete	4
TOTAL	31

Since the beginning of the Installation Restoration Program (IRP) at NAVSTA TI, a total of twenty-eight CERCLA and three UST sites have been identified for further investigation. Field work for a Phase II Remedial Investigation (RI) study will continue through FY 97 to further characterize the extent of contamination and to collect data necessary for evaluation of remedial alternatives. The Phase II RI is being conducted in two steps. The Phase IIA RI is focusing on existing groundwater monitoring and tidal influence study, while the Phase IIB RI is focusing on further characterization and contaminant delineation. A no action decision document (Remedial Action Plan (RAP)) for IR Site 1 (Medical Clinic) and Site 3 (PCB Equipment Storage Area) was initiated in FY 96. Also, in FY 96, a bench scale soil bioremediation treatability study was initiated.

Phase II RI field work was completed in FY96 except for the Phase II Ecological Risk Assessment (EA) work for Site 13 (Stormwater Outfalls YBI/TI) which will be initiated in FY97. The Remedial Investigation (RI) and the Feasibility Study (FS) reports will be completed for all sites by FY99. A basewide interim groundwater monitoring plan for existing and new monitoring wells will be implemented in FY97 and FY98. Nine IR sites which were determined by the Base Realignment and Closure (BRAC) Cleanup Team (BCT) to be impacted only by petroleum are in the process of being transferred from the Navy's Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) program to the petroleum underground storage tank (UST) program. A Corrective Action Plan (CAP) for petroleum sites was initiated and will incorporate a treatability study and design of a bioremediation system.

Immunoassay field tests, a rapid field screening technique, were used extensively at NAVSTA TI to guide the Phase IIB RI. Immunoassays allow more data to be reported faster and for less money than does the use of an analytical laboratory for analyses. Since results were immediately available, additional sampling locations were quickly identified and the field investigation accelerated. By field screening 80 percent of all samples, approximately $1 million in analytical costs was avoided.

The BRAC Commission recommended NAVSTA TI for closure. Operational closure of NAVSTA TI is scheduled for September 1997. The Navy plans to transfer property throughout the closure process as it becomes suitable for lease or transfer. At this time, no leases or transfers of property have occurred. However, two buildings have been licensed to the city of San Francisco for use as film studios. In addition, the Department of Labor (DOL) will be operating a Jobs Corps Training Center at NAVSTA TI.

TREASURE ISLAND NS
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - TI and YBI are surrounded by the waters of San Francisco Bay. TI is a man-made island composed of dredged materials consisting of poorly graded fine sand placed over Yerba Buena Shoals. Groundwater at TI is generally encountered at 30-72 inches below ground surface. Because of the presence of relatively impermeable silt and clay lenses, there may be some perched conditions above the shallow water table. The direction of flow for both groundwater and surface runoff at TI is towards the Bay. Soluble contaminants would tend to migrate vertically through the sand to the water table or migrate overland in surface runoff. Less soluble contaminants may tend to bind with the soils and become relatively immobile.

YBI is a natural rock island with minimal soil cover. Surface soils are sandy loam to gravelly loam and subsoils are gravelly loam to sandy clay loam. Bedrock on YBI consists of sandstone and shale. Although there is limited information concerning groundwater at YBI, the groundwater in similar sites in the San Francisco Bay area is commonly present in sandstone or fractured shale due to infiltration. In the filled areas at YBI on the eastern side, soluble contaminants would potentially migrate to the Bay waters. At other areas on the Island, the surface runoff would either transport potential contaminants to the Bay or runoff would infiltrate into the Franciscan sandstone and shale. Less soluble contaminants would tend to bind with the soils and bedrock becoming relatively immobile or leaching small quantities to the surface runoff and ground water.

Drinking water wells are not used on TI or YBI. Subsurface water at TI and YBI proves impotable due to contact with the saline to brackish Bay waters. Water used by the facilities is conveyed by pipeline from San Francisco or Emeryville via the Bay Bridge.

NATURAL RESOURCES - TI consists of approximately 403 acres of developed flat terrain, covered mainly by buildings, roads, and parking lots. Most of the vegetation has been cultivated in landscaped areas. Any undeveloped habitat on NAVSTA TI is found on YBI (119 acres), where eucalyptus woodlands represent the largest habitat. Brushland, mixed woodland, and grassland are also present on YBI.

The Bay Area supports a variety of fish, birds and mammals. The fishery resource includes anadromous fish which migrate through the Bay to spawn; native fish that remain in the area for life and shellfish such as crab and shrimp. The Bay is a seasonal home for many migrating birds since the San Francisco Estuary is a stopping point along the Pacific Flyway. Migratory birds observed at or near NAVSTA TI include several species of harvested waterfowl and passerine birds. The California sea lion and harbor seal are routinely seen in the San Francisco Bay waters at NAVSTA TI. A small group of harbor seals has been reported to frequent the southwestern and western shorelines of YBI during the winter. A survey of both Federal and California endangered or threatened species observed at or near NAVSTA TI included 7 animals and 17 plant species.

The only rare or sensitive habitat that may be present at NAVSTA TI are the mudflats, which may be located on the western side of the cove between TI and YBI; and threatened and endangered species habitats.

RISK - Both a draft Baseline Human Health Risk Assessment (BHHRA) and a draft EA were prepared in conjunction with the draft Phase I RI Report. Based on the results of the risk assessments, site characterization, and discussions with the regulatory agencies, the Navy is proceeding with no action at Site 3 and no further action after minimal soil removal at Site 1. Several sites, including additional Sites 27, 28 and 29 were recommended for further investigation during the Phase II RI and EA field work. The Phase II EA for onshore sites was completed. The Phase II EA for offshore operable unit (OU) Site 13 will be conducted in FY97.

For the Department of Defense (DOD) Relative Risk Ranking System, 18 IR sites were ranked as high relative risk. The high rankings are primarily due to known contamination on the site and the migration potential to ecological receptors present in the Bay or YBI, or exposure of on-site personnel through direct contact with both the soil and the near surface ground water. The groundwater is likely to be connected to the San Francisco Bay. A tidal influence study was completed for NAVSTA TI.

REGULATORY ISSUES

LEGAL AGREEMENTS - A Federal Facility Site Remediation Agreement (FFSRA) between the Navy, the Department of Toxic Substances Control (DTSC), and the Regional Water Quality Control Board (RWQCB) was signed on September 29, 1992. Under this agreement, the Navy agreed to undertake, seek adequate funding for, implement, and report on specified tasks associated with environmental assessment and response actions for 22 sites under the IRP in accordance with CERCLA. In May 1996, the FFSRA was amended to include the three newly identified installation restoration sites (Sites 27, 28 and 29) and offshore operable unit (Sites 13 and 27). Also, the FFSRA Appendix D schedule was revised to be consistent with the comprehensive strategy in the BRAC Cleanup Plan (BCPNAVSTA TI is not on the National Priorities List.

PARTNERING - The BRAC Cleanup Team (BCT) includes a member from each of the Navy, the U. S. EPA Region IX, and the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) with the support of the RWQCB. The BCT has worked closely with the Remedial Project Manager (RPM) to expedite the RI process at NAVSTA TI.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - The Technical Review Committee (TRC) was formed to provide public involvement in the Installation Restoration Program (IRP) decision-making process. At the December 1993 meeting, the TRC was expanded into a Restoration Advisory Board (RAB) which represents the interests of a broader and more diverse cross-section of the community. The RAB has 26 community members including environmental groups and individual community members. The RAB meetings serve as a forum for the Navy, regulatory agencies, and the community to discuss issues related to base closure, environmental restoration programs, real estate transfer, and decision-making. Meetings are held monthly, with special meetings scheduled to facilitate comments on documents that RAB members are reviewing. Community RAB members also meet monthly, without the regulatory agencies and the Navy, to discuss topics and agenda for the next full RAB meeting.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) for the NAVSTA TI IRP was finalized April 23, 1992. The CRP is being revised to reflect the community relations requirement under BRAC. A mailing list of all interested parties in the community is maintained by the Navy and updated periodically. Fact sheets describing the status of the IRP activities are distributed to the mailing list and informal meetings are held frequently for the general public. The BCT with the support of the RWQCB has conducted site tours and workshops for the community and RAB members regarding the environmental activities at NAVSTA TI.

INFORMATION REPOSITORY - Public information repositories have been established at NAVSTA TI and San Francisco Public Library Main Branch. These repositories contain information relative to environmental activities at NAVSTA TI. An Administrative Record file has also been established at EFA WEST in accordance with CERCLA requirements. A copy of the Administrative Record (AR) documents are contained in the Information Repositories.

TREASURE ISLAND NS
RELEVANT ISSUES

BASE REALIGNMENT AND CLOSURE

BRAC - In July 1993, the BRAC Commission recommended closure of NAVSTA TI and relocation of the Naval Reserve Center to Alameda, California, and the Naval Technical Training Center to Great Lakes, Illinois, and Little Creek, Virginia. Closure is scheduled for September 1997. The Navy plans a gradual drawdown of personnel and activities prior to the actual closure date. The Navy plans to transfer property throughout the closure process as it becomes suitable for lease or transfer. The community reuse plan and Environmental Baseline Survey will be necessary for the efficient transfer of property.

BRAC CLEANUP TEAM - The BRAC Cleanup Team (BCT) was established in December 1993 and has presented community workshops on CERCLA and the cleanup process. The BCT works closely with the project team to expedite cleanup and to implement cost saving measures. The BCT includes the BRAC Environmental Coordinator (BEC), representatives of the U.S. EPA Region IX, and the California Environmental Protection Agency's Department of Toxic Substances Control.

DOCUMENTS - The BRAC Cleanup Plan (BCP) was finalized in March 1994 and updated in March 1995 and 1996. The draft Environmental Baseline Survey (EBS) was completed in FY94, and then finalized in FY95. The EBS placed all parcels in environmental condition of property categories 1, 2, 6 and 7. Nine parcels will be designated as Community Environmental Response Facilitation Act (CERFA) clean. The Phase II EA Work Plan and the companion Quality Assurance Project Plan (QAPP) were completed in FY 96. Also, the Bench Scale Soil Bioremediation Treatability Study Work Plan was completed in FY96. The Interim Groundwater Monitoring Work Plan was initiated and will be finalized in early FY97.

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
38 acres	9 acres	0 acres	0 acres	0 acres	189 acres	286 acres

LEASE/TRANSFER - The Navy intends to make NAVSTA TI property available for interim use and to transfer NAVSTA TI property as it becomes available and when requested by the city of San Francisco. Parcels may be identified for transfer based upon a Finding of Suitability to Lease (FOSL) or a Finding of Suitability to Transfer (FOST). These mechanisms will be developed and incorporated as the NAVSTA TI closure continues. FOSLs have been completed for building 2, and building 180 which are leased to the city of San Francisco. The city of San Francisco has subleased the buildings to film companies. FOSLs for the elementary school, building 3, the brig, and the firefighting school have been completed and are ready for signature. These buildings will be leased to the city of San Francisco. A Summary Document for Federal to Federal Transfer to the Department of Labor of 35.5 acres of property at Treasure Island was completed and is ready for final approval.

REUSE - A Naval Station Treasure Island Reuse Plan prepared for the Office of Military Base Conversion was endorsed by the Treasure Island Citizens Reuse Committee, Planning Department, City and County of San Francisco, and the San Francisco Redevelopment Agency. The endorsement was made by the City and County of San Francisco Board of Supervisors at their July 22, 1996 meeting. At this time, no leases or transfers of property have occurred. However, two buildings have been licensed to the city of San Francisco for use as film studios. In addition, the Department of Labor will be operating a Jobs Corps Training Center at NAVSTA TI (FOST is currently being prepared).

FAST TRACK INITIATIVES - Early actions are an important component of the IRP at NAVSTA TI. Based on the results of the draft Phase I RI and discussions with the regulatory agency representatives, three IR sites are currently targeted for removal actions, and no further action decision documents are being prepared for two IR sites. There are nine IR sites considered as petroleum impacted sites and will be remediated under the Navy's petroleum /UST program.

HISTORICAL PROGRESS

FY86

Site 14 - Test Underground Gasoline Spill, Report #1, completed in April as part of the Site Inspection (SI).

FY87

Site 6 - Initial Hazardous Material Investigation, Report #2, completed in August and Investigation of Potential Soil and Groundwater Contamination of Tank 2, Report #3 completed in July as part of SI.
Site 20 - Geotechnical Engineering Study, Proposed Family Housing Project, Report #4, was completed as part of SI.

FY88

Sites 1-26 - Preliminary Assessment/Site Inspection (PA/SI), Report #5, completed in April.
Sites 1, 3-7, 9-17, 19-22 and 24-26 - PA/SI recommended further action.
Sites 2, 8, 18 and 23 - No further action recommended in PA/SI.
Sites 8, 19 and 25 - The State of California reviewed PA/SI and recommended further investigation for these sites. The additional SI was completed in April and an Remedial Investigation/Feasibility Study (RI/FS) was recommended for all three sites.

FY89

Site 20 - SI Report, Former Tank 225A, Report #6, completed in November.
USTs - Five Underground Storage Tanks (USTs) removed.

FY90

Site 11 - UST Removal, Tank 270, Report #7, completed July as part of SI.
USTs - Two USTs removed.

FY91

Sites 8, 19 and 25 - SI Report, Report #8, was completed April and recommended an RI/FS for all three.
Site 20 - Soil Aeration Field Work Plan, Status on Aeration Project, and Bioremediation Treatment Letter Report, Report #9, completed February and October 1991, and February 1992, respectively, as part of Interim Remedial Action (IRA).

FY92

Federal Facility Site Remediation Agreement (FFSRA) signed by Department of the Navy and the State of California in September.
Site 12 - Preliminary Risk Assessment Report, Report #10, completed September as part of SI.
Sites 6 and 14 - Suitability Study for Floating Product Removal, Report #11, completed February as part of IRA.
Site 6 - Hazardous Waste Testing Old Fire Fighting Training School, Report #12, completed April as part of SI.
USTs - Twenty-three USTs removed.

TREASURE ISLAND NS
HISTORICAL PROGRESS

FY93

Sites 13 and 13A - Stormwater Pollution Prevention Plan, Report #13, completed in June 1993 as part of PA.
Site 29 - Soil and Air Testing, Report #17, completed June and September as part of PA.

FY94

Sites 1, 3, 4-17, 19-22, 24 and 25 - Draft Phase I RI Report, Report #14, completed in November.
Sites 1, 3, 4-12, 14-17, 19-22, 24 and 25 - Draft Baseline Human Health Risk Assessment, Report #15, completed November.
Sites 1, 3, 4-17, 19-22, 24 and 25 - Draft Ecological Risk Assessment, Report #16, completed November.
Sites 1, 3, 4-12, 14-17, 19-22, 24 and 25 - Draft Initial Screening of Technologies, Report #18, as part of FS.
Site 14 - Characterization Wells Letter, Report #19, completed January as part of IRA.
Sites 6, 22 and 25 - Draft Summary Report of UST Removals, Report #20, completed January 1994 as part of IRA.

FY95

Limited Basewide Environmental Baseline Survey (EBS)/Community Environmental Response Facilitation Act (CERFA) Report was completed in December 1994.
Quarterly Groundwater Sampling Report - November 1994 was completed in February 1995.
Base Realignment and Closure Cleanup Plan (BCP) Second Edition was completed in March 1995.
Phase IIB Remedial Investigation (RI) Work Plan Addendum was completed in April 1995.
Quarterly Groundwater Sampling Report - February 1995 was completed in May 1995.
Quarterly Groundwater Sampling Report - May 1994 was completed in August 1995. Initiated the removal of floating product at Site 6 by bailer and skimmer pump.
USTs - Five USTs removed.

PROGRESS DURING FISCAL YEAR 1996

FY96

Federal Facility Site Remediation Agreement (FFSRA) was amended and a revised Appendix D schedule was submitted.
Continued the removal of floating product at Site 6 by bailer and skimmer pump.
Completed the RI field investigation except the offshore operable unit Site 13-Stormwater Outfalls (YBI/TI).
Source Control and Additional Characterization Summary Report, Site 01-Medical Clinic was completed in November 1995.
The NAVSTA TI Tidal Influence Study Summary of Results was completed in December 1995.
Phase IIA RI Aquifer Testing Revised Summary of Results was completed in February 1996.
Base Realignment and Closure Cleanup Plan (BCP) Revision 02 was completed in March 1996.
Phase II Ecological Risk Assessment (EA) Work Plan and Field Sampling Plan was completed in April 1996.
Phase IIB RI Summary of Validated data Report, Volumes I and II was completed in May 1996.
Groundwater Status Report: Summary of Groundwater Monitoring from November 1994 to November 1995 was completed in May 1996.
Quarterly Groundwater Sampling Report - February 1996 was completed in July 1996.
Bench Scale Soil Bioremediation Treatability Study (TS) Work Plan was completed in July 1996, the TS itself will not be complete until FY97 due to funding limitations.
Air Sampling Work Plan was completed in July 1996.
Ecotoxicological Testing Sampling and Analysis Plan for Development of Petroleum Cleanup Goals was completed in August 1996.
Quarterly Groundwater Sampling Report - June 1996 was completed in September 1996.
Closed-in-place 11 USTs at YBI.
Removed two USTs from government vehicle service station.
Completed IRA at Site 1.
Initiated a NFA ROD at IR Sites 1 and 3.
Continued preparation of the draft RI and draft Baseline Human Health Risk Assessment; this was expected to be completed in FY96 but has been moved to early FY97 due to data collection problems.
Sites scheduled for EE/CA in FY96 are being transferred into the Petroleum Program, therefore the EE/CA requirement has been replaced by a Corrective Action Plan (CAP).

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 1 and 3 - Complete the RI/FS and achieve Response Complete (RC).
Complete the bench scale soil bioremediation treatability study.
Complete the Interim Basewide Groundwater Monitoring Work Plan.
Continue the preparation of the draft and final RI and FS reports excluding offshore OU 13.
Initiate the basewide interim groundwater monitoring program.
Initiate the Phase II Ecological Risk Assessment(EA) field work and draft report for offshore OU 13.
Initiate the preparation of decision documents (RAP/ROD) for twelve IR sites.
Initiate interim actions at YBI IR sites to support reuse.
Initiate removal actions at petroleum sites (IR Sites 6, 14 and 22) under the Navy's petroleum/UST program. Complete IRA at Site 6.
Remove tanks at UST 234 from NSTI.
Conduct remedial investigation as required at UST 234.
Remove fuel lines from NSTI.
Conduct remedial investigation as required at fuel lines.
Conduct semi-annual groundwater sampling/monitoring at UST sites.
Conduct remedial investigation at two USTs.
Design remediation systems for UST sites as required.
Remove AST's from NSTI as required.
UST 1 - Complete CAP.

FY98

Continue removal actions at petroleum sites under the Navy's petroleum/UST program.
Continue the basewide interim groundwater monitoring program.
Complete the FS Report for offshore OU.
Initiate the remedial design for most of the IR sites.
Initiate the remedial actions for some sites.
Conduct remediation systems for UST sites.
Design remediation systems for fuel lines as required.
Conduct semi-annual groundwater sampling/monitoring at UST sites.

TREASURE ISLAND NS
PLANS FOR FISCAL YEARS 1997 AND 1998

Sites 4-12, 14-17, 19-22, 24, 25, 28 and 29 - Complete RI/FS.
Site 6 - Complete RD.
Site 7 - Achieve RC.
Sites 6, 8, 11, 14, 22, 28 and 29 - Complete IRA.
UST 1 - Complete Design phase.
UST 23 - Complete CAP.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	25							
RI / FS			2	21	2			
RD				1	19	2		
RAC						8	9	5
RAO								11
IRA		1(1)	1(1)	7(7)				
RC	3		2	1		4	3	15
Cumulative % RC	11%	11%	18%	21%	21%	36%	46%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	1							
CAP			1	1				
DES				1	1			
IMP						1	1	
IMO								2
IRA	2(2)							
RC	1							2
Cumulative % RC	33%	33%	33%	33%	33%	33%	33%	100%

TREASURE ISLAND NAVAL STATION HUNTERS POINT ANNEX

SAN FRANCISCO, CALIFORNIA

Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible]

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	74	High:	24	Not Evaluated:	12
RCRA Corrective Action:	0	Medium:	30	Not Required:	8
RCRA UST:	0	Low:	5		
Total Sites:	74				

NPL | BRAC II

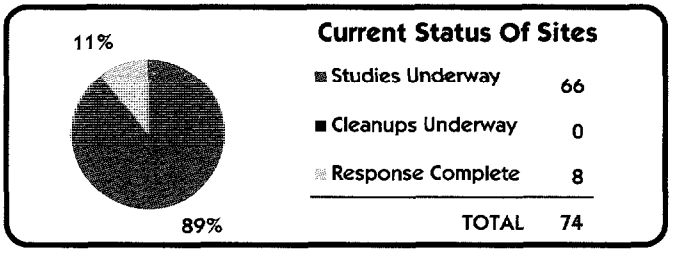
Sites Response Complete: 8

EXECUTIVE SUMMARY

Treasure Island Naval Station Hunters Point Annex (NSTI Hunters Point) is in the southeast portion of San Francisco County, California. It is a deactivated Navy shipyard that was selected and approved for closure and disposition by the Base Realignment and Closure (BRAC) Commission in 1991. It is currently under caretaker status by the Naval Facilities Engineering Command's Engineering Field Activity West located in San Bruno, California. Portions of NSTI Hunters Point have already been leased to private parties. Because of the presence of hazardous materials resulting from past shipyard operations and the operations of a commercial machine shop that had leased NSTI Hunters Point from 1976 to 1986, the EPA placed the installation on the NPL in 1989. Site types include landfills and land disposal areas. The Navy Radiological Defense Laboratory (NRDL) used multiple buildings at Hunters Point Annex. The Atomic Energy Commission determined the buildings were clean although the State of California requested additional sampling. Low level radiation was found outside some of the NRDL buildings and continues to be investigated.

NSTI Hunters Point is currently under a Federal Facility Agreement (FFA) that was signed by the Navy, the EPA, and the California Environmental Protection Agency (Cal/EPA) in 1992.

NSTI Hunters Point is on a long promontory in the southeastern portion of San Francisco, extending eastward into San Francisco Bay. The facility is bounded on the north and east by the bay, and on the south and west by the Bayview/Hunters Point district of San Francisco. Between 70 and 80 percent of NSTI Hunters Point is relatively flat lowlands constructed by placing fill materials along the bay margin. The remaining land is on a moderately to steeply sloping ridge. Most of the lowlands are covered by asphalt paving and structures. The open areas are either sparsely vegetated or bare soil. Potential contaminant migration pathways exist via both surface runoff and infiltration of the rain water. Stormwater runoff is channeled to discharge in San Francisco Bay. Stormwater percolating into the soils has the potential to migrate via the groundwater to the San Francisco Bay where both human and ecological receptors are present.



The Technical Review Committee was converted to a Restoration Advisory Board (RAB) in FY94 and has 32 members from the community, local business, and regulatory agencies. An Information Repository was established at two local libraries.

At the end of FY95, preliminary study phases have been completed for all sites, and the Remedial Investigation (RI) phase is underway at 66 sites. Eight sites are currently Response Complete.

In FY92, the installation successfully demonstrated an innovative technology for recycling sand blasting grit containing low levels of copper and lead from ship cleaning operations. A full scale demonstration using the grit was completed in FY93. The Navy can use this technology at other installations.

In 1991, NSTI Hunters Point was included in the Base Realignment and Closure (BRAC) Program. A revised approach to investigation and remediating sites was implemented at this time. Sites were divided into geographic areas, Parcels A-F, to facilitate investigation and remediation. The intent is to sell the land, parcel by parcel, as various parcels are remediated. The concerns of the local community are primarily economic reuse of the facility, and increasing the economic potential of the community. The community has experienced 20 to 30% unemployment since the base was placed in industrial reserve in 1974. Operational base closure was 1 April 1994. The Navy is making local small and disadvantaged businesses aware of subcontracting opportunities, encouraging mentor and protégé arrangements under large business contracts, and conducting aggressive outreach programs.

TREASURE ISLAND NS HUNTERS POINT ANNEX
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - There are three aquifers under NSTI Hunters Point. The groundwater is not used for any purpose, and no irrigation or water supply wells are located at NSTI Hunters Point. The nearest public water supply well is about 2.5 miles inland from the base. A commercial bottled-water company, Albion Mountain Spring, is located within 2,300 feet of the facility. Albion Mountain Spring extracts groundwater for commercial sale to the public. However, the groundwater extracted and used by Albion appears to be separate and distinct from the groundwater beneath NSTI Hunters Point. It is unlikely that any contamination found in NSTI Hunters Point groundwater would impact Albion's bottled water supply. Surface water drainage is primarily through sheet-flow runoff. The runoff is collected by an on-site storm drain system that is discharged through several outfalls into San Francisco Bay. No naturally occurring channeled drainage exists; any pre-existing drainage channels have been filled or modified by construction over the years.

NATURAL RESOURCES - Terrestrial and aquatic ecosystems are present at NSTI Hunters Point. Although most of NSTI Hunters Point is covered with asphalt, buildings, or other structures, vegetated areas supporting the terrestrial fauna exist. These are areas of disturbed landscape, non-native grassland, and salt marsh. All four habitats are somewhat disturbed as a result of past or current activities. The aquatic system consists of wetland, pelagic intertidal, and subtidal habitats that are contiguous with San Francisco Bay. Threatened or endangered species that have been observed at NSTI Hunters Point include chinook salmon, longfin smelt, peregrine falcon, loggerhead shrike, and California brown pelican.

RISK - A three-phased Ecological Risk Assessment (ERA) to determine any potential adverse effects on the biota in the area was initiated in August 1994. The first phase involved the review of existing documentation, performing bioassays and field surveys, and identifying biota. The Ecological Sampling and Analysis Plan is complete and field work began in late FY95. A separate schedule has been established for the investigation of potential impacts from radiation generated from radium dials disposed at Site 1 (Industrial Landfill). Using the DOD Relative Risk Ranking System, 24 sites were ranked high, 20 were ranked medium, and 5 were ranked as low relative risk. Seventeen other sites were not evaluated. The high relative risk sites were so ranked primarily because of the potential for contaminants to migrate through the groundwater pathway to the San Francisco Bay where both human and ecological receptors are present. Some sites were ranked high based on contamination present in the soil and the potential for workers on site or recreational users to be exposed to the contaminants. Seven removal actions have either been completed or are underway at the high ranked sites. The Agency for Toxic Substances and Disease Registry (ATSDR) performed a Public Health Assessment in FY94. Concerns were raised about restricting access to sites and subsistence fishing offshore of NSTI Hunters Point.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - NSTI Hunters Point was included on the National Priorities List in November 1989 based on a Hazard Ranking System Score of 48.77. The presence of hazardous materials resulting from past shipyard operations and the operations of a private company who had leased NSTI Hunters Point from 1976 to 1986, contributed to the NPL classification.

LEGAL AGREEMENTS - A Federal Facility Agreement was signed in 1990. A revised agreement was signed by the California Department of Toxic Substances Control, the California Regional Water Quality Control Board (San Francisco Bay Region), and by the Department of the Navy in 1991. It was also signed by the EPA Region IX in 1992. The agreement defines work schedules and required deliverables for each operable unit. The FFA schedule was renegotiated in June 1995.

PARTNERING - While there are no formal partnering agreements, the BRAC Cleanup Team (BCT) was formed in FY94 and has helped improve communications and partnering among the installation, EPA, and the state.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was established in 1988. The TRC was converted to a Restoration Advisory Board (RAB) in FY94 and has 32 members from the community, local business, and regulatory agencies. The RAB meets monthly and is currently being reorganized. The RAB provides a forum for diverse opinions to be directed to the BCT and to resolve issues.

COMMUNITY RELATIONS PLAN - In 1989, a Community Relations Plan (CRP) was completed. It was updated in 1995. Other community relations activities include public meetings, open houses, workshops, and distribution of fact sheets and newsletters. The CRP is presently being updated again.

INFORMATION REPOSITORY - An Administrative Record was established and information repositories were set up in 1989. The Information Repositories, containing copies of the Administrative Record documents, are located at the following two local public libraries:

San Francisco Public Library
Anna E. Waden Branch
5075 Third Street

San Francisco Public Library
Main Library
corner of McAllister and Larkin

Both repositories were updated in 1993 and are now updated quarterly.

BASE REALIGNMENT AND CLOSURE

BRAC - In 1991, NSTI Hunters Point was included in the Base Realignment and Closure (BRAC) Program. A BRAC Cleanup Plan was completed in FY94 and updated in FY95. In addition, a Baseline Environmental Report was completed in July 1994. A revised approach to investigation and remediating sites was implemented at this time. Sites were divided into geographic areas, Parcels A-F, to facilitate investigation and remediation. The intent is to sell the land, parcel by parcel, as various parcels are remediated.

Parcel A: Sites 19, 41, 43, 59 and 77.
Parcel B: Sites 6, 7, 10, 18, 20, 23-26, 31, 42, 45, 46, 50 and AOCs 60-62.
Parcel C: Sites 27-30, 45, 49, 50, 57, 58 and AOCs 63 and 64.
Parcel D: Sites 8, 9, 16, 17, 22, 32-39, 44, 45, 47, 48, 50, 53, 55 and AOCs 65-71.
Parcel E: Sites 1-5, 11-15, 21, 38-40, 45, 47, 48, 50-52, 54, 56 and AOCs 72-76.
Parcels D and E both include Sites 38, 39, 47 and 48.
All the parcels include Site 45 (Steam Lines) and Site 50 (Storm Drains/ Sewers).

BRAC CLEANUP TEAM - A BRAC Cleanup Team (BCT) was formed in January 1994. The BCT meets every two weeks. The BCT has helped improve communication and partnering among the installation, EPA, and the state. The BCT also has helped expedite cleanup. Small areas of contamination can now be excavated during the investigation process, eliminating the need to revisit the site. The BCT will use Records of Decision (RODs) to streamline the decision-making process. The BRAC Cleanup Plan was prepared in FY94 and is updated regularly.

TREASURE ISLAND NS HUNTERS POINT ANNEX
RELEVANT ISSUES

DOCUMENTS - A basewide Environmental Baseline Survey (EBS) was delayed because the many studies conducted at NSTI Hunters Point showed that there were no Community Environmental Response Facilitation Act (CERFA) clean parcels. In order to speed reuse and transfer, a basewide EBS was completed in May 1996. Site specific EBSs will be conducted in conjunction with a Finding of Suitability to Lease (FOSL) as properties are prepared for leasing. The following property classifications were developed from an evaluation of historical documentation (baseline environmental reports) written during RI/FS activities.

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
1 acres	34 acres	0 acres	53 acres	0 acres	405 acres	443 acres

LEASE/TRANSFER - The final property transfer date has not been determined. Site specific EBSs will be conducted in conjunction with the FOSL/FOST processes as properties are prepared for leasing or transfer.

REUSE - The Reuse Plan was completed in March 1995. A preferred alternative has been approved by the Mayor's Hunters Point Shipyard Citizens' Advisory Committee next and by the City's Board of Supervisors. General reuse expectations are for education, arts, industrial, and maritime use.

FAST TRACK INITIATIVES - Hunters Point Annex has been divided into six parcels. This has allowed the accelerated remediation of one parcel. Parcel A may be transferred in FY97. This parcel was originally scheduled for transfer in FY96, but was delayed due to the National Environmental Policy Act (NEPA) documentation. Other remediation techniques that have accelerated the cleanup include investigation by excavation, early removal actions, and shorter document review periods. Funding appropriations have, and will continue to fall short of the levels needed to maintain an accelerated response action program. The strategy so far has been to use available funds to maximize compliance with the enforceable Federal Facility Agreement (FFA) schedule.

HISTORICAL PROGRESS

FY84

Sites 1-12 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), was completed and identified 12 potentially contaminated sites. Sites 2 and 10 were found not to pose a threat to human health or the environment and no further action was recommended. Site 12 (Bay Sediments), was found to have sediment contaminated with copper, lead, and zinc. No further action was recommended for Site 12 in the IAS based on the determination that the sediment was "best left undisturbed." Removal actions, with no further investigation, were recommended at Sites 4, 7 and 8. Sites 1-3, 5, 6, 9, 10 and 11 were recommended for further investigation.

FY87 - FY90

Sites 1, 4 and 8 - Contaminated soil removals were completed.

Site 11 - Soil removal was complete and the site was capped.

Sites 12-18 - Concurrent with the IAS, the San Francisco District Attorney's Office investigated allegations that a machine shop illegally disposed of hazardous waste at approximately 20 locations during its lease of portions of NSTI Hunters Point. A second PA was completed and Sites 12-18 were identified. The number 12 was re-used at this time and is not the same Site 12 identified in the 1984 IAS. Sites 12, 15 and 17 were recommended for an Remedial Investigation (RI). Sites 16 and 18 were recommended for an SI. The machine shop was indicted for illegal disposal of hazardous waste.

Sites 19-58 - A third PA was completed. Of the forty sites identified (Sites 19-58), Sites 19 and 23-58 went on to an SI and Sites 20, 21 and 22 went directly to an Remedial Investigation/Feasibility Study (RI/FS).

Site 8 - Soil contaminated with the chemical additive PCB was discovered during the repair of an underground utility line in the vicinity of Building 503. A removal action was completed to remove soil containing PCB. Soil was excavated and transported to an off-site disposal facility. The site was included in the RI.

FY91

Site 1 - Began investigation of potential impacts from radiation generated from radium dials disposed of in the landfill.

USTs 1-5 - Underground Storage Tanks (USTs) were removed and some were closed in place. Removal Action Plans and Tank Abandonment Plans were completed for 23 tanks within all 5 sites. The tanks were removed or closed in place.

FY92

Site 2 - A removal action to remove soil contaminated with heavy metals was completed.

Site 6 - Removal action of immediately adjacent soil was completed.

Sites 16 and 18 - An SI was completed. Both sites were recommended for further action.

Sites 6 and 8-10 - Draft RI was completed and found PCBs, lead, zinc and Volatile Organic Compounds (VOCs) in soil and groundwater. A Public Health and Environmental Evaluation was completed. A draft FS was completed and Interim Remedial Actions (IRAs) were proposed for Sites 6, 9 and 10.

Sites 1-3, 6 and 10 - Site Soil Treatment Feasibility Study was completed. The study found that large quantities of contaminated soil will require remediation during the course of RI/FS activities. On-site soil remediation will not be effective for Sites 1 and 2 due to disseminated metals and other contamination dispersed throughout the ground mass.

USTs 1-5 - USTs are being tracked by parcel. Seven additional tanks were identified in Parcel C. Further investigation with no further excavation due to the close proximity of buildings or other structures to the tanks was recommended for 6 tanks. Additional excavation with no further investigation was recommended for one tank.

FY93

Ecological Sampling and Analysis Plan is completed. Field work began. First phase of a three-phased Ecological Risk Assessment (ERA) was completed. The ERA was necessary to determine any potential adverse effects on the biota in the area. The first phase involved the review of existing documentation, performing bioassays and field surveys, and identifying biota.

Site 2 - Removal of PCB-contaminated sludge and a 150,000 gallon tank was completed.

Site 6 - Removal of nine 12,000 gallon tanks and their foundations, one 210,000 gallon tank, and underground piping was completed. In addition, a clay and gravel cap was placed over the site and rainwater runoff was collected and drained to the existing storm drain.

FY95

The Reuse Plan was finalized in March 1995.

A basewide Environmental Baseline Survey was underway. Site specific EBSs will be conducted in conjunction with a Finding of Suitability to Lease (FOSL) as properties are prepared for leasing.

TREASURE ISLAND NS HUNTERS POINT ANNEX

HISTORICAL PROGRESS

Federal Facility Agreement (FFA) schedules were renegotiated in June 1995 and now include schedules for Parcels A and F. Parcel F is the offshore portion of NSTI Hunters Point.
Completed draft RI/FS at Parcel A.
Site 9 - Removal of equipment, sunken baths, above ground structures, foundations, and soil contaminated with zinc and chromate began at the Pickling and Plate Yard. The project team included local residents who were specifically hired and trained to perform this work.
Site 3 - An Engineering Evaluation/Cost Analysis (EE/CA) is underway. A treatability study for chemical/thermal bioremediation in-situ is also underway. The treatability study is part of the removal action and may be used for the final remedy.
Sites 1, 2, 6, 50, 57 and basewide - Removal action activities continued.
UST 1 - This site was determined to be RC.

PROGRESS DURING FISCAL YEAR 1996

FY96

A basewide EBS was completed in May 1996.
The CRP was revised and will be released in early FY97. The release of CRP was delayed due to the establishment of a new RAB in August 1996.
Sites 19, 41, 43, and 59 - RI/FS was completed and these sites were determined to be RC.
Parcel A - A draft and final No Action Record of Decision (ROD) was completed. Parcel A will be transferred in FY97.
Parcel B - A draft RI/FS was completed.
Parcel D - A draft RI/FS was completed.
Parcels B, C, D and E - Removal actions initiated include groundwater plume, storm drains, and exploratory excavation. Remedies considered include groundwater pump and treat, iron curtain, and excavation and disposal.

PLANS FOR FISCAL YEARS 1997 AND 1998

Parcel B - A draft and final ROD will be completed and an RD will be started in FY97.
Parcel C - A draft RI/FS and a draft ROD will be completed in FY97, with final ROD in FY98.
Parcel D - A draft and final ROD will be completed and an RD will be started in FY97.
Parcel E - A draft and final RI/FS will be completed in FY97 and a draft and final ROD in FY98.
Parcels B, C, D and E - All removal actions started in FY96 will be completed in FY97.
Parcels B and D - RDs will be completed in FY98.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	72							
RI / FS		4	37	29				
RD				29	34	1		
RAC					14	21	5	24
RAO								46
IRA			11(11)			1(1)	1(1)	
RC	4	4	1	1	5	4	4	51
Cumulative % RC	5%	11%	12%	14%	20%	26%	31%	100%

TUSTIN MARINE CORPS AIR STATION
TUSTIN, CALIFORNIA

Engineering Field Division/Activity: SWDIV
Major Claimant: CINC
Size: 1,383 Acres
Funding to Date: $37,705,000
Estimated Funding to Complete: $15,600,000

Base Mission: Provided services and materials to support the operations of the 3rd Marine Aircraft Wing; provided operational training and weather support; operated helicopter outlying field and air traffic control facility.

Contaminants: Benzene, dichloroethane, ethylbenzene, naphthalene, perchloroethene, PCBs, toluene, xylene, trichloroethene.

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	12	High:	3	Not Evaluated:	1
RCRA Corrective Action:	16	Medium:	10	Not Required:	0
RCRA UST:	0	Low:	14		
Total Sites:	28				

BRAC II

Sites Response Complete: 0

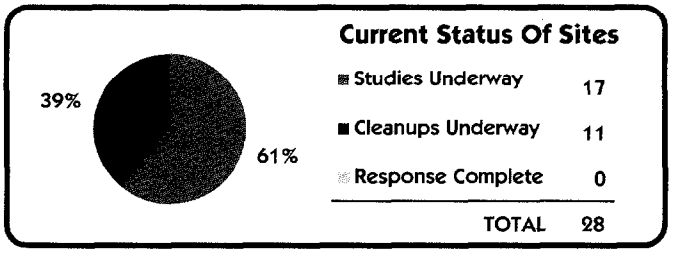
EXECUTIVE SUMMARY

Tustin Marine Corps Air Station (MCAS) is located in southern California near the center of Orange County. The installation is approximately 40 miles south of downtown Los Angeles and approximately 100 miles north of the California/Mexico border. Operations such as aircraft maintenance and servicing, firefighting training, and storage of petroleum products have been the biggest contributors to sources of contamination. Contaminants consist of volatile organic compounds and petroleum products primarily affecting groundwater and soil.

The installation occupies approximately 1,383 acres of land, of which approximately 30 percent is currently used for agriculture. Within the last 20 years, the area surrounding Tustin MCAS has transformed from primarily agricultural land to a residential and light manufacturing neighborhood. Both surface water and groundwater are of concern in the Tustin MCAS area. Five miles downstream from the station, the Upper Newport Bay Ecological Reserve encompasses 752 acres of coastal wetlands set aside for wildlife. In addition, a 300 acre duck pond is located between Tustin MCAS and the Upper Newport Bay. Groundwater quality is of concern as Tustin MCAS and various nearby communities obtain their potable and agricultural water supplies from wells in the middle aquifer.

A Restoration Advisory Board (RAB) was formed in FY94 and has 30 members which meet on a monthly basis. The Community Relations Plan (CRP) was revised in August 1995. An information repository has been established at the University of Irvine at California (UC Irvine) and four fact sheets have been issued.

Currently, 17 sites are in the study phase. All 12 CERCLA sites are in the Extended Site Inspection (ESI) or Remedial Investigation/Feasibility Study (RI/FS) phases. Two operational RCRA sites, Sites 23 and 24, are covered under a part B permit, and were not investigated under the RFA. All USTs are covered in the compliance program.



To accelerate cleanup, a thermal desorption process was selected for on-site treatment of contaminated soils. An on-site remediation project using the process was initiated in July 1995 at the Fuel Farm to accelerate the cleanup schedule for the Fuel Farm to meet the reuse priority. The fuel farm, a portion of Site 30, has been successfully remediated. The process will also be used on petroleum contaminated soils at similar site areas identified during on-going site characterization.

Tustin MCAS was recommended for closure by the BRAC II commission in 1991. Operations and activities at Tustin MCAS are expected to cease by June 1999. Due to the lack of definition of the Tustin groundwater characteristics, the California Environmental Protection Agency (Cal-EPA) and EPA did not concur with the Community Environmental Response Facilitation Act (CERFA) determination. This resulted in classifying the entire base property as Type 7. Without consideration of the groundwater, the bulk of the property is Type 1, with a few acres that can be classified under Types 5 and 6. Steps have been taken to expedite the groundwater characterization. The BRAC Cleanup Team (BCT) is taking steps to negotiate with the Local Redevelopment Authority (LRA) to determine the priority for the reuse parcels without compromising the mission requirements nor the cleanup activities. Draft Findings of Suitability to Transfer (FOSTs) were prepared for eight parcels in FY96.

TUSTIN MCAS
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - When the installation was first developed in 1942, the area was found to be fairly marshy. The area was backfilled and regraded and an extensive surface and subsurface drainage network was installed. The drainage network is still in use today, providing runoff control at the installation. Storm drainage ditches discharge to Peter's Canyon Channel on the east side which also receives runoff from Barranca Channel on the southwest side of the base. Peter's Canyon Channel merges with San Diego Creek which feeds the Upper Newport Bay Ecological Reserve, a coastal wetlands area. Wells within one mile of Tustin MCAS are primarily used for agricultural purposes, although the city has a drinking water well one and a half miles away and the Irvine Ranch Water District has two deep drinking water wells within one mile north of Tustin.

The installation lies in the Irvine groundwater basin, a subbasin of the Los Angeles groundwater basin. A shallow-deeper dual aquifer system has been identified beneath Tustin MCAS. The shallow groundwater flows generally in a southward direction in areas west of Peters Canyon Channel and to the west in the remainder of the base east of Peters Canyon Channel. The deeper or regional aquifer is believed to be 70-100 feet beneath Tustin MCAS. Groundwater levels in the deeper aquifer are generally lower than in the shallow aquifer due to extensive groundwater extraction from the deeper aquifer. The flow in the regional aquifer is to the west-southwest. Groundwater extraction beneath Tustin MCAS is currently from the regional aquifer through one well operated by the on-site farmer and is used for irrigation only. Shallow groundwater beneath the installation is currently not extracted for any beneficial use due to its high Total Dissolved Solids (TDS) content.

NATURAL RESOURCES - Two regional species listed as either federally threatened or potentially threatened are present in the vicinity of Tustin MCAS. The California gnatcatcher is a threatened species. In addition, the California least tern is an endangered species. The Upper Newport Bay Ecological Reserve, into which Peters Canyon Channel flows, was established in 1975 to preserve and enhance the saltwater marsh ecosystem. Eight species classified by California as either rare or endangered are dependent on the Upper Newport Bay. A series of marshy wildlife refuges are located immediately adjacent to San Diego Creek. Many plant and animal species settle in this wildlife refuge.

RISK - Baseline Human Health Risk Assessments and Ecological Risk Assessments are being conducted on a site by site basis as part of the RI/FS. Three sites were ranked as high relative risk in the DOD Relative Risk Ranking System. The high ranking was due to contaminated groundwater for six of the sites and contaminated soil for one of the sites.

REGULATORY ISSUES

LEGAL AGREEMENTS - There is a Federal Facility Site Remediation Agreement (FFSRA) currently under negotiation which is expected to be signed in early 1997. A master schedule for future CERCLA-related work has been developed to complete site remediation as expeditiously as possible. After the FFSRA negotiations are complete, the master schedule will become the basis for the enforceable project milestones schedule included as Appendix A to the FFSRA.

PARTNERING - The BRAC Cleanup Team (BCT) has agreed to use "team building" tools, which include frequent technical discussions, weekly telephone calls and an open door policy on communication among the various entities. Project team members are partners with the BCT in the development of the cleanup plan.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in August 1993. A Restoration Advisory Board (RAB) was formed in FY94 and divided into ten subcommittees to address various Areas of Concern (AOC) or interest. There are approximately 30 members on the RAB, which meets on a bi-monthly basis. All RAB meetings are open to the public. Technical presentations to assist members in understanding complex environmental issues are given as needed.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was originally prepared in November 1990 for Tustin MCAS. In August 1995, the CRP was revised to reflect the community's concerns following the announcement that Tustin MCAS would be closing. Four fact sheets have been issued.

INFORMATION REPOSITORY - An information repository was established at the Main Library of the University of California at Irvine. It contains documents related to the Installation Restoration Program (IRP) process including the Administrative Record, work plans, technical reports and community relations materials, including the CRP, fact sheets, news releases and RAB meeting materials.

BASE REALIGNMENT AND CLOSURE

BRAC - Tustin MCAS was identified for closure in the Defense Base Closure and Realignment Act of 1990 (PL101-510) Base Realignment and Closure (BRAC II). Operations and activities performed at the installation are currently being discontinued or transferred to other Marine Corps installations. Operations and activities are expected to cease sometime between June 1997 and June 1999. Investigation and remediation of hazardous waste sites at Tustin MCAS will continue. The communities surrounding Tustin MCAS are already considering potential uses for the land that will be available when the military leaves. They want the environmental restoration process to proceed as quickly as possible so that they will not be hampered in developing the land to suit community needs.

BRAC CLEANUP TEAM - The BRAC Cleanup Team (BCT) was formed in FY93 and is composed of members from Tustin MCAS, EPA, Cal-EPA/DTSC, El Toro MCAS, Naval Facilities Engineering Command (NAVFAC) Southwest Division (SWDIV), City of Tustin and Regional Water Quality Control Board Santa Ana. The BCT meets regularly to address issues regarding cleanup at the installation and to expedite the process.

DOCUMENTS - The BRAC Cleanup Plan (BCP) was last updated in March 1996. The Environmental Baseline Survey (EBS) was published in April 1994. Environmental Condition of Property (ECP) was completed and the findings are summarized in the following table.

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
1,285 acres	4 acres	11 acres	1 acres	14 acres	67 acres	0 acres

Due to the lack of definition of the Tustin groundwater characteristics, the Cal-EPA and EPA did not concur with the CERFA determination. This resulted in classifying the entire base property as ECP Category 7. Steps have been taken to characterize the groundwater. The BRAC Cleanup Team is taking steps to negotiate with the LRA to determine the priority for the reuse parcels without compromising the mission requirements nor the cleanup efforts.

TUSTIN MCAS
RELEVANT ISSUES

LEASE/TRANSFER - Since identification of uncontaminated or clean parcels has not yet been finalized, activities for Findings of Suitability to Transfer (FOST) or Findings of Suitability to Lease (FOSL) have not been initiated. Draft FOSTs were prepared for eight parcels in FY96, with additional transfers planned for 1997, 1998 and 1999.

REUSE - A land reuse plan has been developed and is expected to be final in October 1996. A draft document was issued in July 1996. The document will undergo a public comment period during the fall of 1996.

FAST TRACK INITIATIVES - Major steps taken to expedite cleanup include: Initiation of cleanup of Former Fuel Farm Area; implementation of a single phase RI at seven IRP sites; implementation of a base wide groundwater RI; using Expedited Site Characterization as developed by Argonne National Lab; Mobilization of an on-site Thermal Desorption Unit and identification of early removal actions at three IRP sites and multiple AOCs.

HISTORICAL PROGRESS

FY84

Site 1 - An Interim Remedial Action (IRA) was completed at Moffett Trenches and Crash Crew Pits in 1984 that involved sandbagging the Peters Canyon Channel to prevent contaminated groundwater from seeping into the channel, installing an extraction well and an oil/water separator, and excavating and backfilling the crash crew burn pits with clean sand.

FY85

Sites 1-14 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA) was completed in September 1985 and identified 14 potentially contaminated sites at Tustin MCAS.
Site 1 - In May 1985, the Southern Area Regional Water Quality Control Board (SARWQCB) issued a Cleanup and Abatement Order to stop seepage and cleanup contaminated soil at Moffett Trenches and Crash Crew Pits. A Confirmation Study, Verification Phase Report (equivalent to a Site Inspection (SI)) was completed in July 1985 and was revised in September 1986. The study consisted of interpretation of new and existing data that indicated that groundwater and soil were contaminated with petroleum products and benzene, and the organic solvents trichlorethylene (TCE) and dichloroethane (DCA).

HISTORICAL PROGRESS

FY86

Site 1 - A removal action involving the excavation and disposal of contaminated soil at Moffett Trenches and Crash Crew Pits was completed in April 1986.

FY87

Site 16 - In May 1987, fuel was discovered in two holes excavated adjacent to two aboveground storage tanks at the Fuel Farm Area (Site 16). The tanks were removed and the soil was confirmed to be contaminated with petroleum hydrocarbons.

FY88

Site 1 - An IRA involving the installation of a gunite concrete slurry wall and the construction of a french drain was completed in July 1988 at Moffett Trenches and Crash Crew Pits.
Site 16 - A PA was completed in July 1988 for the Fuel Farm Area. The investigation found the following petroleum products: benzene, ethyl benzene, toluene and xylene in the groundwater.

FY91

RCRA Sites - An Addendum to the PA (the IAS), completed in February 1991, identified 14 additional potential sites (all 14 of these sites are being studied under RCRA).
Site 1 - An extended SI was completed in February 1991 for Moffett Trenches and Crash Crew Pits.

FY92

Site 16 - A removal action was completed in November 1991 for the Fuel Farm Area which consisted of removing 39 tanks.
RCRA Sites - Phase I of RCRA Facility Assessment (RFA) which consisted of a Preliminary Review was completed in March 1992.

FY93

Site 16 - An ESI was completed in September 1993 for the Fuel Farm Area.
RCRA Sites - Phase II of an RFA, which consisted of a visual SI, was completed in November 1992. Of the 246 Solid Waste Management Units (SWMUs) visited, 58 SWMUs were recommended for Phase III, a RCRA sampling visit. An aerial photography review was completed in December 1992, 11 Areas of Concern (AOCs) were identified and recommended for further investigation.

FY95

Sites 1, 3, 5, 7, 12, 13 and 35 - An RI/FS was initiated.
Sites 17-26 and 36-40 (RCRA sites) - Phase III RFA was initiated.
Sites 2, 6, 8, 9 and 11 - An ESI was initiated.

PROGRESS DURING FISCAL YEAR 1996

FY96

OU1, OU2 and OU3 - Completed RI/FS field work, issued draft RI/FS. OU1 covers basewide groundwater and is designated Site 35. OU2 covers soil at Sites 3, 5, 12 ,13 and 16. OU3 covers Site 1 soil and groundwater.
Sites 17-26 and 36-40 - Completed RFA field work, issued draft RFA, complete phase III of RFA.
Site 1 - Water Board Cleanup and Abatement Order (Issued 1985) rescinded in May 1996.
Sites 7 and 16 - Transferred to the Leaking Underground Fuel Tank (LUFT) program
BRAC - Environmental work to clear 6 parcels for FY96 transfer has been completed. Parcel specific EBS, FOSTs and other supporting documentation are being developed.
Draft FOSTs were prepared for eight parcels
Eight parcels were made environmentally ready for disposal.
Land reuse plan submitted by City of Tustin to Department of Housing and Urban Development (HUD).

TUSTIN MCAS
PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 2, 7, 8, 9 and 11 - ESI final.
Sites 1, 3, 5, 12 ,13, 16 and 35 - Complete RI/FS.
Sites 2, 5, 6, 8, 9, 12 and 13 - Complete RD.
Sites 7 and 17 - Complete RFA.
Site 35 - Complete RD.
Site 39 - Complete RFI, and RD.
Sites 2, 6 and 8 - Complete IRAs.
Site 1 - Complete RA.
Sites 2, 6, 8 and 15 - Response Complete.
Sites 1, 3, 5, 12, 13 and 35 - Carry 3 RODs through to signature and begin installation of remedial actions per RODs.
Sites 7 and 27-34 - Continue LUFT program cleanup projects.
Sites 17-26 and 36-40 - Continue RCRA cleanup and closure.

FY98

Site 3 - Complete RD.
Sites 1, 3 and 5 - Complete IRA.
Site 12 - Complete RA and Response Complete.
Site 6 - Response Complete.
Sites 17 and 18 - Complete Design.
Sites 18 and 35 - Complete Construction Measures Implementation.
Site 39 - Response Complete.

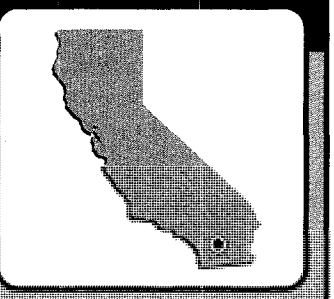
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	7		5					
RI / FS			7					
RD			7	1				2
RAC			1	1	1	1		1
RAO								2
IRA	2(2)		3(3)	3(4)	1(1)	2(2)		
RC			3	2	1	3		3
Cumulative % RC	0%	0%	25%	42%	50%	75%	75%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA			2					
RFI / CMS			1					2
DES			2	2				10
CMI				2	1			9
CMO								1
IRA					2(2)			
RC			1	1	2			12
Cumulative % RC	0%	0%	6%	13%	25%	25%	25%	100%

TWENTYNINE PALMS MARINE CORPS AIR TO GROUND COMBAT CENTER

TWENTYNINE PALMS, CALIFORNIA



Engineering Field Division/Activity: SWDIV

Major Claimant: CMC

Size: 595,387 Acres

Funding to Date: $28,828,000

Estimated Funding to Complete: $1,074,000

Base Mission: Provides support to Marine Corps Air Ground Task Forces and Marine Corps tenant activities; administers the Marine Corps Air Ground Combined Arms Training Program; provides training in communications and electronics.

Contaminants: Heavy metals, POLs, volatile and semi-volatile organic compounds

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	54	High:	0	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	1	Not Required:	45
RCRA UST:	9	Low:	17		
Total Sites:	63				

Sites Response Complete: 34

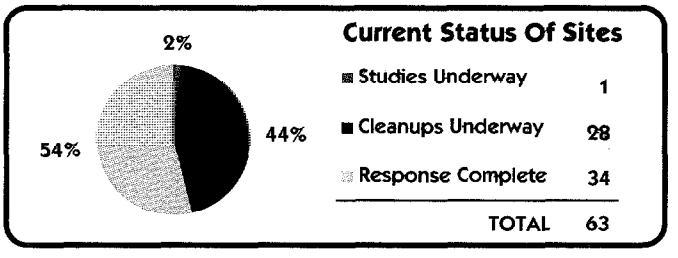
EXECUTIVE SUMMARY

Marine Corps Air to Ground Combat Center (MCAGCC) Twentynine Palms is located five miles north of Twentynine Palms, in San Bernardino County, California. The MCAGCC provides logistic and administrative support as well as training to Fleet Marine Air and Ground Task Forces. Primary operations that contributed to contaminated sites at the facility were vehicle, aircraft, and communications and electronics equipment maintenance. Current operations include pollution prevention technologies to prevent further contamination. Petroleum products have been disposed of at various sites around the activity. This is of concern as contaminants can migrate to usable water supplies. A Cease and Desist Order was issued by the California Regional Water Quality Control Board (CRWQCB) for Site 18 (Crash Training Pit No. 4) in August 1987 and January 1990.

The lands surrounding MCAGCC Twentynine Palms are mostly agricultural and rural residential areas interspersed with some recreational reserves. Contaminants can migrate to usable groundwater supplies at MCAGCC Twentynine Palms through vertical subsurface percolation. Groundwater is the only source of water for public water supply systems at the station and the nearby city.

Currently there are 63 Installation Restoration Sites at MCAGCC Twentynine Palms. 54 sites are designated as CERCLA sites. SI Reports for forty-seven sites were finalized in FY96. The SI Report recommended No Further Action determinations at 30 of these sites, nine of which have received regulatory concurrence. Three sites have completed the cleanup phase and two sites are undergoing cleanup with closeout scheduled for FY97. Bioremediation is ongoing at 15 sites with cleanup completion expected within five years.

A Technical Review Committee (TRC) was formed and information repositories were established in two locations in November 1991. A Community Relations Plan (CRP) was completed in January 1994.



MCAGCC Twentynine Palms was initially designated as a Base Realignment and Closure (BRAC) receiving facility. However, the Department of the Navy (DON) later decided to move the activities it was to receive to another facility. MCAGCC Twentynine Palms is one of five Department of the Navy installations participating in a Pilot Expedited Environmental Cleanup Program (PEECP). In implementation of this program, the station has been emphasizing removal actions to accomplish cleanups concurrently with investigations or a "remediate as you investigate" strategy. In the investigation of large volume fuel spills, the Marine Corps has been able to coordinate the use of borings installed for investigative purposes, which otherwise would have been backfilled at the study's completion, for installation of vent wells and soil gas monitoring points for pilot studies and full scale treatment. This has resulted in a savings in excess of $1 million and at least one year reduction in the cleanup schedule. This approach is also being utilized on tank and other fuel spill investigations. A full scale bioremediation facility was completed for treatment of non-hazardous petroleum-contaminated soil generated as a result of cleanup activities at sites. Regulatory agencies have approved remediated soil for use as landfill cover or roadbed fill.

MCAGCC Twentynine Palms was selected by the Department of the Navy as one of five installations to participate in a Pilot Expedited Environmental Cleanup Program (PEECP). The program was established by Senate Appropriations Bill 102-154 and was initiated in May 1992. The DON's plans for expediting cleanup projects include creative uses of the CERCLA process, such as an emphasis on removal actions to accomplish cleanups concurrently with investigations; variations of the CERCLA process, such as the use of "Observational" and "Data Quality Objective" (DQO) approaches; expedited document reviews; and greater interaction with regulatory agencies. The program encourages the use of expedited contracts, innovative technologies, and innovative approaches to solving problems. Procedures and technologies successfully implemented as a result of this program will be applied to future investigations and remediations.

TWENTYNINE PALMS MCAGCC
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Both surface water and groundwater contamination are of concern in the MCAGCC Twentynine Palms area. There are two groundwater aquifers within MCAGCC Twentynine palms. They are separated by a fault which impedes movement of groundwater between the aquifers. Water supplies for the activity are extracted from wells in the Surprise Springs area aquifer. Surface water drainages in the area of Twentynine Palms, while normally dry, can become a pathway for surface migration of contaminants during the infrequent but intense thunderstorms which occur several times a year. Subsurface percolation of these surface waters and direct precipitation, containing potential contaminants, can migrate into the water table (which is more that 200 feet below the surface in most areas, but as shallow as five feet beneath dry lake beds). Contaminants reaching the water table can flow horizontally downgradient (south) to various wells using the aquifer as a domestic water-supply source (0-5 miles south of MCAGCC Twentynine Palms). Groundwater is the only source of water for public water supply systems at the activity and the nearby city. Therefore, groundwater contamination would be a potential threat to human health.

NATURAL RESOURCES - The native flora and fauna at the activity are typical of a North American desert community. The predominant plant species are the creosote bush and desert annuals. Areas most affected by a negative impact on the plant communities are the Surprise Springs and Wood Canyon areas. The vegetation has diminished somewhat due to soil compaction caused by vehicular movement. The primary types of wildlife are rodents, reptiles, and birds. Larger mammals are only found on station occasionally due to the lack of water sites. Rare, endangered, or threatened species in this area include four species of animals. Indirect contact with contaminants through the food chain is a potential threat to these species.

RISK - Baseline Human Health Risk Assessments and Ecological Risk Assessments were conducted as part of the Site Inspections (SIs). In the Department of Defense (DOD) Relative Risk Ranking System one site was ranked as a medium relative risk, 17 sites received a low relative risk ranking and no sites were given a high ranking. The main concern for the ranked sites is contaminated groundwater. Analytical data indicates off-site migration of contaminated groundwater in the MCAGCC Twentynine Palms mainside area aquifer. This groundwater is rated as available for potential beneficial use by the State Water Board. However, the mainside area groundwater aquifer is not currently used for human consumption. Since there is no groundwater migration between the unused mainside aquifer and the domestic water supply source of the Surprise Springs aquifer, there is no risk to human health.

REGULATORY ISSUES

LEGAL AGREEMENTS - A RCRA Facility Assessment (RFA) was initiated in April 1991 and terminated in July 1992 when the facility decided not to apply for a RCRA Part B Permit.

The California Regional Water Quality Control Board (CRWQCB), Colorado River Basin Region, issued a Cease and Desist Order for Crash Training Pit No. 4 (Site 18) in August 1987 and January 1990. Bioventing was initiated at the site in December 1993 and is expected to be completed in FY00. No further action is expected at the site.

PARTNERING - To facilitate Environmental Program efforts at MCAGCC Twentynine Palms, Quarterly meetings were held which are attended by all involved parties. Due to the reduction of work remaining at the activity, meetings are now held on an as needed basis. There is no Memorandum of Understanding or FFSRA between the Marine Corps, Department of the Navy (DON), Cal-EPA Department of Toxic Substances Control (DTSC), and the CRWQCB..

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Restoration Advisory Board (RAB) has not been established for this base. Marine Corps base will establish a RAB if the public indicates an interest in establishing one. However, a Technical Review Committee (TRC) was formed in November 1991 and meets once a year.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was completed in January 1994.

INFORMATION REPOSITORY - An Information Repository and an Administrative Record were established in November 1991. Information Repositories were established at two locations: the Twentynine Palms Public Library and the Base Library. Information from the Administrative Record is contained in the information repositories.

BASE REALIGNMENT AND CLOSURE

At one time, the DON had plans to move some activities from Marine Corps Air Station (MCAS) Tustin, which was being closed under the Base Realignment and Closure (BRAC) program, to MCAGCC Twentynine Palms. The SIs for Sites 3-5, 8, 10, 17-20, 22 and 25-27 at Twentynine Palms were funded with BRAC II funds as these sites needed to be investigated and remediated before MCAS Tustin activities could be incorporated. Since the SIs were funded, however, DON decided to move the MCAS Tustin activities to Naval Air Station (NAS) Miramar instead. Therefore, Navy environmental restoration (ER,N) funds will be used for any future work at these sites.

HISTORICAL PROGRESS

FY86

Sites 1-20 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), completed in October 1985, identified 20 potentially contaminated sites at MCAGCC Twentynine Palms. Thirteen sites (Sites 1-6, 9, 12, 13 and 17-20) were found not to pose a threat to human health or the environment, and no further action was recommended. Site 7 was recommended for a removal action. Six sites (Sites 8, 10, 11 and 14-16) were recommended for further investigation. Based on EPA review comments of the IAS, four sites (Sites 1, 7, 18 and 19) were later added to the Site Investigation (SI).

Sites 21-54 - Thirty-four potentially contaminated sites at MCAGCC Twentynine Palms were identified after the IAS. Based on discussions with regulatory agencies and on the Department of the Navy's (DON's) internal review, all 34 sites were recommended for further investigation.

FY88

Sites 1-22, 25-27, 29, 30, 33-36 and 39-54 - A Confirmation Study (CS), Verification Step Report (equivalent to an SI), was completed in FY88. The study recommended further investigation for all sites. Further investigation was scheduled for FY93.

FY91

USTs 1-9 - A Site Assessment Report Phase I, for 15 tank locations at MCAGCC Twentynine Palms was completed in September 1991. Nine of the fifteen locations (Underground Storage Tanks 1-9) were recommended for additional investigation and remediation before a request for closure. The nine UST locations were identified as having petroleum products contamination at the following locations: one tank at Building 1851 (UST

TWENTYNINE PALMS MCAGCC
HISTORICAL PROGRESS

1); four tanks at Building 1630 (UST 2); four tanks at Building 1573 (UST 3); one tank at Building 1559 (UST 4); two tanks at Building 1440 (UST 5); four tanks at Building 1420 (UST 6); two tanks at Building 1400 (UST 7); six tanks at Building 1138 Gas Station (UST 8); and one tank at Building 1065 (UST 9).

FY92

Sites 31, 32, 37 and 38 - SI phases were completed.

FY93

Sites 1-54 - SI initiated.

FY94

Site 16 - An SI was completed.
USTs 1-9 - A Remedial Investigation for bioventing all nine UST sites was completed.
Sites 17 and 18 - Removal actions consisting of bioventing were initiated and will be completed in FY00.
UST 8 - Corrective measures initiated and will be completed in FY00.

FY95

Sites 2 and 3 - Removal actions consisting of bioventing were ongoing.
Site 14 - Two Interim Remedial Actions (IRAs) were completed. These included controlling access to the site and adding drainage controls.
USTs 1-9 - Investigations were completed at all nine UST sites.
USTs 2, 3, 5, 6 and 8 - Corrective measures consisting of bioventing were initiated and will be completed in FY00.
USTs 7 and 9 - Corrective measures were initiated at UST 7 (bioventing) and UST 9 (bioheap) and will be completed in FY98.

PROGRESS DURING FISCAL YEAR 1996

FY96

Sites 17, 10-17, 19-29, 31, 33-36, 39-54 - SIs were completed.
Sites 19 and 23 - Competed IRAs.
Sites 4, 10-15, 19, 21, 23, 27-29, 31, 34-36 and 39-51 - Response Complete.
Sites 8, 22 and 54 - Cleanup completed.
UST 4 - Completed IRA and Corrective Measure Implementation.
USTs 5 and 6 - Completed Corrective Measure Operation.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Site 22 - Complete RI/FS.
Sites 8 and 21 - Complete IRAs.
Sites 5 and 25 - Complete RAC.
Site 25 - Complete Remedial Action Operation (RAO) and determine Response Complete.
Site 52 - Determine Response Complete.

FY98

Sites 5 and 6 - Complete RAOs.
Sites 5, 7 and 8 - Complete one IRA at Site 5 and two IRAs at both Sites 7 and 8.
Sites 5, 7 and 8 - Determine Response Complete.
USTs 4 and 7 - Complete IRAs.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	7	47						
RI / FS			1					
RD	1							7
RAC		3	2		1	1		4
RAO			1	2			4	2
IRA	1(2)	2(2)	2(2)	3(5)		4(4)	1(1)	13(16)
RC	4	30	2	3			2	13
Cumulative % RC	7%	63%	67%	72%	72%	72%	76%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	9							
CAP								
DES	8							1
IMP	1	1				2		2
IMO		2				1		3
IRA		1(1)		2(2)	1(1)	5(5)		8(8)
RC					1			8
Cumulative % RC	0%	0%	0%	0%	11%	11%	11%	100%

WARNER SPRINGS SURVIVAL, EVASION, RESISTANCE AND ESCAPE CAMP
WARNER SPRINGS, CALIFORNIA

Engineering Field Division/Activity: SWDIV/ENV

Major Claimant: COMPACNI

Size: 80 Acres

Funding to Date: $293,000

Estimated Funding to Complete: $1,070,000

Base Mission: Provides training in survival, evasion, resistance and escape for Pacific Fleet Naval Aviators (AIRPAC) and other personnel.

Contaminants: Motor oil, lubricants, solvents, paint, ethylene glycol, hydraulic fluid, batteries, used rags and household rubbish (lead and arsenic).

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:	0
Low:	1		

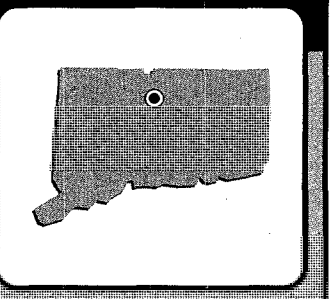
Sites Response Complete: 0

PROGRESS AND PLANS

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

BLOOMFIELD NAVAL WEAPONS INDUSTRIAL RESERVE PLANT

BLOOMFIELD, CONNECTICUT



Engineering Field Division/Activity: NEWNAVY

Major Claimant: COMNAVAIRSYSCOM

Size: 65 Acres

Funding to Date: $[illegible]

Estimated Funding to Complete: $[illegible]

Base Mission: Design, test and manufacture helicopter and aerospace products; test and evaluate helicopters

Contaminants: Solvents, acids, PCBs, base, heavy metals, PCBs

Number of Sites:

CERCLA:	8
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	8

Relative Risk Ranking of Sites:

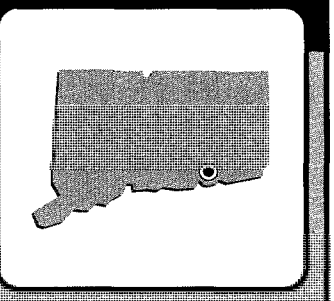
High:	5	Not Evaluated:	0
Medium:	2	Not Required:	0
Low:	1		

Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	7							
RI / FS						1		7
RD							1	7
RAC								8
RAO								6
IRA								
RC								8
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

EAST LYME NAVAL UNDERWATER SYSTEMS CENTER
EAST LYME, CONNECTICUT



Engineering Field Division/Activity: NORTHDIV

Major Claimant: COMNAVSEASYSCOM

Size: 87 Acres

Funding to Date: $1,795,000

Estimated Funding to Complete: $1,714,000

Base Mission: Provides Research, Development, Test and Evaluation (RDT&E) services for submarines

Contaminants: Varies

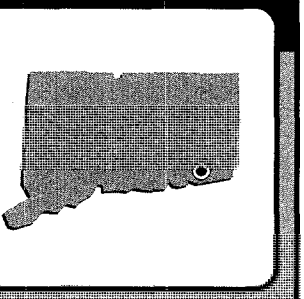
Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	1				
RCRA Corrective Action:	0	High:	1	Not Evaluated:	0
RCRA UST:	6	Medium:	0	Not Required:	0
Total Sites:	7	Low:	0		

Sites Response Complete: 0

PROGRESS AND PLANS

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

NEW LONDON NAVAL SUBMARINE BASE
GROTON, CONNECTICUT



Engineering Field Division/Activity: NORTHDIV
Major Claimant: COMLANTFLT
Size: 547 Acres
Funding to Date: $21,023,000
Estimated Funding to Complete: $44,447,000

Base Mission: Homeports submarines; submarine intermediate maintenance and repairs; submarine training; submarine medical research.
Contaminants: Construction debris, fuel oils, incinerator ash, PCBs, pesticides, solvents, acids

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	22	High:	15	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	5	Not Required:	4
RCRA UST:	5	Low:	3		
Total Sites:	27				

NPL

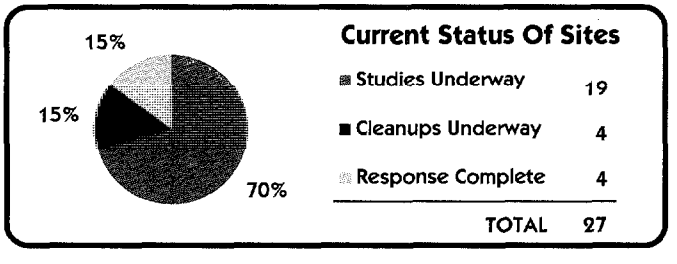
Sites Response Complete: 4

EXECUTIVE SUMMARY

New London NSB is located primarily in the town of Groton and partially in the town of Ledyard, Connecticut. The base performs services to the fleet including homeporting of submarines, maintenance and repair of submarines, submarine training, and medical care and research in the field of submarine medicine. The base also has areas used for housing and community support.

NSB is located along the eastern bank of the Thames River and geographically has a hilly upland area with swamps and rocky ledges, and a lower area that is an old river terrace. All surface drainage and groundwater flow is into the Thames River which eventually discharges into Long Island Sound. The Thames River is a tidal estuary and wetlands. Eighty acres of wetlands is on the NSB and has visible evidence of contamination. This area may be habitat for rare, threatened, or endangered species. Immediately adjacent to the north of NSB is undeveloped land with scattered residential use. Further north, the land is predominantly residential. Almost the entire eastern boundary of NSB is along Route 12, a major north/south arterial highway. East of Route 12 there is undeveloped land with scattered residential use. To the northeast of Route 12 there is a mixture of commercial, residential, and industrial uses, as well as wetlands. To the southwest of Route 12 are acres of protected wetlands. Crystal Lake Road runs along the southern boundary of NSB. The land south of NSB is primarily residential and commercial with recreational and open space areas.

Drinking water supplies come from upgradient reservoirs. The main contaminant migration pathways are groundwater and surface water directly going to the Thames River. Receptors are human and ecological. NSB was placed on the National Priorities List (NPL) due to pesticide contamination in soil and groundwater at Site 2 (Area A Landfill) which is adjacent to a large wetland. Materials disposed of at the landfill include scrap wood, metal, waste chemicals, waste acid, and drums containing solvents. Transformers and electrical switches were observed on the concrete pad built for industrial waste storage. Based on analysis of the soils, it has been determined that they could pose a threat to workers at the landfill. In FY93, a fence was installed at the landfill and downstream water courses to prevent people from being exposed to contaminants or having any direct contact with contaminated surface water and sediments in these areas. Even though the area is fenced off and access is restricted, human and ecological receptors are still present. The landfill at Site 2 will be capped in FY97 to prevent exposure from direct contact.



Other contaminated sites at NSB include storage areas, disposal areas, Underground Storage Tanks (USTs), aboveground storage tanks, and fuel lines. USTs currently in use at Navy Exchange service stations on NSB were recently upgraded with leak detection equipment. Other pollution prevention technologies are in place to prevent further contamination. A Federal Facility Agreement (FFA) between the Department of the Navy (DON), the EPA and the State of Connecticut was signed in January 1995.

A Technical Review Committee (TRC) was formed in 1989. In FY94, the TRC was converted to a Restoration Advisory Board (RAB) and the first formal RAB meeting was held. The RAB now meets quarterly. The Community Relations Plan (CRP) was completed in January 1994. Information Repositories, containing copies of the Administrative Record documents, are located in Groton and Ledyard, and at the New London NSB.

There are 27 IR sites, 22 CERCLA and 5 RCRA UST sites. At the end of FY96, the 19 CERCLA sites at NSB were in the study phase. Four sites are in the cleanup phase. Four CERCLA sites are Response Complete (RC).

Several removal actions and Interim Remedial Actions (IRAs) have been completed. In FY91, a removal action at Site 8 (Goss Cove Landfill) consisted of removing and disposing of 19 gas cylinders that were uncovered during the excavation of a utility trench. In FY94, a removal action at Site 6 consisted of removing lead and soil contaminated with the chemical additive PCB, followed by capping. A removal action at Site 15 consisted of removing lead-contaminated soil. In FY95, at Site 9, a removal action consisted of removing oil contaminated with the chemical additive PCB, sludge, and water from a waste oil tank, cleaning the tank and abandoning-in-place (filling with clean sand).

The Navy used an innovative technology to solidify and stabilize the lead-contaminated solids at Site 17 in FY94. A solidifying mixture of Portland

NEW LONDON NSB
EXECUTIVE SUMMARY

Cement, mono-ammonium phosphate, and water was mixed with the lead-contaminated soil and achieved the treatment objectives. Another innovative technology, air sparging is in operation at NSB. Remedial Action (RA) began in FY95 at USTs 1 and 2 to install an air sparging/soil vapor extraction system to remove gasoline from the subsurface and bioremediate less volatile (diesel) fuels. The air sparging system is expected to operate for three years.

At the end of FY96, RI/FSs were completed for sites 1, 2 and 4. A Remedial Design was completed for Site 2. Site 17 completed a IRA and Site 19 was Response Complete. UST 1, 2 and 4 completed a Corrective Action Measure. UST 1 also completed an IRA. UST 4 is Response Complete.

RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - New London NSB is situated along the eastern bank of the Thames River. All surface drainage from NSB is into the river. Surface runoff from and storm drainage is directly into the river. Streams which receive drainage from areas of NSB also discharge directly into the river. Groundwater is generally within a depth of 10 feet. In the lower base, groundwater is often within two or three feet of the surface. Groundwater from NSB discharges into the Thames River. NSB received its water supply from the city of Groton, which utilizes a series of reservoirs. These reservoirs all lie in watersheds separate from NSB.

NATURAL RESOURCES - Tons of fish and shellfish are privately harvested annually from the Thames River for human consumption. The majority of species are taken from the river below NSB. The most important and commonly caught species is the winter flounder, which inhabits the river year-round. A commercial fishery for eels is in this area. American Shad, Whiting and Blueback Herring may be present in numbers sufficient to allow commercial harvesting in the future.

RISK - A baseline ecological risk assessment is being conducted as part of the Phase II Remedial Investigation (RI). For the DOD Relative Risk Ranking System, 15 sites at New London NSB were ranked high relative risk, primarily because of groundwater and surface water contamination. Receptors are human and ecological. Five sites received medium-risk rankings, and three received low-risk rankings.

One of the high risk sites, Site 2 (Area A Landfill), is adjacent to wetlands. Materials disposed of at the landfill include scrap wood, metal, waste chemicals, waste acid, and drums containing solvents. Transformers and electrical switches were observed on the concrete pad built for industrial waste storage. Based on analysis of the soils, it has been determined that they could pose a threat to workers at the landfill. The landfill will be capped in FY97. Even though the area is fenced off and access is restricted, human and ecological receptors are still present.

At Site 3, another high risk site, contaminants of concern include the pesticides DDT, DDE, and DDD. An Interim Remedial Action (IRA) will be completed in FY97 at this surface disposal area. Other high risk sites have contaminants that include Volatile Organic Compounds (VOCs), petroleum products, cyanide, inorganics, and some lead contamination in both groundwater and soil. In FY94, 2,000 cubic yards of lead and soil contaminated with the chemical additive PCB were removed and replaced with clean fill at Site 6. Erosion control was upgraded along the Thames River, and the site was capped with a clay lining system protected by crushed stone and an asphalt cover.

The Agency for Toxic Substances and Disease Registry (ATSDR), in conjunction with the Navy Environmental Health Center (NEHC) did a Public Health Assessment in May 1993. Sites 2 and 3 no longer pose a threat and the ATSDR determined that the other on-base sites do not pose a public health hazard.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - NSB New London was placed on the National Priorities List (NPL) in August 1990 with a Hazard Ranking System (HRS) score of 36.53. Past disposal operations at Site 2 (Area A Landfill), past pesticide operations at an adjacent large wetland, and a series of ponds and streams downstream from the wetland, drove up the HRS score. Soil and groundwater contamination were the primary media of concern. The remedy chosen to eliminate this problem is a landfill cap.

LEGAL AGREEMENTS - A Federal Facility Agreement (FFA) between the Department of the Navy(DON), the EPA Region I, and the State of Connecticut Department of Environmental Protection was signed in January 1995.

PARTNERING - Discussions have been held with the regulatory agencies to initiate a partnering agreement.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in FY89 to accelerate the decision-making process. Meetings were held periodically. In FY94, the TRC was converted to a Restoration Advisory Board (RAB). The first formal RAB meeting was held in November 1994. The RAB has 12 members who meet quarterly.

COMMUNITY RELATIONS PLAN - The Community Relations Plan (CRP) was completed in January 1994.

INFORMATION REPOSITORY - Information Repositories, containing copies of the Administrative Record documents, are located in the Connecticut cities of Groton and Ledyard, and at the New London NSB.

NEW LONDON NSB
HISTORICAL PROGRESS

FY82

Sites 1-16 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), was completed in 1982. Of the 16 potentially contaminated sites studied, three sites (Sites 2, 3 and 6) were recommended for further investigation. The IAS did not include a description of Sites 5, 7, 9, 12 and 16 because they were outside the scope of the Naval Assessment and Control of Installation Pollutants (NACIP) program that generated the IAS. Only eleven sites (Sites 1-4, 6, 8, 10, 11 and 13-15) were actually presented in the IAS.

FY85

Sites 2, 3 and 6 - A Verification Study (VS), equivalent to a Site Inspection (SI), was completed and recommended for further investigation the three sites recommended for further study in the IAS. The VS found elevated levels of metals, Volatile Organic Compounds (VOCs) and pesticides at two sites, Site 2 (Area A Landfill) and Site 3 (Over Bank Disposal Area). High concentrations of VOCs and Semi-VOCs at Site 6 were also found. Additional characterization was recommended for all three sites.

FY90

UST 1 - Nautilus Park Service Station. This site was discovered in the IAS and a Corrective Action Plan (CAP) was completed.
UST 2 - NEX Gas Station. This site was discovered in the IAS. It failed a tank test in October 1989.
Site 23 - (UST 3) Fuel Farm. This site was discovered in the IAS.

FY91

Site 8 - A removal action consisted of removing and disposing of 19 gas cylinders from the Goss Cove Landfill site. The cylinders were uncovered during the excavation of a utility trench.
Sites 17-20 and 24 - These sites were discovered during multi-media inspection.

FY92

Sites 1, 3, 7, 8, 14, 15 and 18 - Step I investigations, equivalent to an SI, were performed on these seven sites as part of a Phase I Remedial Investigation (RI) report completed in August 1992. Supplemental Step I investigations were recommended for Sites 1 and 14 and corrective action for Site 18 under the Underground Storage Tank (UST) Program. This Site 18 is not to be confused with the current Site 18 in the Defense Site Environmental Restoration Tracking System (DSERTS).
Sites 2-4, 6-8, 15 and Study Area M - The SI Phase was completed for these sites. Study Area M is now Site 25 in DSERTS.

FY93

Site 2 - A fence was installed at the landfill and downstream water courses to prevent human exposure to contaminants.

FY94

Site 6 - A removal action was completed. The 2,000 cubic yards of lead and soil contaminated with the chemical additive PCB were removed and replaced with clean fill. Erosion control was upgraded along the Thames River, and the site was capped with a clay lining system protected by crushed stone and an asphalt cover.
Site 15 - A removal action was completed that consisted of removing lead-contaminated soil.
Site 17 - A removal action was completed that consisted of removing lead-contaminated soil, using an innovative technology to solidify and stabilize the lead-contaminated soils. A solidifying mixture of Portland Cement, mono-ammonium phosphate, and water was mixed with the lead-contaminated soil and achieved the treatment objectives.
Sites 21, 22 and 25 - Three additional sites were discovered and added to the program. Site 21 is the Berth 16 Wharf, Site 22 is the Pier 33 Wharf, and Site 25 is the Lower Base Incinerator - Building 97. The Phase I SI Work Plan for these sites has been completed and the field work was completed in April 1994.

FY95

Site 2 - A Record of Decision (ROD) was signed in September 1995, in which the Navy agreed to cap the landfill at the Area A Landfill as an Interim Remedial Action (IRA).
Sites 6, 13 and 15 - Four removal actions were completed at these sites.
Site 9 - A Remediation, consisting of removing oil contaminated with the chemical additive PCB, sludge, and water from a waste oil tank, cleaning the tank and abandoning-in-place (filling with clean sand), will be completed. Future actions at this site will be under Site 23.
Site 23 - An SI was initiated at the Fuel Farm.
Sites 1-11, 13-15 and 20 - The draft Phase II Remedial Investigation/ Feasibility Study (RI/FS) was completed for these 14 sites.
UST 1 - Interim Remedial Action (IRA) began to install an air sparging/ soil vapor extraction system to remove gasoline from the subsurface. Also, an oil-contaminated soil pile was disposed of off-site. The air sparging system is expected to operate for three years.
UST 2 - IRA began to install an air sparging/soil vapor extraction system to remove gasoline from the subsurface and bioremediate less volatile (diesel) fuels. The air sparging system is expected to operate for three years.

PROGRESS DURING FISCAL YEAR 1996

FY96

Sites 1, 2 and 4 - RI/FS were completed.
Site 2 - Remedial Design for the landfill cap was also completed.
Sites 3, 8 and 14 - A Feasibility Study was initiated at these sites.
Site 9 - Response Complete.
Site 17 - IRA completed.
UST 2 - Implementation of clean-up continuing.
UST 1, 2 and 4 - IMP's were completed in FY96.
UST 1 - Completed an IRA.
UST 4 - Response Complete

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Site 2 - Complete the construction of the landfill cap for this site.
Site 3 - Complete removal action (IRA) at the Over Bank Disposal Area at this site. Complete FS for this site. Begin Remedial Design.
Site 8 and 14 - Complete FS for these sites.
Site 14 - Response Complete.
UST 1 - Plan to complete a Corrective Action Plan and Corrective Measures Design.
UST 2 - The IRA is expected to be completed.

FY98

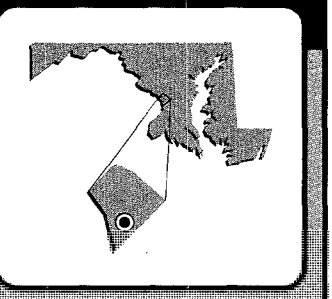
Site 3 - Complete Remedial Design at this site.
Site 6 and 20 - Complete FS at these sites.
Site 20 - Response Complete is expected.

NEW LONDON NSB
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	17							
RI / FS		3	3	2	6		1	6
RD		1		1	1		1	13
RAC			1		1	1		14
RAO								11
IRA	5(6)	1(1)	1(1)				1(1)	1(1)
RC	1	1	1	1	1			17
Cumulative % RC	5%	9%	14%	18%	23%	23%	23%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	2							
CAP	4		1					
DES	3		1					
IMP		3			1			
IMO					2			1
IRA	1(1)	1(1)	1(1)					
RC	1	1			2			1
Cumulative % RC	20%	40%	40%	40%	80%	80%	80%	100%

ANACOSTIA NAVAL STATION
WASHINGTON, DISTRICT OF COLUMBIA



Engineering Field Division/Activity: [illegible]
Major Claimant: [illegible]
Size: [illegible]
Funding to Date: [illegible]
Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

Number of Sites:

CERCLA:	3
RCRA Corrective Action:	0
RCRA UST:	3
Total Sites:	6

Relative Risk Ranking of Sites:

High:	2	Not Evaluated:	0
Medium:	0	Not Required:	4
Low:	0		

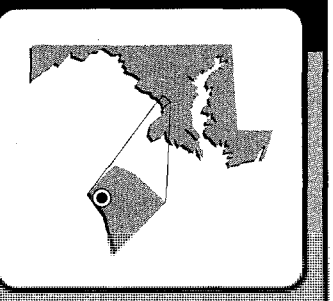
Sites Response Complete: 4

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	3							
RI / FS			1					
RD								
RAC								
RAO								
IRA								
RC	2		1					
Cumulative % RC	67%	67%	100%	100%	100%	100%	100%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								1
CAP	1	1						
DES								
IMP								
IMO								
IRA	1(1)	1(1)						
RC	1	1						1
Cumulative % RC	33%	67%	67%	67%	67%	67%	67%	100%

WASHINGTON NAVAL OBSERVATORY
WASHINGTON, DISTRICT OF COLUMBIA



Engineering Field Division/Activity: [illegible]
Major Claimant: [illegible]
Size: [illegible]
Funding to Date: [illegible]
Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

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

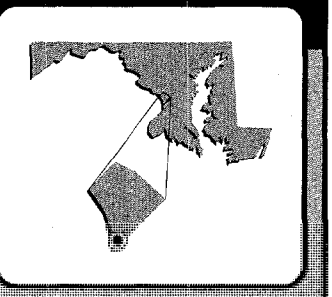
Sites Response Complete: 0

PROGRESS AND PLANS

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA		1						
CAP			1					
DES			1					
IMP					1			
IMO								
IRA	1(2)	1(2)						
RC					1			
Cumulative % RC	0%	0%	0%	0%	100%	100%	100%	100%

WASHINGTON NAVAL RESEARCH LABORATORY

WASHINGTON, DISTRICT OF COLUMBIA



Engineering Field Division/Activity: [illegible]

Major Claimant: ONR

Size: [illegible] Acres

Funding to Date: $[illegible]

Estimated Funding to Complete: $[illegible]

Base Mission: Provides research laboratory facilities and services

Contaminants: POLs

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	1	High:	1	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	0	Not Required:	1
RCRA UST:	2	Low:	0		
Total Sites:	3				

Sites Response Complete: 2

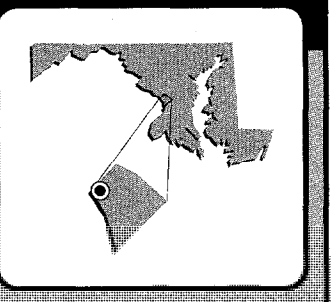
PROGRESS AND PLANS

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

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	2							
CAP	2							
DES								1
IMP								1
IMO								
IRA	2(3)							
RC	1							1
Cumulative % RC	50%	50%	50%	50%	50%	50%	50%	100%

WASHINGTON NAVAL SECURITY STATION

WASHINGTON, DISTRICT OF COLUMBIA



Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible]

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

Number of Sites:

CERCLA:	3
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	3

Relative Risk Ranking of Sites:

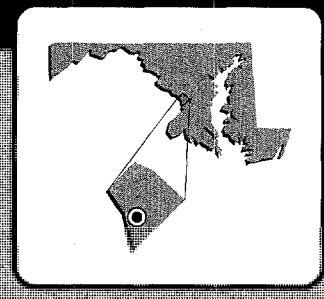
High:	2	Not Evaluated:	0
Medium:	1	Not Required:	0
Low:	0		

Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	3							
RI / FS					1		1	1
RD								1
RAC								1
RAO								1
IRA	1(1)		2(2)					
RC					1		1	1
Cumulative % RC	0%	0%	0%	0%	33%	33%	67%	100%

WASHINGTON NAVY YARD
WASHINGTON, DISTRICT OF COLUMBIA



Engineering Field Division/Activity: [illegible]
Major Claimant: [illegible]
Size: [illegible] Acres
Funding to Date: [illegible]
Estimated Funding to Complete: [illegible]

Base Mission: Provides supply and administrative services
Contaminants: POLs

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	15	High:	4	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	11	Not Required:	2
RCRA UST:	3	Low:	1		
Total Sites:	18				

Sites Response Complete: 9

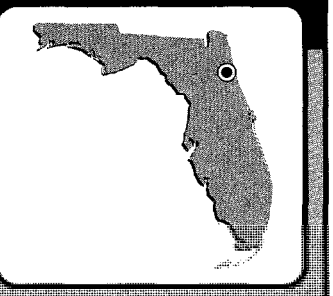
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI			12					3
RI / FS					1	2		12
RD							2	13
RAC								15
RAO								4
IRA		2(2)	1(1)	2(2)				
RC								15
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	3							
CAP		1	1					
DES								
IMP		1						
IMO								
IRA	2(4)							
RC		2	1					
Cumulative % RC	0%	67%	100%	100%	100%	100%	100%	100%

CECIL FIELD NAVAL AIR STATION

CECIL FIELD, FLORIDA



Engineering Field Division/Activity: SOUTHDIV

Major Claimant: CINCLANTFLT

Size: 31,200 Acres

Funding to Date: $167,510,000

Estimated Funding to Complete: $51,700,000

Base Mission: Provides facilities, services and material support for the operation and maintenance of Naval weapons and aircraft to activities and units of the operating forces as designated by the CNO.

Contaminants: Heavy metals, halogenated aliphatics, phthalate esters, petroleum, aromatic hydrocarbons

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	19	High:	15	Not Evaluated:	0
RCRA Corrective Action:	1	Medium:	0	Not Required:	2
RCRA UST:	3	Low:	2		
Total Sites:	25				

NPL | BRAC III

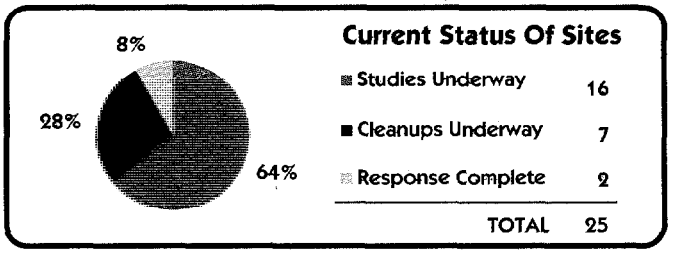
Sites Response Complete: 2

EXECUTIVE SUMMARY

Naval Air Station (NAS) Cecil Field is located primarily in Duval county, and partially in Clay County, Florida. Downtown Jacksonville, Florida is approximately 14 miles northeast of the installation's main entrance. The typical air station operations that contributed to the contaminated sites on the facility include: equipment maintenance, fuel and oil storage and disposal, fire training, and target ranges. Groundwater, surface water, and soil contamination resulted from installation operations. Current operations include pollution prevention technologies to prevent further contamination. NAS Cecil Field was placed on the National Priorities List (NPL) primarily due to the presence of the organic solvent TCE in the soil and the resulting groundwater plume at Site 16, the Aircraft Intermediate Maintenance Department (AIMD) Seepage Pit. There was also concern about lead contamination in the soil at Site 15, an ordnance disposal/ shooting range site.

The area surrounding the station is rural in character and sparsely populated. Jacksonville is the only appreciably sized city in the area. Contaminants have migrated downward to the shallow aquifer at numerous sites and to a deeper aquifer at one site. However, no contaminated groundwater has migrated off base. Surface water contamination has occurred in numerous ditches and creeks that drain into several larger nearby water bodies located on base, including Lake Fretwell, Rowell Creek, and Sal Taylor Creek. However, no contaminated surface water has been detected off base.

Work for the Navy's Installation Restoration Program (IRP) got underway at NAS Cecil Field in 1984. The Initial Assessment Study (IAS) identified 18 CERCLA sites. Since that time, an additional 6 Underground Storage Tank (UST) sites have been added to the program and one RCRA Corrective Action site (SWMU 1) was added in FY88. An additional 250 gray area sites, potential official sites were discovered during the Environmental Baseline Survey (EBS). Confirmatory sampling was conducted on the gray area sites from FY95 and will continue into FY97.



Most of these potential sites go no further than this sampling, and others have extremely minor cleanups which the study contractor completes while taking the samples. If or when any of these potential sites uncover any extensive cleanup, they will be transferred into the official IR program. One UST tank site (UST 6, 103rd St. pipeline) will be officially transferred to NAS Jacksonville's IR program in FY97. To date 7 IRAs have been completed, involving Sites 5, 11, 16, 17 and 18, and another IRA , at Site 5, is still underway Final Remedial Actions (RA) will begin at Sites 1 and 2 in FY97, having been delayed because additional sampling information was needed. RA's were not initiated at an additional 9 sites in FY96, due to shifting funding priorities within the Navy BRAC program.

In order to conduct the cleanup in an orderly manner, 12 of the sites at NAS Cecil Field, identified during the PA/SI have been divided into 7 Operable Units (OUs) based on the types of wastes disposed or typical profile of suspected contaminants. OU 1 (Sites 1 and 2) are landfills. OU 2 (Sites 5 and 17) are oil/sludge disposal areas. OU 3 (Sites 7 and 8) are fire training areas. OU 4 (Site 10) is a rubble disposal area. OU 5 (Sites 14 and 15) are ordnance disposal areas. OU 6 (Site 11) is a pesticide disposal area. OU 7 (Site 16) is the AIMD seepage pit. OU 8 (Site 3) is an oil/sludge disposal area. The remaining Sites, 4, 6, 9, 12, 18 and 19 are referred to as Potential Sources of Contamination (PSCs).

Several major successes in the cleanup program at Cecil Field have taken place. Risk reduction IRAs have been accomplished by source (soil) removal at Sites 11, 16, 17. Additionally, source removal has been accomplished at the North Tank Fuel Farm and the Truck Stand. Source removal is currently underway at Site 5. Innovative technologies are being used where appropriate. Intrinsic bioremediation (natural attenuation) of groundwater for petroleum products and TCE is being used at Site 17 (Oil/ Sludge Disposal Pit-Southwest) and is proposed at Site 8 (Fire Fighting Training Area) and Site 3 (Oil/Sludge Disposal Area). Bioslurpping is currently underway at the North Tank Fuel Farm for free-product removal and bioventing of the soils. The initial soil remediation of Site 5 soils was accomplished via ex-situ bioremediation. The remaining Site 5 soil remediation will be accomplished via bioventing in conjunction with groundwater remediation via air sparging. At the south Fuel Farm, bioventing is the chosen remediation for soils and air sparging for groundwater remediation.

CECIL FIELD NAS
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - There are three aquifers of concern at NAS Cecil Field: the surficial, the shallow rock and the Floridan. The unconfined surficial aquifer occurs at or near the surface and is primarily recharged by local rainfall. Contaminants easily enter the surficial aquifer due to its close proximity to the surface and the permeability of the sandy soil common in the area. Contamination can migrate downward into the shallow rock aquifer. Migration by surface water is also a potential pathway since there are numerous ditches and creeks throughout the installation. The major receiving waters on base include Lake Fretwell, Rowell Creek, and Sal Taylor Creek.

Five CERCLA sites and 4 tank sites have contaminated groundwater plumes in the upper aquifer. Since drinking water wells at the NAS do not tap the surficial aquifer, the direct impact to potable water sources is not anticipated. The presence of confining clay sediments and artesian conditions impedes downward migration from the surficial aquifer to the shallow rock aquifer at most sites. However, at the North Tank Fuel Farm contamination has migrated down and into the shallow rock aquifer. NAS Cecil Field and the majority of the surrounding areas receive their potable water from the deep Floridan aquifer which is protected by an extensive confining layer.

NATURAL RESOURCES - Aquatic organisms, in the receiving waters of surface and groundwater migrating from NAS Cecil Field, and animals which rely on these areas for feeding and water are the primary, potential receptors. These receiving waters are classified by the Florida Department of Environmental Regulation as Class III Water - Recreation, Propagation and Management of Fish and Wildlife. Base personnel who fish Lake Fretwell are also potential receptors. Lake Fretwell, located on the base, was closed to fishing due to discovery of low level PCBs in the fish. A more comprehensive fish study shall be performed in FY97.

RISK - In FY95, Baseline Human Health and Ecological Risk Assessments (BRA) were completed, following EPA guidance, for CERCLA Sites 1, 2, 5 and 17. In FY96 BRA was completed for site 16. In FY97, BRAs are scheduled for completion at sites 7, 8, 10, 11, 14, 15, and 16. In FY 98, BRAs are scheduled for Sites 4, 6, 9, 12, 18 and 19. The Baseline Human Health and Ecological Risk Assessments for Sites 1 and 2 determined that there is no human health risk, only micro-organisms are at risk. At Sites 5 and 17, the BRA revealed a human health risk only if you drink the groundwater, and an ecological risk due to runoff and shallow groundwater discharging to nearby drainage ditches and wetlands. At Site 16, again there was a human health risk if you drank the groundwater and a ecological risk due to groundwater discharging to nearby drainage ditches.

The Navy completed a Relative Risk Ranking for the installation in FY95. Fifteen of the 25 sites at Cecil Field received a "High" risk ranking. Though the majority of the high ranked sites were landfills and disposal sites, there was also high ranked contamination found at a firing range and fire fighting training sites. Groundwater was the media of greatest concern, 8 of the 15 high ranked sites were found to have current or the potential for contaminated groundwater. Two other media types received several high ranks; sediment had a high score at seven sites and surface water ranked high at six sites. Both these media had either evidence of or potential for a path to human receptors.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - NAS Cecil Field was placed on the National Priorities List (NPL) in December of 1989 with an HRS score of 31.99. Placement on the list was driven by the presence of the solvent TCE in the soil and the groundwater at Site 16. There was also concern about lead contamination at Site 15, an ordnance disposal area and shooting range site.

LEGAL AGREEMENTS - A Federal Facility Agreement (FFA) was signed in FY91 between the Navy, EPA, and the Florida Department of Environmental Protection (FDEP). The FFA identified sites for Remedial Investigation and Feasibility Study (RI/FS) activities and further screening. Based on the FFA, a Site Management Plan (SMP) was implemented in FY92 and is updated annually. A consent agreement with the state of Florida allows the station to operate tanks which are out of compliance until FY00. The Florida Petroleum Contamination Agreement allows the Navy to establish and manage the Underground Storage Tanks (USTs) cleanup program. A RCRA Hazardous and Solid Waste Amendments (HSWA) permit was issued in October 1987.

PARTNERING - The installation has encouraged partnerships with federal and state regulatory agencies and promoted public involvement by coordinating with local regulatory agencies, natural resource trustees, and other interested agencies and organizations. Because of this partnering team approach to solving problems, the amount of time required for the installation's sites to proceed from the investigation phase to the remedial process has been reduced. An example is that work plans are being put in place more quickly because agreements are reached on what is to go into the plans before they are written so that they can be accepted and implemented without delay for reviews and rewrites.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - In an effort to keep the community informed of the cleanup progress at the installation, a Technical Review Committee (TRC) was formed in FY91. For greater community involvement, the TRC was converted to a Restoration Advisory Board (RAB) in September 1994. There are 12 active community members on the RAB. Meetings are held on a monthly basis. The public has a positive view of the Station and they are involved in the decision making and review process. The RAB acts as a conduit for information dissemination to the local community. They show little concern over potential contamination because they have a high degree of trust for the BCT and the cleanup program.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was developed in FY91.

INFORMATION REPOSITORY - The Administrative Record and Information Repository were established in FY91. They are available to the public at the Westconett Library in Jacksonville, Florida.

BASE REALIGNMENT AND CLOSURE

BRAC - In July 1993, the Base Realignment and Closure (BRAC) Commission recommended the closure of NAS Cecil Field and relocation of its aircraft, dedicated personnel, and equipment to MCAS Cherry Point, North Carolina; NAS Oceana, Virginia; and MCAS Beaufort, South Carolina. The 1995 BRAC Commission redirected the relocation to include NAS Jacksonville, Florida and NAS Atlanta, Georgia. Additionally, OLF Whitehouse was redirected to NAS Jacksonville in lieu of closing.

BRAC CLEANUP TEAM - The installation's BRAC Cleanup Team (BCT), formed in FY94, is made up of a Navy representative, an EPA Region IV member and a representative from FDEP. The BCT has secured a C.L.E.A.N. contractor for conducting studies and a Remedial Action Contractor for cleanup activities.

CECIL FIELD NAS
RELEVANT ISSUES

DOCUMENTS - As a result of BRAC, NAS Cecil Field completed the Environmental Baseline Survey (EBS) in November 1994 and completed the BRAC Cleanup Plan (BCP) in March 1994.

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
16,148 acres	45 acres	20 acres	0 acres	20 acres	91 acres	1,259 acres

REUSE - During FY95, the installation finalized the EBS and a BRAC Land Reuse Plan. The NAS reuse plan provides for the base property and facilities to remain an aviation facility. Additionally, provisions were made for light and heavy industrial to locate on the property as well as recreational areas for the local community and areas to be forested. Potential lessors or buyers that fit the re-use plan are now being sought. By January1997, two parcels will have a Finding of Suitability to Lease (FOSL) signed and one parcel will have a Finding of Suitability to Transfer (FOST) signed. Regulatory concurrence for the Community Environmental Response Facilitation Act (CERFA) clean acreage was obtained. The Environmental Impact Statement (EIS) is scheduled to become final in April 97 with the signing of the ROD soon thereafter. Reuse interest is expected to escalate drastically six to twelve months prior to operational closure currently set for FY99.

FAST TRACK INITIATIVES - As a BRAC installation, NAS Cecil Field will make use of "Fast Track Initiatives": (1) compressed schedules; (2) improved communications; (3) eliminate redundant actions; (4) increase concurrent activities; (5) maximize direct-push technology; and (6) partnering with regulatory agencies and contractors.

HISTORICAL PROGRESS

FY85

Sites 1-12 and 14-19 - The Initial Assessment Study (IAS) was completed in July 1985 and identified 18 potentially contaminated sites.
UST 5 (Day Tank 1) - The Initial Site Characterization (ISC), was completed.

FY88

RCRA HSWA permit issued.
Sites 1-12 and 14-19 - A Site Inspection (SI), completed in March 1988, addressed all 18 CERCLA sites.
SWMU 1 - A RCRA Facility Assessment (RFA) was completed for SWMU 1.

FY90

Placed on the NPL.

FY91

FFA was signed.
CRP was completed.
The Information Repository was established.
Site 13/UST 5 (Day Tank 1)- After initial testing at Site 13 indicated only petroleum contamination, the site was transferred to the UST program, as UST 5, for remediation.

FY92

Site Management Plan (SMP) was completed. Updated annually.
USTs 1 (North Tank Fuel Farm) and 6 (103rd St. Pipeline) - An ISC was completed for two UST sites.

FY93

Sites 1, 2, 5, 11 and 17 - Remedial Investigation/Feasibility Study (RI/FS) activities were started at five CERCLA sites.
Sites 5, 11, 16 and 17 - In order to meet a fast deadline, a Focused Feasibility Study (FFS) was completed and four Interim Records of Decision (IRODs) were prepared.
SWMU 1 - A Corrective Measures Study (CMS), completed in March 1993 recommended the removal of the tank.
UST 3 (Detachment ASTOR Motorpool) - An ISC was completed.
UST 5 (Day Tank 1) - An investigation was completed in September 1993.
UST 6 (103rd St. Pipeline) - A Corrective Action Report (CAR) was completed.

FY94

BCP was completed.
RAB was established from the previous TRC.
Sites 3 and 14-16 - RI/FS activities were started at four CERCLA sites.
Site 11 - An IROD for removal of pesticide drums and contaminated soil was signed in September 1994.
Site 16 - An IROD was signed in May 1994 and 2 IRAs were completed in July 1994. The IRAs called for the removal of a RCRA-permitted storage tank as well as the contaminated soils.
SWMU 1 - The CMI was begun in May with the work to include removal of the tank and removal of contaminated soil.
USTs 2 (South fuel Farm) and 3 (Detachment ASTOR Motorpool) - Interim Corrective Measures were completed. Tank and soil removal completed at UST 2. CAR phase, including tank removals, and Implementation phase (IMP) completed at UST 3.
UST 6 (103rd St. Pipeline) - IMP phase was started. Approximately 25% of the installation's USTs were also removed.
IRODs were also signed for Sites 5 and 17, bringing the total IRODS prepared and signed to four for FY94.

FY95

EBS was completed.
BRAC Land Reuse Plan completed.
Sites 1 and 2 - Submitted final RI/FS and BRA. ROD signed and submitted to regulatory agencies.
Sites 5 and 17 - IRA started at both sites. Submitted final RI/FS and BRA. ROD signed and submitted to regulatory agencies.
Sites 7 and 8 - Completed RI/FS workplan. Completed confirmation sampling.
Site 10 - Completed RI/FS workplan. Completed confirmation sampling.
Site 15 - Completed RI/FS workplan and Confirmation program completed.
Site 11 - RI/FS workplan completed. 2 IRAs initiated and completed..
Site 16 - Final RI/FS completed. RD was completed. .
Site 3 - Draft RI/BRA/FS submitted.
SWMU 1 - Corrective Measures Implementation (CMI) completed and site listed as Response Complete (RC).
UST 2 (SFF) - ISC completed.
UST 3 (Detachment ASTOR Motorpool)- Listed as RC and received Site Close-out in March 1995.
BRAC EBS Gray Sites - Began the stand alone workplans for the 250 gray sites (potential sites).

CECIL FIELD NAS
PROGRESS DURING FISCAL YEAR 1996

FY96

Site 1, 2, 5 and 17 - The RI/FS report was completed.
Site 5 - One IRA soil treatment was completed and another IRA for soil treatment was begun. In summer 1996, the BCT decided to discontinue ex-situ treatment of the soil in favor of in-situ (bioventing) treatment concurrently with the groundwater treatment (air sparging).
Site 17 - IRA completed.
Sites 7 and 8 - Draft RI/BRA report submitted.
Site 10 - Draft RI/BRA report submitted.
Site 14 - Began RI/FS.
Site 16 - ROD was approved by the regulatory agencies.
Site 3 - Final RI report submitted. USGS begins study to determine if intrinsic bioremediation of groundwater is occurring.
Site 18 - Completed the IRA.
UST 1 - (North Tank Fuel Farm) -. 2 IRAs were begun, 1 for soil removal and another for bioslurping.
UST 2 - (South Fuel Farm) - The Corrective Action Plan (CAP) was completed.
UST 5 - 2 IRAs were begun.
UST 6 - (103rd St. Pipeline) - Transferred environmental responsibility to NAS Jacksonville.
UST Gray Site Zones - Phase 1 site assessment begun for all tank gray sites. Report to be submitted mid FY97.
BRAC EBS Gray Sites - Completed field sampling program for 80% of gray sites.
Signed FOSL for 60 acres in Yellow Water Weapons Area.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

EIS expected to be complete.
Fish study to be conducted.
Sites 1 and 2 - Begin first year of a five year monitoring program in accordance with the ROD.
Site 5 - Continue IRA.
Site 17 - RD will be completed. Groundwater intrinsic bioremediation monitoring program to begin.
Sites 7 and 8 - Complete the final RI/BRA/FSs.
Site 8 - Begin RD.
Site 15 - Complete the final RI/BRA/FS.
Site 11 -Submit final RI/BRA/FS.
Site 16 - Begin groundwater remediation.
Site 3 and 19 - Complete the final RI/BRA/FSs.
BRAC EBS Gray Sites - Complete the sampling.
UST 1 - (N. Tank Fuel farm) - Begin CAP.
UST 2 - (SFF) - Complete the Design and begin the IMP.
UST 4 - (JETC) - Complete the CAP, Begin the Design and the IMP.
UST 5 - (DT1) - Complete the CAP. Begin the Design and the IMP.
UST 6 - Complete the IRA. Begin LTO. (This will show in next years NAS Jacksonville section).

FY98

Sites 1 and 2 - Continue with the second year of the five year monitoring program.
Site 5 - Complete the IRA.
Site 17 - Continue with the intrinsic bioremediation monitoring.
Site 7 - Begin the RD.
Site 11 - Complete RI/FS, ROD and RD.
Site 16 - Continue with groundwater remediation.
Site 19 - Complete the IRA and Site will go RC.
Site 3 - Complete the RD.
Sites 4 - Complete the final RI/BRA/FS.
BRAC EBS Gray Sites - Complete remediation of gray sites.
Base closure activities begin along with transferring of aircraft.
UST 1 - Complete the CAP, Complete the 2 IRAs and begin the Design and the IMP.
UST 4 - Complete the Design. Complete the IRA.
UST 5 - Complete the Design. Complete the 2 IRAs.
UST 6 - Complete the IMP. (This will show on next years NAS Jacksonville section).

CECIL FIELD NAS
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	18							
RI / FS	1	4	5	2		1	4	1
RD	3		1	2	3	1	2	1
RAC						4	5	4
RAO							1	2
IRA	9(4)	3(3)		2(2)				4(4)
RC				1		2	6	9
Cumulative % RC	0%	0%	0%	6%	6%	17%	50%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	1							
RFI / CMS	1							
DES								
CMI	1							
CMO								
IRA								
RC	1							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	6							
CAP	2	1	2	1				
DES			1	2		1		
IMP				1	3	1		
IMO							1	4
IRA	1(1)		1(1)	3(5)				
RC	1						1	4
Cumulative % RC	17%	17%	17%	17%	17%	17%	33%	100%

JACKSONVILLE FLEET AND INDUSTRIAL SUPPLY CENTER
JACKSONVILLE, FLORIDA

Engineering Field Division/Activity: SOUTHDIV

Major Claimant: COMNAVSUPSYSCOM

Size: 50 Acres

Funding to Date: $2,500,000

Estimated Funding to Complete: $1,650,000

Base Mission: Supplies fuel to all Jacksonville area installations

Contaminants: Diesel fuel, JP-5 jet fuel

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	0	High:	1	Not Evaluated:	0
RCRA Corrective Action:	2	Medium:	0	Not Required:	1
RCRA UST:	0	Low:	0		
Total Sites:	3				

Sites Response Complete: 1

PROGRESS AND PLANS

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	2							
RFI / CMS		2						
DES		1						
CMI				1				
CMO							1	
IRA								
RC		1					1	
Cumulative % RC	0%	50%	50%	50%	50%	50%	100%	100%

JACKSONVILLE NAVAL AIR STATION
JACKSONVILLE, FLORIDA

Engineering Field Division/Activity: SOUTHDIV

Major Claimant: CINCLANTFLT

Size: 3,800 ACRES

Funding to Date: $46,033,000

Estimated Funding to Complete: $104,956,000

Base Mission: Provides services and support necessary for aviation activities and associated tenants. The complex includes a naval aviation depot, a naval supply center, and several air squadrons.

Contaminants: Acids, caustics, cyanide, heavy metals, dry-cleaning solvents, fuel spills, oil, paint, PCBs, pesticides, phenols, radionuclides, waste solvents

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	48	High:	25	Not Evaluated:	2
RCRA Corrective Action:	2	Medium:	9	Not Required:	16
RCRA UST:	13	Low:	19		
Total Sites:	64				

NPL

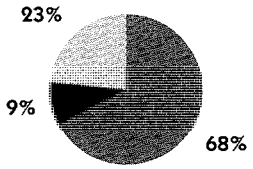
Sites Response Complete: 15

EXECUTIVE SUMMARY

Jacksonville Naval Air Station (NAS) is located in southwestern Duval County, within the limits of the city of Jacksonville, Florida, approximately ten miles south of the central business district and 15 miles from the Atlantic Ocean. Jacksonville NAS includes the following site-types: fire fighting training areas; waste storage and disposal areas; transformer storage areas; radioactive waste disposal areas; and other miscellaneous support and maintenance areas. The media types of greatest concern are soil, groundwater and sediments. Typical air station operations have contributed to the contaminants of concern, including solvents, sludge from on-site treatment plants, and low-level radioactive waste. Over the years, contaminants have migrated into nearby soils and local groundwater supplies. This lead to the placement of the NAS on the National Priorities List (NPL). Current operations include pollution prevention technologies to prevent further contamination. A Federal Facilities Agreement (FFA) between the Navy and the EPA was signed in October 1989, which governs the cleanup schedule.

The groundwater of northeast Florida is made up of two aquifer systems: the deep Floridan aquifer and the shallow aquifer. The deep Floridan aquifer is the principle aquifer for supplying water to the City of Jacksonville and the NAS. It is not a major concern for contamination because it is protected by a 300 foot thick confining layer, and the upward flow of water under artesian pressure. The shallow aquifer is of primary concern because of its potential for contamination from surface sources. The migration of contaminants in surface water at Jacksonville NAS is not a major concern.

A Technical Review Committee (TRC) was formed in FY88. For greater community involvement, the TRC was converted to a Restoration Advisory Board (RAB) in March 1995 and meets monthly in Jacksonville, Florida. There are eight members in the RAB, made up of both Navy employees, state and federal regulators and local citizens. A charter for the RAB has been developed and after receiving technical training, RAB members have reviewed several Interim Records of Decision (IROD) and Remedial Investigation/Feasibility Studies (RI/FSs). An Information Repository was established in FY91 at the Wesconnet Public Library in Jacksonville, Florida.



Current Status Of Sites

Studies Underway	43
Cleanups Underway	6
Response Complete	15
TOTAL	64

To simplify and expedite the cleanup process, three Operable Units (OUs) were defined based on geographic location, type and nature of contaminants, and media contaminated. OU 1 consists of two disposal pits, Sites 26 and 27. OU 2 consists of Sites 2-4, and 41-43 and is known as the Wastewater Treatment Plant Area. OU 3 consists of six sites (Sites 11-15 and 48) and is known as the Industrial Area. In addition, the installation has thirteen Underground Storage Tank (UST) sites. In February 1993, the Navy's Radiological Affairs Support Office (RASO) performed a radiological survey of various sites at Jacksonville NAS. Another radiological survey was begun in September 1994 at the nine sites of concern and was completed in FY96. The completion was delayed due to funding constraints in FY95. Soil removal / relocation were accomplished at three sites. Soil from sites 13 and 18 was removed and placed on site 26. A portion of the soil at site 26 was moved to the landfill area.

There are several areas where Jacksonville NAS is having significant success. A Remedial Response Decision System (RRDS) document was finalized in October 1995. The document was created as a management tool for identified Installation Restoration Sites at Jacksonville NAS. This system is an innovative approach. It establishes guidelines and criteria for evaluating existing site data and proposing remedial responses. Implementation of the RRDS began in FY94, with the first remedial decisions made in FY95.

For risk reduction at Site 26 (Old Main Registered Disposal Area), an IRA, begun in FY95 and completed in FY96, to place berms around the drainage ditches to direct surface runoff away from the ditches, to retain the solvents on the site and to block their migration path, was accomplished. At Site 18 (Radioactive Waste Fill Area) in FY95, an IRA, to erect fences to minimize the chance of human and animal contact with the contaminated soil, was accomplished. There is a plan to consolidate sites by digging up and moving contaminated soil from other sites to the fenced in area of Site 26. In an effort to accelerate cleanups, contaminated waste from Sites 41 and 43 were stabilized (chemical and physical treatment of soils and metals) and will be consolidated on Site 42 in FY97. The treated soil will then be used as filler for a settling pond, which reduces the cost for clean fill. Site 2 and a UST were treated at the same time. Petroleum products from both sites were treated at a thermal desorption plant which was set up at Site 2. The treated UST soil will be used for fill at Site 42. At Site 26, a passive recovery system for Liquid Non-Aqueous Phase Liquid (LNAPL) is being operated by base personnel instead of contractors. This will be completed in FY98.

JACKSONVILLE NAS RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - The groundwater of northeast Florida is made up of two aquifers: the deep Floridan aquifer and the surficial aquifer. The surficial aquifer is exposed at the land surface and is composed of sand, silts and clays and a thin limestone unit. Below the surficial aquifer is an aquiclude, which separates the surficial aquifer from the deep Floridan aquifer. Of the 53 inches of average annual precipitation, approximately 5 to 13 inches recharges the surficial aquifer. Precipitation that does not recharge the surficial aquifer is either evapotranspired or is discharged from the station as storm runoff. The surficial aquifer is exposed at land surface so contaminants spilled or disposed of at near the surface can readily percolate downward and then migrate laterally under the prevailing groundwater flow rate and direction. The Floridan aquifer is confined at the Naval Air Station by the aquiclude and water levels within the aquifer exceed land surface. The Floridan aquifer is recharged naturally by rainfall where the limestone of the aquifer is exposed at the surface in areas away from the station. The Floridan aquifer is the principle aquifer for supplying water to the City of Jacksonville and the NAS. It is very unlikely that contamination could reach the Floridan aquifer because it is overlain by the 300 foot thick aquiclude and the direction of groundwater flow is upward from the Floridan aquifer toward the surficial aquifer. The surficial aquifer is of primary concern because of its relative ease of contamination from surface sources. The migration of contaminants in surface water at Jacksonville NAS is not a major concern.

NATURAL RESOURCES - The NAS is bounded on three sides by off-base housing developments which use the shallow aquifer supply for their domestic water purposes. Surface waters from the station migrate into the St. John's River which is rated by the Florida Department of Regulations as a Class III waterbody, a protected waterway, and is designated for fish and wildlife propagation and human recreational uses. Endangered species present in the area include the Manatee and various waterfowl.

RISK - A Baseline Risk Assessment for Human Health and Ecological Risk Assessment, as part of the RI/FS for Sites 26 and 27, was performed in FY95, following EPA guidance. Risks for potential future land uses are above EPA risk range for surface soil and groundwater. In FY97, a risk assessment, in conjunction with an RI/FS, will be done at OU 2 (Sites 2-4 and 41-43).

The Navy completed a Department of Defense (DOD) Relative Risk Ranking for the installation in FY95. Of the 64 sites at Jacksonville NAS, 25 sites received a high relative risk ranking. Fifteen were ranked high for groundwater contamination; eight with evidence of a pathway to the receptors, the other seven had only a potential for a migration pathway. The contamination was from a variety of site types, from disposal areas and a fire fighting training area to sludge beds and a polishing pond. The other sites receiving high rankings were for contamination of surface water with the potential for both human and ecological receptors. There was only one site, Site 48 (Navy Exchange (NEX) Laundry), which had evidence of high risk soil contamination. The Agency for Toxic Substance and Disease Register (ATSDR) performed a public health assessment for the installation in March 1995.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - NAS Jacksonville was placed on the National Priorities List (NPL) 12 December 1989 with a Hazard Ranking System (HRS) score of 31.02. Site 26 (Old Main Registered Disposal Area) was the likely site driving the inclusion of Jacksonville NAS on the NPL because of its many years as the main site for waste disposal. Based on an FY83 study, there was a potential for contaminants (including the organic solvent TCE, the chemical additive PCB, cadmium, chromium, lead, copper and mercury) to migrate in groundwater off-site and endanger local water supplies. At that time, there were private wells in shallow groundwater within three miles of the hazardous substance site that provided drinking water to an estimated 300 people.

LEGAL AGREEMENTS - An FFA, signed in October 1989, was between the Navy, EPA and the State of Florida. The Site Management Plan (SMP), established in the FFA for Jacksonville NAS, is updated annually.

PARTNERING - Jacksonville NAS established a partnering team, which includes EPA, Florida Department of Environmental Protection (FDEP), Comprehensive Long Term Environmental Action Navy (CLEAN) contractors, Remedial Action contractors, Navy personnel from Naval Facilities Engineering Command (NAVFAC) Engineering Field Division (EFD) Southern Division (SOUTHDIV), and Jacksonville NAS. The team was formed in December 1993. It meets regularly to plan the work to be accomplished and come to agreement on any problems. A general acceleration of the Installation Restoration (IR) process at Jacksonville NAS was accomplished through the use of partnering. Less time is spent in reviewing documents and making plans due to the increased communication between team members.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A TRC was formed in FY88 for regulatory involvement. For greater community involvement, the TRC was converted to a Restoration Advisory Board (RAB) in March 1995 and meets the third Tuesday of each month in the Timucuan Elementary School Library in Jacksonville, Florida. There are fourteen members in the RAB, made up of both Navy employees, state and federal regulators and local citizens. Members are elected to a two year term. Membership includes two base employees, two local bank employees, an insurance company employee, an engineering consultant, an environmental consultant, and a retired civil service employee. A charter for the RAB has been developed and initial team building and technical training sessions have been conducted. Based on the technical training the RAB members have been able to review IR documents and they also had a tour of the NAS.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was completed in 1991. In addition, Jacksonville NAS has published fifteen Fact Sheets including two that were completed in September 1994.

INFORMATION REPOSITORY - An Administrative Record and Information Repository were established in FY91. The Administrative Record is maintained by NAVFAC SOUTHDIV, The Information Repository is located at the Wesconnet Public Library in Jacksonville and contains copies of Administrative Record documents.

JACKSONVILLE NAS
HISTORICAL PROGRESS

FY83

Sites 1-6, 8-18, 20-32 and 34-43 - An Initial Assessment Study (IAS), equivalent to Preliminary Assessment (PA) for 40 CERCLA sites was completed.
Site 19 and USTs 1 and 4 - Initial Site Characterization (ISC) completed for three RCRA UST sites.

FY86

Sites 2-4, 11-15, 26 and 27 - Site Inspections (SI) for ten sites completed.

FY88

Site 26 - Surface water drainage controls completed.

FY89

SWMU 2 - Corrective Measures Implementation (CMI) and an IRA started.

FY91

UST 1 - Corrective Action Plan (CAP) was started.

FY92

Sites 1, 5-10, 16-18, 20-25, 28-32 and 34-45 - SI for 32 sites completed.
Sites 1, 6, 10, 24, 34, 36 and 37 - Seven sites listed as Response Complete (RC) after SI phase.
Sites 7, 19 and 33 - Moved three CERCLA sites to the UST program.
Site 19 - Investigation (INV) completed for one RCRA UST site.
SWMU 3 - CMI and IRA started for RCRA site SWMU 3.

FY93

Sites 26 and 27 - Remedial Investigation/Feasibility Study (RI/FS) began for OU 1 sites.
Sites 2-4 and 41-43 - Implemented RI/FS Work Plan for OU 2 sites.
USTs 2, 3, 5 and 8 - ISC completed for four RCRA UST sites.
USTs 3, 5 and 8 - Three RCRA UST sites were listed as Response Complete after the ISC.
UST 4 - CAP was started.

FY94

All Sites - The RASO performed a radiological survey of various sites at the installation and released the final report in FY94. The report recommended further evaluation and delineation of radiological contamination. As a result of these recommendations, the installation initiated a radiological survey in September 1994.
All Sites - Implementation of RRDS document for decision making began, with the first remedial decisions made in FY95.
Sites 18 and 27 - Two IRAs were completed at Site 27, one IRA was started at Site 18. A fence was erected on both sites to restrict access and soil removal was completed on Site 27.
Sites 26 and 27 - ROD signed in August 1994 with estimated completion of FY96, was for recovery of Light Non-Aqueous Phase Liquid (LNAPL) at Sites 26 and 27.
SWMU 1 - Corrective Measures Study (CMS) completed, CMI and Final Remedial Action (FRA) started.
UST 2 - CAP completed and Implementation (IMP) was begun.
UST 4 - Removal action for removal of contaminated soil and waste containers from UST 4 (Gas Hill Building 159) was completed.
UST 9 - ISC completed.

FY95

All Sites - A radiological survey of all sites which had the potential for radiological contamination, was completed in late FY95.
All Sites - An RRDS document was finalized in October 1995. The document has been created as a management tool to establish guidelines and criteria for evaluating existing site data and proposing remedial responses. The first decision was made using this system in November 1995.
Sites 11, 13 and 26 - Three IRAs were started at three CERCLA sites. Soil removal at Sites 11 and 13, and groundwater treatment at Site 26. Site 11 was completed in FY95, Site 13 to be completed in FY99 and Site 26 to be completed in FY98.
Sites 18 and 26 - IRAs were begun to reduce risk to human exposure: At Site 18 (Radioactive Waste Fill Area), fences were erected to minimize the chance of human and animal contact with the contaminated. This action is complete. At Site 26 (Old Main Registered Disposal Area), berms were placed around drainage ditches to direct surface runoff away from drainage ditches and to contain contaminants on the site. This action to be complete in FY96.
Sites 26 and 27 - A Baseline Risk Assessment for Human Health and Ecological Risk Assessment was performed during an RI/FS for Sites 26 and 27.
Site 42 - An IROD signed in February 1995 was for soil stabilization at Site 42. The stabilized waste from two other sites (Sites 41 and 43) is to be placed with the stabilized soil at Site 42. Soil which was treated by thermal desorption (Site 2) will be used for fill. In addition to saving time, use of the stabilized waste for filler reduces the cost for the cleanup project.
Sites 2- 4 and 41-43 - Began an RI/FS activities at six sites.
Sites 2, 41 and 43 IRAs for soil removal and soil stabilization at Sites 41 and 43 and thermal desorption for Site 2 were completed. The ROD for these actions was signed in FY94.
USTs 7 and 10 - CAP begun.
UST 7 - ISC completed.
UST 9 - CAP completed.
SMWU 2 - Intrinsic bio-remediation on groundwater was begun.
SWMU 3 - A removal (IRA) was accomplished.

PROGRESS DURING FISCAL YEAR 1996

FY96

Sites 47, 49 and 51 - PA/SI completed.
Sites 26 and 27 - RI/FS activities were completed. ROD was completed.
Sites 2- 4 and 41-43 - RI/FS activities continued at six sites.
Site 26 - Intrinsic bio-remediation on groundwater is ongoing.
Site 25 - The IRA for berms was completed.
Site 42 - An IRA for in-situ soil treatment to stabilize the soil was completed..
Sites 11, 12, 13, 14, 15 and 48 - Engineering Evaluation/Cost Analysis (EE/CA) was completed for six sites to determine what steps to take for final cleanup.
Sites 11 and 48 - Two IRAs for groundwater treatment were started.
UST 1 - A Remedial Design(RD) was completed and approved for the shallow plume. The deep plume received a NFA for this site. The IMP was begun. Three IRAs for soil removal vapor extraction and plume containment were begun.
UST 2 - The Monitoring Only Plan (MOP) was completed and a NFA was received for this site. RC dates back to FY94.
UST 7 - CAP was completed and approved by FDEP. An IRA for soil removal was completed. An IMP was begun.
UST 10 - CAP was completed and approved by FDEP. CAP recommended a MOP. Site is RC.
UST 11 - SA was completed. Removal action was conducted as part of the MILCON project.
SWMU 1 - An IRA to remove two tanks with associated piping and soil was begun in late FY.
SMWU 2 - Intrinsic bio-remediation continued.
SWMU 3 - CMI completed and site is RC.

JACKSONVILLE NAS
PLANS FOR FISCAL YEARS 1997 AND 1998

FY 97

Sites 11-15 and 48 - RI/FS activities to be continued at six sites.
Site 18 - An IRA begun in FY94 for soil removal is complete.
Sites 26 and 27 - Remedial Design (RD) to be completed.
Sites 26 and 27 - Remedial Action to start.
Sites 2, 3 4, 41, 42 and 43 - RI/FS activities to complete at these six sites. Sites 41, 42 and 43 RC is expected, but not guaranteed.
UST 1 - RA will be completed, 3 IRAs will be completed and IMO will begin.
UST 10 - Implement MOP.
SWMU 1 - Continue groundwater remediation.
SWMU 2 - Intrinsic bio-remediation RA is complete, an RC will be recorded and 1 year of Long Term Groundwater Monitoring begins.

FY 98

Site 21 - PA/SI complete.
Sites 11-15 and 48 - RI/FS activities to be continued at six sites.
Site 26 - Complete IRA for groundwater treatment begun in FY95.
Sites 26 and 27 - Complete RA. RC is recorded for both sites.
UST 7 - IMP was complete. LTO to start in FY99.UST 13 CAP is completed.
SWMU 1 - IRA and CMI will be completed and RC obtained.
SMWU 2 - Groundwater monitoring ends.

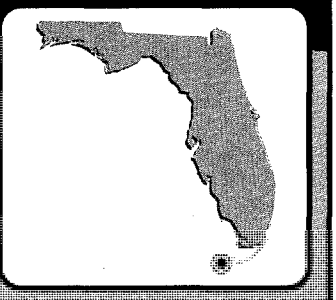
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	39	3		1			2	
RI / FS		2	6		5	1	2	21
RD			2		2	2	1	23
RAC				2			3	25
RAO								16
IRA	10(11)	2(2)	1(1)	1(1)	4(4)			1(1)
RC	11		3	2	1			31
Cumulative % RC	23%	23%	29%	33%	35%	35%	35%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA								
RFI / CMS	1							
DES								
CMI		1	1	1				
CMO								
IRA	1(1)			1(1)				
RC		1	1	1				
Cumulative % RC	0%	33%	67%	100%	100%	100%	100%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	8	1						1
CAP	2	2		1		1	1	5
DES		1				1		7
IMP	1		1	1		1		7
IMO								9
IRA		1(1)	1(3)			1(1)		
RC	2	1						10
Cumulative % RC	15%	23%	23%	23%	23%	23%	23%	100%

KEY WEST NAVAL AIR STATION
KEY WEST, FLORIDA



Engineering Field Division/Activity: SOUTHDIV

Major Claimant: CINCLANTFLT

Size: 19,615 Acres

Funding to Date: $15,508,000

Estimated Funding to Complete: $13,955,000

Base Mission: Maintains and operates facilities and provides services and materials to support operations of aviation activities. Partial closure under BRAC IV.

Contaminants: Heavy metals, PCBs, pesticides, volatile organic compounds

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	8	High:	12	Not Evaluated:	0
RCRA Corrective Action:	7	Medium:	5	Not Required:	0
RCRA UST:	5	Low:	3		
Total Sites:	20				

Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	4	1	3					
RI / FS				5				
RD				1				2
RAC					1			2
RAO								3
IRA		4(4)	1(1)					
RC			3	2				3
Cumulative % RC	0%	0%	38%	63%	63%	63%	63%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	7							
RFI / CMS			4	3				
DES							2	1
CMI				4			1	2
CMO								4
IRA		4(4)	1(1)					1(1)
RC				2				5
Cumulative % RC	0%	0%	0%	29%	29%	29%	29%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	4	1						
CAP	2		2					1
DES			1		1			1
IMP					1	1	1	1
IMO								1
IRA		1(1)	1(1)					
RC			1			1	1	2
Cumulative % RC	0%	0%	20%	20%	20%	40%	60%	100%

MAYPORT NAVAL STATION
MAYPORT, FLORIDA

Engineering Field Division/Activity: SOUTHDIV

Major Claimant: CINCLANTFLT

Size: 3,958 Acres

Funding to Date: $95,556,000

Estimated Funding to Complete: $144,705,000

Base Mission: Ship and on-shore maintenance activities for 34 surface ships

Contaminants: Heavy metals (lead), pesticides, PCBs, volatile organic compounds (chlorobenzenes, toluene, benzene, ethylbenzene)

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	0				
RCRA Corrective Action:	21	High:	25	Not Evaluated:	2
RCRA UST:	12	Medium:	5	Not Required:	1
Total Sites:	33	Low:	3		

Sites Response Complete: 1

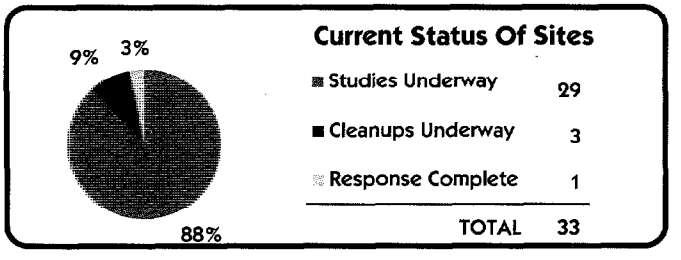
EXECUTIVE SUMMARY

Naval Station (NS) Mayport lies on the southern bank at the mouth of the St. Johns River. The station is approximately 14 miles east of Jacksonville, Florida. Navy station operations normally associated with ship and on-shore maintenance activities contributed to contaminated sites on the installation. The primary site types of concern are the landfills, oily waste treatment sites, pesticide and transformer storage sites, spill areas and fire fighting training sites. Contaminants of concern include waste oils, mercury waste, asbestos, paints, solvents, pesticides, liquid industrial wastes, photo processing wastes and construction debris. Current operations include pollution prevention technologies and hazardous waste minimization programs to prevent further contamination. A Hazardous and Solid Waste Amendment (HSWA) RCRA permit governing the investigation and cleanup of hazardous waste sites was issued by EPA to NS Mayport in March 1988 and renewed on June 15, 1993.

Contaminants at NS Mayport can migrate both by surface water and groundwater. Surface water runoff drains into Sherman Creek, Chicopit Bay, the St. Johns River and the Atlantic Ocean. Neither the shallow groundwater nor the surface water downgradient from NS Mayport is used as a public source of potable water and no potential exists for contaminants to enter the deeper aquifer, which is used as a source of potable water. There is a potential for contaminants reaching human receptors through surface runoff, but the primary receptors at NS Mayport are plants and animals utilizing surface waters rather than humans utilizing groundwater.

For greater community involvement, a Restoration Advisory Board (RAB) was started in FY95. A public Information Repository was established in October 1994.

NS Mayport operates the Installation Restoration Program (IRP) investigations under the RCRA/HSWA program (not under CERCLA). A RCRA Facility Assessment (RFA) was conducted by EPA Region IV in 1989. The RFA identified 56 Solid Waste Management Units (SWMUs) and two Areas of Concern (AOCs). 18 of the sites listed in the 1988 permit entered the IR Program as SWMU sites and 3 additional SWMU sites were added during FY96 based upon investigations identifying contaminant levels requiring cleanups. All 21 SWMUs are still in a study phase. There are currently 11 Underground Storage Tank (UST) sites on NS Mayport (and one at a satellite activity). Eight UST sites are in a study phase, two UST sites have entered the cleanup phase, and one site has no further action.



A major success in the cleanup program at NS Mayport involves the Oily Waste Treatment Plant (OWTP), which contains a waste oil pit and sludge drying beds. The OWTP is located 200 feet from St. Johns River and there is an Light Non-Aqueous Phase Liquid (LNAPL) plume moving toward the river from SWMUs 6 and 7. An Interim Measure (IM), funded in FY94 and completed during FY95, included the construction of five sumps. The five sumps remove LNAPL contaminated groundwater. The fluids are then processed through the OWTP and a Wastewater Treatment Plant (WWTP). Another successful risk reduction IM—funded in FY94 and completed in FY96—removed surface soil contaminated with the chemical additive PCB from land adjacent to SWMU 2 (Landfill B). The removal continued until the contamination was reduced to below residential levels for PCBs.

NS Mayport and North Island NAS (San Diego, CA) are the two Navy activities selected for the Navy Environmental Leadership Program (NELP). The NELP activities serve as test beds for new and innovative technologies and management practices. Successes will be implemented throughout the Navy and Marine Corps. Four NELP innovative technology contracts were awarded in FY94—three for installation restoration (IR) and one for pollution prevention (P2). One IR technology contract was for low temperature thermal desorption for treating petroleum contaminated soil at the Oily Waste Treatment Plant. Two IR contracts involved bioremediation and bioaugmentation treatment; bioremediation to treat petroleum contaminated concrete surfaces and petroleum contaminated surface soil at the Fire Fighting Training Center and bioaugmentation to treat pesticide contaminated surface soil at an Old Pesticide Handling Area. The P2 innovative technology contract involved an UV oxidation process to treat oily bilge water. Oversight contractors are currently reviewing independent data to determine the level of success of these contracts. The NELP innovative technology cleanup contracts have enabled Interim Measures (IMs) to be planned and implemented under the same contract, allowing the remediation work to proceed at a faster pace.

MAYPORT NS
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Contaminants at NS Mayport can migrate both by surface water and by groundwater. NS Mayport sits at the mouth of the St. Johns River. The station occupies 3,400 acres of land, of which approximately 1,667 acres are brackish marsh, sand spits, beachfront and dredge material holding areas. Major wetlands exist in the southwestern portions of the station. Dredge material holding areas have displaced some of the wetland areas within the station's boundaries. Surface water runoff eventually drains into Sherman Creek, Chicopit Bay, the St. Johns River and the Atlantic Ocean. There are three aquifers below NS Mayport; a shallow aquifer, near the surface; a secondary artesian aquifer under some areas of the station; and the deep Floridan Aquifer. The upper, shallow aquifer consists of near-surface layers of sand and shell fragments. These deposits vary greatly in composition, thickness, and permeability. NS Mayport groundwater movement is primarily lateral through the shallow aquifer because vertical movement is impeded by underlying clay sediments. The groundwater from the shallow aquifer discharges into streams, ditches, and marshes in the area. The artesian aquifer is imbedded in clayey soil between the shallow and Floridan Aquifers. At the NS, the Floridan Aquifer occurs at a depth of 400 feet. There is sufficient artesian pressure in the Floridan Aquifer so the groundwater flows to the surface and there is an upward hydraulic gradient between the two aquifers, therefore there is little danger of contamination reaching the deeper aquifer from the surface.

NATURAL RESOURCES - Neither the shallow groundwater nor the surface water downgradient from NS Mayport is used as a public source of potable water. Portions of the shallow aquifer are contaminated, but this aquifer is not used for drinking water. The deeper Floridan Aquifer, which is a source of potable water, has no contamination. The United States Geological Survey (USGS) is providing a groundwater flow model to determine the flow patterns of groundwater at NS Mayport. About half the NS land area is wetlands, brackish marsh, sand spits, beach front and dredge material holding areas. Because a large percentage of the base has been filled using dredged material from the St. Johns River and the turning basin, there have been problems in determining "background" levels for comparison values for contamination.

Since the town of Mayport (including homes and playgrounds) borders the NS, there is a potential for contaminants reaching human receptors through surface runoff. Because of a clay cap between the aquifers, no potential exists for contaminants to enter a deeper aquifer which is used as a source of potable water. Therefore, the primary receptors at NS Mayport are plants and animals utilizing surface waters rather than humans utilizing groundwater. In the vicinity of NS Mayport, there are several species of animals that are designated as endangered or protected; among these are the American Alligator, the Arctic Peregrine Falcon, the Least Tern, the Southeastern Kestrel, wood stork, piping plover, eastern indigo snake, loggerhead turtle, ridley turtle, leatherhead turtle, two species of sturgeons, the West Indian Manatee, and the Right Whale. A 20-acre man-made, fresh-water lake is used by residents for fishing and recreation.

RISK - The Navy completed the Department of Defense (DOD) Relative Risk Ranking for the installation in FY95. Of the 33 installation sites—Solid Waste Management Units (SWMUs) and Underground Storage Tank (UST)—25 received a "high" risk ranking; nine ranked high in multiple media categories. The most common high ranked media category was groundwater; it was listed for 18 of the 25 high ranking sites. The high ranking was due to the close proximity of the community of Mayport and the existence of a migration pathway to the groundwater at most of the sites. Four landfill sites (SWMUs 2-5) were ranked high in five media categories (groundwater, surface water with human receptor, sediment with human receptor, sediment/ecological marine receptor, and soil). By their nature, old landfills contain a wide variety of contaminants, and in this case even background level of the sites are difficult to determine due to the unknown origin of some of the fill.

RESTORATION PROJECTS - There are two dredge material holding areas that were filled to capacity during the last dredging cycle (FY94). The next dredge cycle is scheduled for FY97 and approval was received for ocean disposal. Funding was received in FY96 for additional toxicity testing during a non-dredge cycle. Previous toxicity testing, performed during a dredging cycle, indicated potential ecological problems. Without resolution of the ecological toxicity, the Navy may be forced to use expensive ocean disposal, purchase additional land for holding dredge material, or postpone future dredge cycles.

For the area adjacent to SWMU 2, where soils contaminated with the chemical additive PCB were removed, a restoration project is planned for FY97. NS Mayport is planning a tree-planting project for local elementary schools to perform during Earth Week activities.

REGULATORY ISSUES

LEGAL AGREEMENTS - A Hazardous and Solid Waste Amendment (HSWA) RCRA permit was issued to NS Mayport in March 1988; and revised and renewed on June 15, 1993. This permit will expire on June 15, 2003.

PARTNERING - Partnering between EPA Region IV, Florida Department of Environmental Protection (FDEP), NS Mayport Installation Restoration Coordinator (IRC), and Naval Facilities Engineering Command Southern Division (SOUTHDIV) Remedial Project Manager (RPM) began in July 1994. This cooperative arrangement has succeeded in accelerating the investigation and cleanup process at Mayport.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - The first Technical Review Committee (TRC) meeting for NS Mayport was held in November 1989. For greater community involvement, the TRC was converted to a Restoration Advisory Board (RAB) in FY95. A community briefing, to explain the purpose of the RAB and solicit community participation, was held in December 1994. The first regular monthly meeting was held in February 1995. Meetings are held at the Atlantic Beach City Hall. The RAB, made up of five community members, EPA, FDEP, and Navy personnel, has toured the station and received training on regulations, field work techniques, Navy budgeting, and contracting processes, risk assessment and communication, local hydrogeology, data validation, and the Navy Environmental Leadership Program (NELP). Currently, members are reviewing several reports on the investigation and the recommendations and conclusions regarding remediation. Meetings recently were scaled back from monthly to quarterly due to a reduction in study and clean-up funding for NS Mayport.

COMMUNITY RELATIONS PLAN - The installation's Community Relations Plan (CRP) was originally finalized in November 1992 and is currently being updated.

INFORMATION REPOSITORY - An Administrative Record was established in October 1993. It was placed in the Installation's Information Repository, which was established in October 1994 and is available for public viewing at the Beaches Branch Public Library in Neptune Beach, Florida.

MAYPORT NS
HISTORICAL PROGRESS

FY86

SWMUs 1-6, 10-16, 26, 28 and 29 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), identified 16 Solid Waste Management Units (SWMUs).

FY88

SWMUs 1-6, 11, 13, 14 and 16 - Completed Extended Site Inspections (ESIs).

FY89

EPA Region IV conducted NS Mayport RFA, identified 56 SWMUs and 2 AOCs.

FY91

USTs 1, 3, 4, 8, 9 and 12 - Initial Site Characterization (ISC) started.

FY92

EPA Region IV approved RCRA Facility Investigation (RFI) and RCRA Facility Assessment/Sampling Visit (RFA/SV) workplan.
UST 5 - ISC started.

FY93

SWMUs 2-5, 13 and 22 - RFI conducted.
SWMUs 26, 49, 50 and 56 - RFA/SV conducted.
UST 6 - ISC started.
USTs 1, 3 and 5 - ISC completed.
USTs 1 and 3 - Corrective Action Plans (CAP) started.

FY94

SWMUs 6-12, 15 and 16 - RFI conducted.
SWMUs 19, 28, 48 and 51 - RFA/SV conducted.
SWMUs 2-5, 13 and 22 - Additional RFI activities conducted.
SWMUs 26, 49, 50 and 56 - Additional RFA/SV activities conducted.
SWMUs 2, 6 and 7 - Began Intermediate Measures (IMs). IM is a RCRA IRA.
SWMUs 6 and 7 - Awarded a Navy Environmental Leadership Program (NELP) innovative technology contract for cleanup of hydrocarbon contaminated soils by low temperature thermal desorption (LTTD).
SWMU 14 - Awarded a NELP innovative technology contract for cleanup of hydrocarbon contaminated concrete surfaces and soils by bioremediation.
SWMU 15 - Awarded a NELP innovative technology contract for biodegrading pesticides in contaminated soil.
UST 4 - ISC completed.
UST 3 - CAP completed.
UST 5 - CAP started and completed.
UST 12 - Interim Remedial Action (IRA) started.

FY95

SWMUs 1, 14 and 17 - RFI conducted.
SWMUs 18, 20, 21, 23-25, 44, 45 and 52 - RFA/SV conducted.
SWMUs 2, 6 and 7 - Continued work on two projects for reducing risk to human health and the environment; one installed five sumps for removal of Light Non-Aqueous Phase Liquid (LNAPL) from groundwater at two RCRA sites (SWMUs 6 and 7); one removed the chemical additive PCB contaminated surface soil at SWMU 2 (Landfill B).
USTs 12-14 - IRA completed.

PROGRESS DURING FISCAL YEAR 1996

FY96

SWMU 2 - IM completed for soil removal.
SWMUs 6, 7 and 14 - Conducted IM NELP innovative technology demonstrations. Performed bioslurping pilot scale demonstration to determine if this technology would be effective at removing LNAPL and remediating hydrocarbon contaminated soil above water table. Demonstrations were successful, showed that bioslurping and bioventing was just as effective as the significantly more expensive Low Temperature Thermal Desorption (to treat sludge drying beds soil above water table) and additional trenching and pumping for LNAPL removal.
SWMU 6 - IM complete and another IM was begun.
SWMUs 7 and 14 - IMs to continue.
SWMU 15 - Awarded NELP II innovative technology contract for additional groundwater investigation adjacent to activity boundary.
SWMUs 23-25 - Were added to the IR program during the RFA.
UST 9 - NFA obtained. Site is RC.
USTs 3 and 5 - Remedial Actions (RAs) started.
USTs 6, 8 and 9 - SAs completed.
UST 15 - CAP completed. RD was started.
USTs 1, 6 and 8 - CAPs were started.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

SWMUs 6, 7 and 14 - Under the continuing IM phase, will construct a larger bioslurping and bioventing system and begin operations.
SWMU 15 - Further groundwater investigation required to determine extent of contamination. The town of Mayport's water wells may need to be tested if the investigation indicates contamination is moving in that direction. Continue CMS and complete design for clean-up.
SWMUs 4 and 14 - Complete the CMSs, complete the Designs, and begin CMIs.
SWMUs 23-25 - Begin a Removal (IM) to clean-up contaminated surface soils.
UST 1 - Anticipate CAP completion and RA start.
USTs 4 and 12 - Anticipate ISC completion. SA complete.
USTs 4, 8 and 12 - Anticipate RC.
USTs 1, 6 and 8 - CAPs to be completed.
USTs 1 and 15 - Designs to be completed. Implementations (IMPs) of final cleanups measure to be started.
UST 3 - Complete IMP and start (IMO).
UST 8 - Begin LTM.

FY98

SWMUs 8-11, 13, 16 and 22 - Complete the RFAs.
SWMUs 7, 12, 15 and 17 - Complete the RFI/CMSs.
SWMU 15 - Begin IM construction.
SWMUs 6 and 7 - IMs continues.
SWMUs 4 and 14 - Continue CMIs construction.
SWMU 7 - Complete the Design.
USTs 1 and 15 - IMPs to be completed and start IMOs.
UST 3 - Continue IMO.
UST 5 - Complete IMP and IMO. Start LTM. Site is RC.
UST 6 - Complete Design.
UST 8 - Complete LTM.

MAYPORT NS
PROGRESS AND PLANS

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	11			7				3
RFI / CMS			2	4			2	13
DES			3	1		1	1	14
CMI						1		19
CMO								18
IRA		2(2)			1(1)	1(1)		3(3)
RC								21
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	4	3	2				1	2
CAP	2	1	3				1	2
DES	2		2	1				3
IMP			1	3		1		3
IMO				1	1	2		
IRA	6(7)						1(1)	
RC		1	3	1	1	2	1	3
Cumulative % RC	0%	8%	33%	42%	50%	67%	75%	100%

ORLANDO NAVAL RESEARCH LABORATORY UNDERWATER SOUND REFERENCE DETACHMENT

ORLANDO, FLORIDA

Engineering Field Division/Activity: SOUTHDIV

Major Claimant: COMNAVSEASYSCOM

Size: 17 Acres owned; 60 Acres in grant

Funding to Date: $256,000

Estimated Funding to Complete: $300,000

Base Mission: Provides Research, Development, Testing and Evaluation (RDT&E) services for acoustic and sonar devices

Contaminants: None

Number of Sites:

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

Relative Risk Ranking of Sites:

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

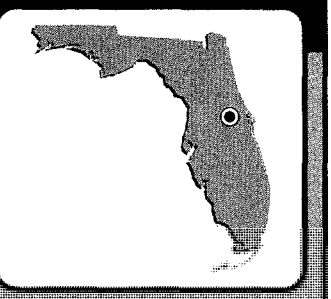
BRAC IV

Sites Response Complete: 0

PROGRESS AND PLANS

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

ORLANDO NAVAL TRAINING CENTER
ORLANDO, FLORIDA



Engineering Field Division/Activity: SOUTHDIV
Major Claimant: CNET
Size: 2,075 Acres
Funding to Date: $7,970,000
Estimated Funding to Complete: $21,500,000

Base Mission: Army Air Base, 1941-47; U.S. Air Force constructed the installation until 1974; currently used as a Naval Training Center

Contaminants: Asbestos, low-level radioactive waste, paint, POLs, pesticides, photographic chemicals, solvents

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	10	High:	1	Not Evaluated:	3
RCRA Corrective Action:	0	Medium:	1	Not Required:	0
RCRA UST:	4	Low:	0		
Total Sites:	14				

BRAC III

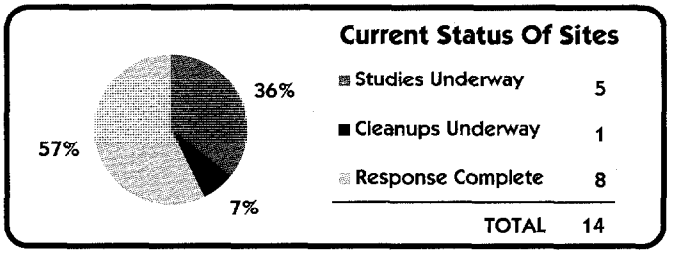
Sites Response Complete: 8

EXECUTIVE SUMMARY

Orlando Naval Training Center (NTC) is located on 2075 acres in Orange County, Florida. The complex is composed of four noncontiguous properties: Main Base, Area C, Herndon Annex and McCoy Annex. The majority of the operational and training facilities are located at Main Base, a 1,093 acre parcel that lies entirely within the Orlando city limits approximately 4 miles northeast of downtown Orlando. Area C is 46 acres and is located approximately 2 miles west of the Main Base. It contains warehouse and laundry operations. Herndon Annex occupies 54 acres on a parcel located about 5 miles south of Main Base. It also contains warehouses and research facilities. McCoy Annex occupies 882 acres and is 12 miles south of the Main Base. It is mainly housing and support community facilities. NTC has been a Naval Training Center since 1968. It was previously used by the Army Air Base, 1941-1947 and Air Force Base from 1952 - 1968.

Groundwater, surface water, and soil contamination have resulted from installation operations. Asbestos, paint, petroleum/oil/lubricants (POL), pesticides, photographic chemicals, solvents and low-level radioactive wastes are contaminates of concern. Contaminants have migrated downward to the shallow aquifer. Surface water contamination has occurred in numerous ditches and creeks that drain into several larger nearby water bodies, including Lake Baldwin, Lake Susannah, Lake Gear, Lake Druid and Lake Barton. There are also numerous wetland areas on and near the base.
Although the area surrounding NTC is urban in character and is surrounded by the Cities of Orlando and Winter Park, threatened and endanger species such as Ospreys, Bald Eagles and Gopher Tortoises nest and range throughout the area. Current operations include pollution prevention technologies to prevent further contamination. NTC Orlando has not been placed on the National Priorities List (NPL).

In July 1993, the Base Realignment and Closure (BRAC) Commission recommended the closure of NTC Orlando and relocation of its activities to Great Lakes and New London. The 1995 Base Realignment and Closure (BRAC) Commission redirected the relocation of the Navy Nuclear Power Training Command from New London to Charleston, South Carolina. A Restoration Advisory Board (RAB) was formed in September 1994 and a Community Relations Plan (CRP) was developed in April 1995. The Administrative Record and Information Repository were also established in FY95 and are available for public viewing at the Orange County Library.



Work for the Navy's Installation Restoration Program (IRP) got underway at NTC Orlando in 1985. The Initial Assessment Study (IAS) assessed 9 CERCLA sites. There are now 10 CERCLA sites and as of FY96, 6 are RC. There are 4 RCRA UST sites, and as of FY96, 2 are RC. Since that time, as part of BRAC, 53 Potential Areas of Concern (PAOCs) and over 300 tank system have been identified as requiring assessment. There are Four Operable Units(OUs), OU1 is Site 1, OU2 is Site 3, OU3 is Site 8 and OU4 is Site 5. All 4 OUs are currently being investigated or scheduled for investigation. The RI/FS for Site 1 (OU1, The Main Base Landfill) started in FY95 and the ROD is expected to be completed in FY97. The RI/FS for Site 3 (OU2), the McCoy Annex Landfill, was started in FY95. Currently the workplans are complete and the Field Work is expected to begin in FY97. The RI/FS for Site 8 (OU3), the Old Pesticide Shop and Greenskeeper Storage Area, is planned for FY97. The RI/FS for Site 5 (OU4), the Laundry at Area C, is scheduled for FY97. An IRA, at Site 5, was started in FY95 and is scheduled to be completed in FY97. Funding constraints has caused OU investigations originally scheduled for FY96 to be reprogrammed for FY97.

In order to conduct the cleanup in an orderly manner, the sites were divided into groups based on location and when the area of the base was closing. NTC is a three phase closure with the Recruit Training Command (RTC) and Naval Hospital closing in March 1995, the Service School Command (SSC) closing in November 1996 and the Navy Nuclear Power Training Command (NNPTC) closing in September 1999. 53 PAOCs and 300 tank systems are on the various sites. The tank systems are being addressed as BRAC compliance sites. Only a few of the PAOCs, if any will move into the IR program as official sites.

Several successes in the cleanup program at NTC have taken place. Risk reduction has been accomplished by source and soil removal when tanks were removed. Innovative technologies and presumptive remedies are being used where appropriate to speed-up the OU and site screening investigations. Intrinsic bioremediation of groundwater for petroleum products, the organic solvents, PCE and methyl chloride is being considered for OU 4. Bioremediation of soil for petroleum hydrocarbons has been enhanced by using a Vacuum-Truck to remove free product and draw oxygen into the contaminated zone thus shortening the time to remediate the site.

ORLANDO NTC
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - There are three aquifers of concern at NTC Orlando: the surficial, the intermediate and the deepest, Floridan aquifers. The unconfined surficial aquifer occurs at or near the surface to approximately 40 feet below surface (bls) and is primarily recharged by local rainfall. Contaminants easily enter the surficial aquifer due to its close proximity to the surface and the permeability of the sandy soil common in the area. The intermediate aquifer underlies the surficial aquifer and consists of permeable units within the Hawthorn Group. This aquifer generally is found at depths ranging from 60 to 150 feet bls. The Floridan aquifer underlies the intermediate aquifer and consists of two water-producing zones: the upper zone, from 150 to 600 feet bls, and the lower zone, from 1,000 to 1,500 feet bls. Groundwater movement is primarily lateral through the surficial aquifer because vertical movement is impeded by the underlying claycy sediments of the Hawthorn Group. Migration by surface water is a potential pathway since there are numerous ditches, Lakes and wetlands throughout the installation. The major receiving waters include Lake Baldwin and Lake Susannah at Main Base, Lake Druid at Area C, and Lake Barton at Herndon Annex. McCoy annex has no lakes in the immediate down gradient area but there are several wetland areas on the property.

Two OUs and several petroleum contaminated sites have plumes of contamination in the upper aquifer, but drinking water wells at the NTC do not tap the surficial aquifer, therefore direct impact to water sources is not anticipated. The presence of confining clay sediments and artesian conditions impedes downward migration from the surficial aquifer. NTC Orlando and the majority of the surrounding areas receive their potable water from a deep aquifer which is protected by an extensive confining layer.

NATURAL RESOURCES - Aquatic organisms, in the receiving waters of surface and groundwater migrating from NTC Orlando, and animals which rely on these areas for feeding and water are the primary, potential receptors. These receiving waters are classified by the Florida Department of Environmental Protection (FDEP) as Class III Water - Recreation, Propagation and Management of Fish and Wildlife. Base personnel who fish in the lakes are also potential receptors.

RISK - The Navy has partially completed a Relative Risk Ranking for the installation in FY95. One Site received a "High" risk ranking. Three of the OUs do not have evaluations and they will be done in FY97. Reuse and transfer is the primary priority factor for restoration. All three OUs not ranked are expected to receive "high" risk rankings.

RESTORATION PROJECTS - The restoration of OU 3 and OU 4 will be accomplished by source removal and ground water treatment.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - NTC Orlando has not been placed on the National Priorities List (NPL). HRS scoring has been completed twice the latest in 1995.

LEGAL AGREEMENTS - Cleanups are conducted under the CERCLA Installation Restoration Program. NTC Orlando is part of the Florida Petroleum Agreement which establishes the framework for petroleum storage tank cleanup.

NTC is a small quantity generator and is not required to have a RCRA Hazardous and Solid Waste Amendments (HSWA) permit.

PARTNERING - The installation has encouraged partnerships with federal and state regulatory agencies and promoted public involvement by coordinating with local regulatory agencies, natural resource trustees, and other interested agencies and organizations. Because of this partnering team approach to solving problems, the amount of time required for the installation's sites to proceed from the investigation phase to the remedial process has been reduced. An example is that work plans are being put in place more quickly because agreements are reached on what is to go into the plans before they are written so that they can be accepted and implemented without delay for reviews and rewrites.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - In an effort to keep the community informed of the cleanup progress at the installation a Restoration Advisory Board (RAB) was formed in September 1994. There are 15 community members on the RAB. Meetings are held on a bi-monthly basis. The public has a positive view of the NTC and shows little concern over potential contamination.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was developed in April 1995.

INFORMATION REPOSITORY - The Administrative Record and Information Repository were established in FY95. They are available to the public at the Orange County Library, Orlando, Florida.

BASE REALIGNMENT AND CLOSURE

BRAC - The Reuse Plan was finalized in January 1995. The Orlando Community Redevelopment Agency was established by the City of Orlando in September 1995 to implement the reuse plan. The ROD for the Environmental Impact Statement (EIS) will be signed in November 1996 and the Economic Development Conveyance (EDC), submitted by the RDA in September 1996 is being reviewed and much of the vacant property is expected to transfer in FY97.

BRAC CLEANUP TEAM - The installation's BRAC Cleanup Team (BCT), formed in FY94, is made up of a Navy representative, an EPA Region IV member and a representative from FDEP. The BCT is now the Orlando Partnering Team (OPT) and has been expanded to become a facilitated partnering team which include the Navy CLEAN and RAC contractors.

DOCUMENTS - NTC Orlando completed it's draft EBS in January 1994 and BRAC Cleanup Plan in March 1994. The final EBS was submitted in December 1994.

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
1,348 acres	145 acres	0 acres	21 acres	21 acres	104 acres	438 acres

REUSE - During FY95, the installation finalized the EBS and a BRAC Land Reuse Plan. The NTC is to be redeveloped into a commercial center, community parks, residential, educational and light industrial facilities. Potential lessors or buyers that fit the reuse plan are now being sought. The Naval Hospital (45 acres) has been turned over to the Veterans Administration and Customs has taken over Bldg. 325 (4.1 acres). However, the paper work transferring the property has not been finalized. The City of Orlando has requested Capehart Housing (214 acres) as the first phase of their EDC. It should be approved in FY97. Finding of Suitability to Transfer (FOSTs) and Finding of Suitability to Lease (FOSLs) will be completed for all of the vacant property, about 835 acres in FY97. Regulatory concurrence for the Community Environmental Response Facilitation Act (CERFA) clean acreage was obtained.

FAST TRACK INITIATIVES - As a BRAC installation, NTC Orlando will make use of "Fast Track Initiatives": (1) compress schedule; (2) improve communications; (3) eliminate redundant actions; (4) increase concurrent activities; (5) maximize direct-push technology; (6) partnering with regulatory agencies and contractors; (7) use presumptive remedies and innovative technologies.

ORLANDO NTC
HISTORICAL PROGRESS

FY85

Initial Assessment Study of NTC Orlando, Florida was completed in September 1985. It performed Preliminary Assessments (PA) of 9 PAOCs and recommended 5 potentially contaminated sites for Confirmation Studies. Site 7 is RC.

FY86

Verification Study by Geraghty and Miller, Inc. Recommended 4 sites for additional investigation. They were the Landfills at Main Base and McCoy Annex, the Pesticide site at Main Base and the old Waste Water Treatment facility at McCoy Annex. This brought the total CERCLA sites to 10.

FY87

Sites 6, 9 and 10 - PA/SI complete and all three sites are RC.

FY93

Listed for BRAC closure.
USTs 1 and 4 - Corrective Action Plans (CAPs) are complete. Both sites are RC.

FY94

March 1994, Draft EBS report.
BRAC Cleanup Plan (BCP) completed.
Process Decontamination and Closure Procedures developed
RAB was formed.

FY95

Naval Hospital was turned over to Veterans Administration, awaiting final paperwork.
CRP developed.
Administrative Record and Information Repository were established.
Final Reuse plan completed.
Final EBS report completed in December 1994.
BCP updated.
BRAC Cleanup Plan Abstract created. (BCP Abstract)
Site Screening started on 15 PAOCs
Site 1 - RI/FS began.
Site 3 - RI/FS began.
Site 5 - IRA began. PA/SI began.
UST 2 - IRA for groundwater began.
UST 3 - Corrective Action Plan (CAP) completed.

PROGRESS DURING FISCAL YEAR 1996

FY96

Site Screening started on 25 PAOCs (40 total so far).
Site Screening completed on 18 PAOCs with none transferring to official IR program.
Site 5 - PA/SI was completed and RI/FS was initiated.
Site 1 - RI/FS and ROD completion was delayed until FY97 because recommendation for monitoring only in the ROD required more scrutiny. RD was initiated for monitoring only.
Sites 2 and 4 - PA/SI was completed. Sites are RC. These won't need RI/FSs as planned.
Site 3 - RI/FS field work was slipped to FY97 due to funding.
Site 8 - RI/FS start date was delayed until first quarter FY97 due to funding.
UST 3 - Design is complete. IMP beginning and completion delayed due other priority work.
UST 2 - CAP and RD start dates were delayed until FY97 although completion date of FY97 stayed the same. IRA completion delayed until FY97 due to delays in construction.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

First EDC to be completed and approved for Capehart housing..
Complete FOSLs and FOSTs for 835 vacant acres.
Complete screening of previously stated investigation, 22 PAOCs
Start Site Screening on remaining 13 PAOCs (53 total)
Site 1 - RI/FS, ROD and RD to be completed.
Site 3 - RI field work to begin.
Site 5 - IRA begun in FY95 is complete. Another IRA to begin.
Site 8 - RI/FS will be initiated.
Site 1 - RA to be initiated. Depending upon the decision reached in the ROD, an RA may not be initiated if just monitoring is agreed upon for the main base landfill.
UST 2 - CAP, Design and IRA will be completed. IMP will begin.

FY98

13 PAOCs Complete site screening.
Site 5 - IRA to be completed.
Site 5 - RI/FS to be completed and RD to begin.

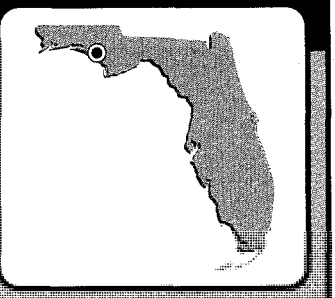
ORLANDO NTC
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	7	3						
RI / FS			1	1	1	1		
RD			1		2		1	
RAC					1	2		1
RAO								1
IRA			1(1)	1(1)				
RC	4	2			1	1		2
Cumulative % RC	40%	60%	60%	60%	70%	80%	80%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	3							
CAP	3		1					
DES		1	1					
IMP					2			
IMO						1		
IRA			1(1)					1(1)
RC	2					1		1
Cumulative % RC	50%	50%	50%	50%	50%	75%	75%	100%

PANAMA CITY COASTAL SYSTEMS STATION

PANAMA CITY, FLORIDA



Engineering Field Division/Activity: SOUTHDIV

Major Claimant: COMNAVSEASYSCOM

Size: 667 Acres

Funding to Date: $2,071,000

Estimated Funding to Complete: $14,894,000

Base Mission: Serve as a major research, development, testing and evaluation laboratory for Navy systems.

Contaminants: POLs, solvents

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	0	High:	7	Not Evaluated:	0
RCRA Corrective Action:	19	Medium:	2	Not Required:	10
RCRA UST:	3	Low:	0		
Total Sites:	19				

Sites Response Complete: 10

PROGRESS AND PLANS

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	16							
RFI / CMS		6	4					
DES			1	1	2			1
CMI			1		1	1	1	1
CMO							1	1
IRA			2(2)	1(1)	1(1)			
RC	6	3	3				2	2
Cumulative % RC	38%	56%	75%	75%	75%	75%	88%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	3							
CAP		3						
DES								
IMP		1						
IMO						2		
IRA								
RC		1				2		
Cumulative % RC	0%	33%	33%	33%	33%	100%	100%	100%

PENSACOLA NAVAL AIR STATION
PENSACOLA, FLORIDA

Engineering Field Division/Activity: SOUTHDIV
Major Claimant: CNET
Size: 5,874 Acres
Funding to Date: $45,307,000
Estimated Funding to Complete: $115,792,000

Base Mission: Provides flight training (fixed wing and rotary), provides maintenance as a Naval Aviation Depot (NADEP), formerly a Naval Air Rework Facility (NARF)

Contaminants: Aluminum, asbestos, cyanide, heavy metals, paint, PCBs, pesticides, phenols, plating wastes, chlorinated and non-chlorinated solvents

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	38	High:	20	Not Evaluated:	0
RCRA Corrective Action:	1	Medium:	8	Not Required:	10
RCRA UST:	14	Low:	13		
Total Sites:	53				

NPL

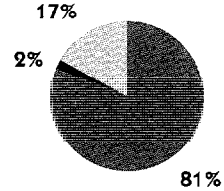
Sites Response Complete: 9

EXECUTIVE SUMMARY

Pensacola Naval Air Station (NAS) is on a peninsula about six miles southwest of Pensacola, Florida. The NAS has been a Naval industrial operations center since the early 1800's. It was a Navy shipyard from 1826 to 1911, and then converted to an air station. Typical air station operations that contributed to contaminated sites on the facility include: machine shops; foundry; coatings and paint shops; paint stripping; plating shops; mechanical maintenance shops; public work shops; automotive shops; printing and photographic shops; power plants; wastewater treatment plants; fire fighting; landfill disposal; and storage of supplies, materials, fuels and limited ordnance. Current operations involve pollution prevention technologies to prevent further contamination. The primary sites of concern on the NAS are two landfills into which all types of wastes were disposed. The sites ranked as high relative risk; they were so ranked primarily because of known contamination and identified migration pathways to both human and ecological receptors. The NAS is under a Federal Facilities Agreement (FFA) with the EPA, signed on 23 October 1990.

The NAS is surrounded by sensitive wetlands and marine ecosystems on the north (Bayou Grande), east and south (Pensacola Bay). West of the NAS are small towns and rural populations. Contaminant migration to the Bayou and Bay, which are used for recreation, fishing and wildlife habitat, is a major concern to the community. Contaminants have been detected in the NAS wells which draw from the upper groundwater aquifer (now only used for irrigation). There are drinking water wells within 3 miles of the sites drawing from the deeper drinking water aquifer, in which no contamination has been detected to date.

A Restoration Advisory Board (RAB) was started in June 1995 and has five active community members who provide public advice to the Navy. A Community Relations Plan (CRP) was first published in 1990 and three publicly available Information Repositories were established at local libraries.



Current Status Of Sites

Studies Underway	43
Cleanups Underway	1
Response Complete	9
TOTAL	53

Forty-five CERCLA sites have been identified since 1983, with 6 sites (3, 19, 20, 21, 23 and 37) being named UST sites (18, 20, 21, 22, 23, 24 respectively) and 1 site (Site 31) being combined with Site 30. This currently leaves 38 sites in the CERCLA program, with 5 being Response Complete (RC). There are 14 RCRA UST sites currently, with 4 being RC. There is 1 RCRA SWMU site which is currently under a Corrective Measure Operation for groundwater cleanup. This SWMU will not be RC until FY02.

There are 44 sites still active. All 33 CERCLA sites are in a Remedial Investigation/Feasibility Study (RI/FS) phase. Five RCRA Underground Storage Tank (UST) site are in the Corrective Action Plan (CAP) study phase, three USTs are in the Site Assessment (SA) study phase and two USTs are awaiting the Initial Site Characterization (ISC) phase, which is part of the SA. One RCRA Solid Waste Management Unit (SWMU) site is currently in the long term cleanup phase, after installing a pump and treat groundwater system. A removal action for contaminated soil and an Interim Remedial Action (IRA) to install a cap on the site accelerated the cleanup. Ten additional removal actions have been completed. Contaminated soil was removed from six CERCLA sites (Sites 9, 29, 32, 34, 36 and 39) and from two UST sites (USTs 2 and 23). Soils from around the industrial sewer lines (Site 36) went through a low temperature thermal desorption process. Tanks were removed from Site 30 and a fence was installed around Site 43 to limit access. The response is complete at five CERCLA sites. A removal action to remove contaminated soil completed the cleanup at one site and four site required no further study or action at the end of the RI/FS phase.

A major success in the cleanup program at NAS Pensacola involves preparations for Naval activities moving on the base as a result of closures or realignments. The Base Realignment and Closure (BRAC) III realignment of NADEP from NAS Pensacola and the Naval Aviation Technical Training Center to NAS Pensacola required a $227 million BRAC construction project on the NAS. Sites 9, 29, 34 and 36 were under investigation and in order to accommodate the BRAC construction schedule, these sites required expedited investigation to determine the nature and extent of contamination and the remediation required. This expedited schedule impacted the prioritization of Installation Restoration (IR) work plans under the FFA. Regulatory agency agreement to the expedited schedule was solicited and achieved. A partnering Team comprised of NAS Pensacola, EPA Region IV, Florida Department of Environmental Protection, and the Naval Facilities Engineering Command (NAVFAC) Southern Division (SOUTHDIV) and its contractors resolved RCRA/CERCLA issues in a timely manner, to prevent any delays in the BRAC construction contract award.

PENSACOLA NAS
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - NAS Pensacola is surrounded by water on three sides: the Pensacola Bay on the south and east and the Bayou Grande on the north. Most NAS property is within a mile of the water. Surface runoff that is not retained in the small lakes or swampy areas runs off into the Bay or the Bayou. Man-made drainage channels, storm drains, and wastewater outfalls feed into intermittent streams and numerous drainage outfalls which in turn empty out into the Bay. Due to the porosity of the soil, rain will infiltrate rapidly until it reaches the water table. The shallow groundwater aquifer is only used for irrigation water on base and the groundwater flow is toward the Bay. The drinking water aquifer is deeper and is separated by a clay layer. There are three wells on NAS that tap into this deeper aquifer. Migration pathways for contaminants exist through overland flow of surface water runoff and through lateral drainage in the surficial sand or vertical drainage downward toward the shallow groundwater aquifer, which eventually connects with the Bay. Monitoring wells, both shallow and deep, have been installed around the base at strategic locations.

NATURAL RESOURCES - Pensacola Bay (Site 42) and Bayou Grande (Site 40), which surround NAS Pensacola, and eighty-one wetlands (Site 41), which have been delineated on the base, are ecologically sensitive areas. The Bay and Bayou are major recreational and shellfishing and fishing areas. The estuarine areas around the NAS are ecologically sensitive coastal marshes, dunes and beaches with seagrass plant communities and marine and coastal habitats. There are at least seven federally listed endangered species in the area of NAS Pensacola including the American alligator, several sea turtles and birds. Located within the boundaries of NAS Pensacola are several historical areas and buildings such as the Lighthouse Reservation, Fort Barrancas, Fort Redoubt, Fort San Carlos and the Barrancas National Cemetery. Fort San Carlos was dedicated as a national landmark in 1963 and entered on the National Register of Historic Places. Native American archeological sites have also been discovered. Coordination with the NAS Cultural Resources Manager is required for Installation Restoration (IR) site inspection and remediation.

RISK - A Baseline Risk Assessment, both ecological and human health, has been completed for Sites 32, 33, 35, and 39 following the EPA guidance. For the Department of Defense (DOD) Relative Risk Ranking System, 20 sites were ranked as "high." The high-ranked sites were so ranked primarily due to known soil and groundwater contamination and identified migration pathways to nearby wetlands and ecological resources and migration pathways and exposure routes for personnel working near the sites.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - NAS Pensacola was proposed for the National Priorities List (NPL) on 14 July 1989 and was subsequently listed on 31 December 1989 with a Hazard Ranking System (HRS) score of 42.4. Two large landfills at Sites 1 and 11 into which all types of wastes were disposed, the industrial wastes outfalls into the sediments at Site 2, and the proximity of recreational surface waters were the primary drivers of the HRS score.

LEGAL AGREEMENTS - A Federal Facilities Agreement (FFA) was signed on 23 October 1990 with the EPA and State of Florida's Department of Environmental Protection. A Site Management Plan, which is updated annually, contains the investigation and cleanup schedules for the sites and is included by reference as part of the FFA. During negotiations on the FFA, eight recently discovered sites were added to the program, Sites 35-42. The FFA covers Sites 1-18, 22, 24-36 and 38-45.

PARTNERING - A partnering initiative between the Navy, EPA Region IV and the Florida Department of Environmental Protection began in December 1993. The partnering arrangement has helped by assuring that the right people are at the appropriate meetings and allow decisions to be made at the lowest possible level in the management chain. For example, the state's RCRA regulators were brought in to resolve RCRA issues on BRAC III construction sites. The partnering team is instrumental in achieving expedited study of IR sites (Sites 9, 29, 34 and 36) affected by new construction for activities moved to the installation as a result of BRAC III and resolving associated RCRA/CERCLA overlap issues.

INSTITUTIONAL CONTROLS - Implementation of land use restrictions at non-closing bases has not been resolved by DOD, EPA, and Florida. Final concurrence of the ROD for Sites 32, 33, and 35 by EPA and Florida is pending resolution of this issue.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in January 1989. Meetings were held on a regular basis until 1995. The TRC was composed of personnel from the installation, SOUTHDIV, EPA Region IV, the Florida Department of Environmental Protection and other appropriate parties. The TRC was converted to a Restoration Advisory Board (RAB). The first RAB meeting was held in June 1995 and regular meetings are held monthly. The RAB currently has nine members of which five are from the community. Community members were sought through newspaper advertisements, public meetings, local television advertisements, fairs and mass mailings. All applicants were accepted as members and the members come from the local professional and business arenas as well as local government. The RAB has selected a community co-chair and has completed its charter.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was first published in March 1990 and was revised in April 1996. Six fact sheets, eleven press releases and eight public notices have been distributed and two public meetings have been held.

INFORMATION REPOSITORY - An Administrative Record (the official file) was established in 1991 and is maintained by the Navy. The information in the Administrative Record was placed in three Information Repositories, established in 1991, for public access. They are located at the NAS Pensacola Station Library, the West Florida Regional Library, and the John C. Pace Library in Pensacola, Florida. The Information Repositories are updated regularly by the Navy.

HISTORICAL PROGRESS

FY83

Sites 1-29 - The Initial Assessment Study (IAS), similar to a Preliminary Assessment (PA), was completed which identified 29 potential CERCLA sites (Sites 1-29). The IAS recommended seven sites for further study: Sites 1, 11, 17, 21, 22, 27 and 29. During a meeting with the state of Florida in November 1983, five more sites were added: Sites 30-34. The state recommended further study at 17 sites: Sites 1, 2, 3, 9, 11, 15, 17, 19, 21-23, 26, 27 and 30-33.

USTs 20-23 - The Initial Site Characterization (ISC) was completed (previously Sites 19, 20, 21 and 23 in the IAS) at these Underground Storage Tank (UST) sites.

FY84

Sites 1-3, 9, 11, 15, 17, 19, 22, 23, 26, 27 and 30-34 - A Verification Step study, similar to a Site Inspection (SI), was completed in July 1984. This study recommended a Characterization Study be done for Sites 1, 11, 15,

PENSACOLA NAS HISTORICAL PROGRESS

26, 27 and 30-34.
Sites 30-34 - IAS (PA) was completed.

FY85

SWMU 1 - A groundwater pump and treat system was installed.

FY89

Sites 1, 11, 15, 19, 26, 27 and 30-34 - A Characterization Study, similar to an SI, was completed. Site 31 was combined with Site 30 and the Site 30 name was retained.
Sites 1-18, 22, 24, 25-30 and 32-34 - Started Remedial Investigation/ Feasibility Study (RI/FS) phase.

FY90

Sites 35-42 - The Federal Facilities Agreement (FFA), signed in 1990, added these eight additional CERCLA sites which went directly into the RI/FS phase.

FY91

Sites 1-42 - The sites were grouped into 17 Operable Units (OUs).
Site 35 - Started RI/FS phase.
UST 17 - ISC was completed and Long Term Monitoring (LTM) was initiated after the ISC and No Further Action (NFA) is expected at the site. UST is RC.

FY92

USTs 20, 21, 22, 23 and 24 - Five CERCLA Installation Restoration (IR) sites (Sites 19, 20, 21, 23 and 37 renamed USTs 20, 21, 22, 23 and 24 respectively) were moved into the RCRA UST program because petroleum products were the only contaminants at the sites.

FY 93

Sites 38 and 39 - RI/FS phase started.
Sites 1-4 and 6-38 - RI Phase II work plans were approved by the regulatory agencies.
Sites 40-42 - Phase I work plans were submitted to the regulatory agencies for review.
Sites 1, 2, 11, 25, 27, 30 and 38 - RI phase field work started on 7 CERCLA sites.
USTs 4, 5, 8, 10, 11 and 16 - PA was completed for six UST sites which were moved to the CERCLA IR program for investigation.
USTs 2, 6, 7, 9, 12, 13 and 15 - ISC was completed.
UST 15 - SA was completed

FY 94

Sites 30, 32 and 39 - Interim Remedial Actions (IRA) were completed. A waste tank was removed from Site 30 and industrial sludge containing heavy metals was removed from the sludge drying beds at Site 32. Stained soil was removed from Site 39 which eliminated the need for an FS phase.
Site 43 - A removal action was completed to install fencing which blocks access to an area with drums protruding from the ground.
Sites 9, 29 and 34 - RI phase field work was expedited and completed to allow award of a $227 million contract for construction to house Base Realignment and Closure (BRAC) III activities realigned to Pensacola.
Sites 5, 9, 10, 13, 14, 32, 33, 35 and 39 - RI phase field work was completed.
Sites 3, 9, 10, 14, 29 and 34 - Two RI phase Sampling and Analysis Plans were completed for six CERCLA sites: one for Site 3, and one for Sites 9, 10, 14, 29 and 34.
Site 3 was renamed UST 18 because only petroleum issues were discovered.
Sites 36, 40, 41 and 42 - RI/FS phase started.
Site 43 - SI phase started and a geophysical survey was completed.
UST 13 - An interim corrective measure was performed to remove petroleum contaminated soil.

FY95

Sites 43 and 44 - Added in the FFA.
Site 39 - RI/FS and Proposed Plan (PP) completed and no further remedial action. ROD signed on 31 July 1995. Site is RC.
Sites 9, 29, 34 and 36 - IRA for soil removal was begun.
Sites 1, 2, 9, 13, 29, 32, 33, 34, 35 and 38 - RI Reports submitted for regulatory review.
Sites 40, 41 and 42 - RI Work Plans and Sampling and Analysis Plans were approved.
Sites 12, 15, 17, 18, 24, 26 and 28 - RI Sampling and Analysis Plans were completed.
Sites 4, 6, 7, 8, 16, 22 and 36 - RI Sampling and Analysis Plans were submitted for regulatory review
Sites 12 and 26 - RI field work was completed.
Sites 15, 17, 18, 24, 28 and 36 - RI field work was started.
Sites 40-42 - Phase I RI Final Work Plans were approved.
USTs 9 and 12 - SA complete and sites are RC.
UST 14 - SA is complete.
USTs 2 and 9 - An interim corrective measure was performed to remove petroleum contaminated soil.

PROGRESS DURING FISCAL YEAR 1996

FY 96

The CRP was revised.
Site 5 - RI/FS complete with NFA. Site is RC.
Sites 29, 34 and 36 - Four IRAs for contaminated soil were completed with two at Site 36.
Sites 10 and 14 - The Site Characterization Reports were completed. RI/ FS phase complete and NFA was recommended. Sites are RC.
Sites 18, 28 and 36 - The RI phase field work was completed.
Sites 4, 7, 8, 16, 22, 24, 40, 41 and 42 - RI phase field work began. Could not be completed due to additional sampling being needed (8, 22 and 24), regulatory agencies needed more review time (4, 6, 7, and 16) and the National Resource Trustee needed more review time (40, 41 and 42).
Sites 32, 33 and 35 - RI, FS, and PP were submitted, but final regulatory review not until FY97. ROD not completed due to pending resolution of institutional controls issue.
Site 13 - RI/FS complete and NFA letter was received. ROD not needed. Site is RC.
Site 1 - RI was completed. RD not begun because of new priorities.
Sites 11, 12, 25, 26, 27, 30 and 38 - RI was submitted for regulatory review.
Sites 32, 33 and 35 - RD was started.
Site 13 - Not needed.
Site 43 - PA/SI completed.
Sites 18, 24 and 28 - RD was delayed due to non-completion of RI/FS.
Site 1 - FS, PP, ROD not completed due to pending resolution of institutional controls issue.
Sites 9, 29 and 34 - RI/FS and ROD not completed due to unanticipated discoveries of other contaminants.
Site 45 - New CERCLA site added and included in the FFA.
SWMU 1 - A groundwater pump and treat system is already in place and will continue to operate at this Solid Waste Management Unit (SWMU).
UST 13 - SA is complete and site is RC.
UST 15 - An interim corrective measure was performed to remove petroleum contaminated soil.

PENSACOLA NAS
PLANS FOR FISCAL YEARS 1997 AND 1998

FY 97

Sites 32, 33 and 35 - RI/FS, PP and ROD to be completed pending resolution of institutional controls issue.
Site 1 - FS, PP, ROD to be completed pending resolution of institutional controls issue.
Sites 2, 9, 29 and 34 - RI, FS, PP - to continue.
Sites 4, 7, 16, 18, 28 and 36 - RI/FS to be completed.
Sites 11, 12, 16, 17, 25, 26, 27, 30 and 38 - RI to be completed.
Sites 11, 12, 26, 27 and 38 - RD and RA should begin.
Sites 25 and 30 - RD will be completed.
Sites 32, 33 and 35 - RD completed and RA should begin.
Site 44 - PA/SI will be completed.
UST 2 - SA will be complete. RC is expected.
USTs 15, 20, 21, 22 and 23 - CAPs will be completed.

FY 98

Site 41 - RI to be completed.
Sites 15, 40 and 42 - RI and FS to continue.
Sites 6, 11, 12, 17, 25, 26, 27, 30 and 38 - FS, PP, and ROD to be completed.
Sites 2, 9, 29 and 34 - RI/FS and ROD to be completed.
Sites 11, 12, 26 and 27 - RD and RA continues.
Site 9 - IRA will be completed.
Sites 36 and 38 - RD will be completed. Both sites to be under RA.
UST 17 - LTM is complete.
UST 15 - Design and RA will be completed.

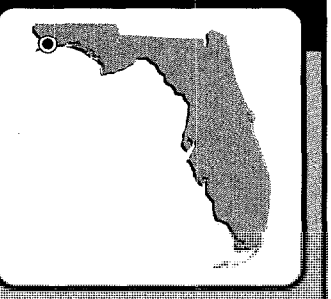
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	29	1	1					
RI / FS	1	4	10	13	7			3
RD			5	2		3	1	22
RAC					7		3	23
RAO								13
IRA	5(5)	3(4)		1(1)			1(1)	1(1)
RC	1	4			5		3	25
Cumulative % RC	3%	13%	13%	13%	26%	26%	34%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA								
RFI / CMS	1							
DES	1							
CMI	1							
CMO								1
IRA	1(1)							
RC								1
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	10	1	1				1	1
CAP			5				2	2
DES				1	2	1		5
IMP				1		2	1	5
IMO								5
IRA	3(3)	1(1)						
RC	3	1	1				1	8
Cumulative % RC	21%	29%	36%	36%	36%	36%	43%	100%

PENSACOLA NAVAL TECHNICAL TRAINING CENTER, CORRY STATION
PENSACOLA, FLORIDA



Engineering Field Division/Activity: SOUTHDIV
Major Claimant: CNET
Size: 664 Acres
Funding to Date: $766,000
Estimated Funding to Complete: $1,743,000

Base Mission: Trains Navy pilots
Contaminants: Metals, chlorinated hydrocarbons, PCBs

Number of Sites:
CERCLA: 4
RCRA Corrective Action: 0
RCRA UST: 0
Total Sites: 4

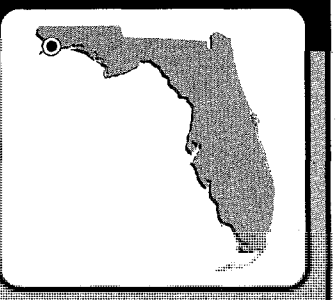
Relative Risk Ranking of Sites:
High: 1 Not Evaluated: 1
Medium: 0 Not Required: 0
Low: 2

Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	4							
RI / FS				1				3
RD								
RAC								
RAO								
IRA								
RC				1				3
Cumulative % RC	0%	0%	0%	25%	25%	25%	25%	100%

SAUFLEY FIELD NAVAL AIR STATION
PENSACOLA, FLORIDA



Engineering Field Division/Activity: SOUTHDIV
Major Claimant: CNET
Size: 800 Acres
Funding to Date: $5,000
Estimated Funding to Complete: $2,450,000

Base Mission: Basic training for Naval aviators
Contaminants: POLs

Number of Sites:
CERCLA: 5
RCRA Corrective Action: 0
RCRA UST: 1
Total Sites: 6

Relative Risk Ranking of Sites:
High: 1 Not Evaluated: 0
Medium: 1 Not Required: 0
Low: 4

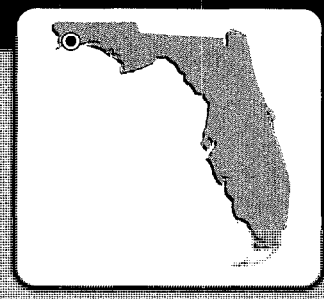
Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	5							
RI / FS								5
RD								5
RAC								5
RAO								1
IRA								
RC								5
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								1
CAP								1
DES								1
IMP								1
IMO								
IRA								
RC								1
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

WHITING FIELD NAVAL AIR STATION
MILTON, FLORIDA



Engineering Field Division/Activity: SOUTHDIV

Major Claimant: ONAV

Size: 2,560 Acres

Funding to Date: $17,675,000

Estimated Funding to Complete: $67,315,000

Base Mission: Provides naval aviation training in basic instrument, formation and tactic phases of fixed-wing and propeller-driven aircraft, radar and advanced helicopter training.

Contaminants: Pesticides, PCBs, volatile organic compounds, heavy metals, chlorinated hydrocarbons

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	38	High:	22	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	5	Not Required:	10
RCRA UST:	6	Low:	7		
Total Sites:	44				

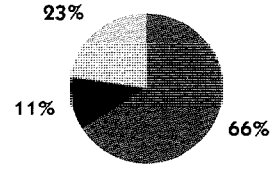
NPL

Sites Response Complete: 10

EXECUTIVE SUMMARY

Whiting Field Naval Air Station (NAS) includes the NAS and Outlying Landing Field (OLF) Barin. Whiting Field NAS is located in Florida's northwest coastal area, approximately seven miles north of Milton and 20 miles northeast of Pensacola, Florida. Land bordering Whiting Field NAS consists primarily of agricultural lands to the northwest, residential and forested to the south and southwest; the borders are forested land. Whiting Field NAS is on a 2,560 acre tract of land that is divided into North Field and South Field. The North Field is used as a fixed-wing training base and South Field is used for helicopter training. Typical air station operations that contributed to contaminated sites on the facility include paint stripping, aircraft and aircraft parts cleaning, operation and maintenance of the aircraft and fire fighting training. Site types include disposal areas and pits, storage areas, spill areas, landfills, a disposal and burning area, maintenance area, Underground Storage Tanks (USTs), fuel pits, fire training areas and drainage ditches. Current operations include pollution prevention technologies to prevent further contamination. The driving force for placing the installation on the National Priorities List (NPL) was the discovery of a plume of volatile organic compounds (VOCs) affecting two base drinking water wells. The Federal Facility Agreement (FFA) is being negotiated and is expected to be signed in FY98.

OLF Barin is located in Baldwin County, Alabama, 40 miles southeast of Mobile, Alabama, approximately ten miles northeast of Gulf Shores, Alabama and 35 miles west of Pensacola, Florida. OLF Barin was commissioned in 1942 as a flight training and indoctrination center and closed in 1959. While the air field was in use, numerous types of solvents, oils and fuels were used for cleaning and maintaining airplanes and vehicles; the quantities of contaminants used are unknown. The field remained unused until 1985, when Whiting Field NAS began using the field as a practice landing strip. Little, if any, hazardous materials are now used, generated or disposed by the airfield. The airfield no longer conducts airplane and vehicle maintenance or has the capability to supply fuel to them. In 1988, the Preliminary Assessment (PA) of OLF Barin was begun in response to the discovery of contamination in two drinking water wells.



Current Status Of Sites

Studies Underway	29
Cleanups Underway	5
Response Complete	10
TOTAL	44

The major pathways for contamination from Whiting Field NAS include surface runoff and groundwater movement through the surficial sand and gravel aquifer to the receiving waters of Clear Creek and Big Coldwater Creek. The most significant issue at Whiting Field NAS is the groundwater contamination. Releases of VOCs have primarily occurred from installation landfills and contamination has migrated from the soil into the groundwater. There are two organic solvent TCE plumes with a benzene, toluene, exobenzene, xylene (BTEX) plume above each. Two of the three supply wells on the base are contaminated with the organic solvent TCE. For risk reduction, after the discovery of the groundwater contamination at Whiting Field NAS, granular activated carbon (GAC) filters were installed to remove the organic contaminants from the water supply. Although this is not a permanent remedial measure, following the installation of the filters and a monitoring system, the State of Florida allowed the use of the well water by NAS Whiting personnel.

A Technical Review Committee (TRC) for Whiting Field NAS was established in 1989. The TRC for OLF Barin started in 1992. For greater community involvement at Whiting Field NAS, the TRC was converted to a Restoration Advisory Board (RAB) in July 1995. The Administrative Record and Information Repository were established in August 1992 and are maintained at the Naval Facilities Engineering Command's Southern Division (SOUTHDIV), Charleston, South Carolina.

There are 38 CERCLA sites (29 at NAS and 9 at OLF). At the end of FY96, there were 7 RC (1 at NAS and 6 at OLF). Of the six UST sites, three have received a No Further Action approval from FDEP (USTs 3, 4 and 6). UST-02 will be investigated in mid-1997. Funding has been approved for the investigative phase only. UST-05 will have a state approved remediation system installed by December 1996.

WHITING FIELD NAS
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - The three major groundwater aquifers within the region are the surficial sand and gravel aquifer, from which virtually all local groundwater is drawn; the Upper Floridan limestone aquifer and the lower Floridan limestone aquifer. The Floridan aquifer is separated from the overlying surficial aquifer by a relatively impermeable Pensacola clay, which tends to keep pollutants from migrating to the lower aquifers. The groundwater contamination is made more complex by the depth to groundwater (90 to 120 ft) as well as no known confining layers and numerous clay lenses creating perched water tables. Because the organic solvent TCE is a Dense Non-Aqueous Phase Liquid (DNAPL), a "sinker", the existing geology creates a true challenge to the Navy for remediation.

The major pathways for contamination from Whiting Field NAS include surface runoff and groundwater movement through the surficial sand and gravel aquifer to the receiving waters of Clear Creek, which runs next to the perimeter of the base and Big Coldwater Creek. Both Clearwater Creek and Big Coldwater Creek drain south to the Black Water River. On average, over half the flow in the rivers and creeks in the area is from groundwater seepage. Erosion is also a concern because it may expose buried material and allow direct contact with surface runoff.

At OLF Barin the pathway for contamination migration is through surface drainage to the creeks on either side of the base, particularly toward Sandy Creek to the east and southeast of the airfield. Contaminants that reach the creek can travel downstream in surface flow toward Wolf Bay and the Gulf of Mexico. Subsurface contaminants could infiltrate to the local drinking water aquifer in recharge areas.

NATURAL RESOURCES - There is a widely spread, rural population in the area surrounding Whiting Field NAS. The private residences in the area have private wells. Aquatic organisms in Clear Creek and Big Coldwater Creek are potential receptors. Bio-accumulation in the tissues of these organisms could be conveyed to predators that inhabit this drainage system. Both creeks are classified by the Florida Department of Environmental Regulations as Class II Water-Recreation, Propagation and Management of Fish and Wildlife. There are many species of plants and animals listed as endangered, threatened or rare that could potentially be present or inhabit the area of Whiting Field NAS but the base area provides little natural habitat for these animals, so few are expected to actually inhabit the base. The animals include: Wood Stork, Eastern Indigo Snake, Alligators, Gopher Tortoises, Red-cockaded Woodpeckers and Peregrine Falcons.

RISK - A Baseline Risk Assessment for Ecological Assessment at OLF Barin, using EPA guidelines for CERCLA sites, was completed in FY94 and a Baseline Risk Assessment Workplan for Whiting Field NAS was done in FY95. A full Baseline Risk Assessment for several CERCLA sites (Sites 1, 2, 9-18 and 31) is currently being conducted.

The Navy completed a Relative Risk Ranking for the installation. Of the 44 sites at the installation (NAS and OLF combined) 22 sites received a "high" Risk Ranking. The overwhelming majority of the sites received the high ranking due to contamination of the groundwater and its use as drinking water. Landfills and disposal sites are the greatest offenders. Solvents, waste oil and fuel, waste paint and thinner and general construction debris were deposited on these sites. The groundwater in the areas were contaminated with VOCs, Semi-volatile Organic Compounds (SVOCs), metals, petroleum products and inorganics above Federal and State acceptable levels. The groundwater near the transformer disposal site contained an unacceptable level of the chemical additive PCBs.

The Agency for Toxic Substances and Disease Registry (ATSDR) completed a preliminary visit at Whiting Field NAS in FY95. Whiting Field received a rating of "E", which denotes no immediate health hazards or any current human exposures. Because of the "E" ranking, NAS Whiting is a low priority for receiving a full public health assessment.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - Whiting Field NAS and OLF Barin were proposed for the NPL on January 18, 1994 and were placed on the list on May 31, 1994, with an HRS score of 50.00. The installation has determined that the VOC groundwater plume is affecting two of the three installation drinking water supply wells. The contaminated groundwater was the driving factor for placing the installation on the NPL.

LEGAL AGREEMENTS - The Federal Facility Agreement (FFA) is being negotiated and is expected to be signed in FY98. A Site Management Plan is in the draft form and will be put in place when the FFA is signed.

PARTNERING - A partnering agreement between EPA, State of Florida regulators, the contractors for the station projects, the installation Remedial Project Manager (RPM) and NAVFAC SOUTHDIV RPM has been initiated and is underway but is not formally implemented. The partnering arrangement has already proved beneficial. In order to speed up the phases, Site Inspections (SIs) are being approached with an intended remediation method in mind. SI methods are discussed and then one method is agreed upon by the partnering team members before SI begins. Time is not wasted investigating various remedies that are known to not fit the current situation.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - The TRC for Whiting Field NAS was established in 1989 and held annual meetings through FY95. A TRC for OLF Barin was established in August 1992. With a need for greater community involvement in the base cleanups, the Whiting Field NAS TRC was converted to a Restoration Advisory Board (RAB) in July 1995. The RAB has monthly meetings and has conducted site tours for its members. The membership, solicited from the communities of Milton and Pensacola, Florida, is made up of local government officials, professionals and retirees, school system and installation employees. With the recent formation of the RAB, the community has become involved at the base with a high interest in the groundwater contamination and the possibility of off-site migration and the impact it may have on a large wetland, Clear Creek Floodplain, to the southwest of the base.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) for Whiting Field NAS was completed in October 1990 and was updated in 1995. A CRP for OLF Barin was completed in FY93.

INFORMATION REPOSITORY - The Administrative Record and Information Repository were established in August 1992 and are maintained at the NAVFAC's SOUTHDIV, Charleston, South Carolina as well as at NAS Whiting and OLF Barin.

WHITING FIELD NAS HISTORICAL PROGRESS

FY85

Sites 1-18 and 29-33 - Initial Assessment Study (IAS) (equivalent to Preliminary Assessment (PA)) for 23 CERCLA sites at Whiting Field NAS completed.

FY87

Sites 1-18 and 29-33 - An SI at 23 sites detected groundwater contamination at some sites and concluded that many monitoring wells were not located downgradient of the intended study site. Additional investigation was required to accurately assess hydrogeologic and chemical contamination conditions.

FY88

OLF - Preliminary Assessment at OLF Barin was begun in response to the discovery of two drinking water wells contaminated with trans-1, 2-dichloroethylene, tetrachlroethylene and trichlorethane. GAC filters were installed to remove the organic contaminants from the water supply.

FY89

Base-wide - To reduce accidental human exposure to contamination, warning signs were posted at hazardous sites.
Sites 1-18 - RI/FS activities began at CERCLA sites at Whiting Field NAS.

FY90

Site 124 - An SI was completed for one OLF Barin site.

FY91

Sites 119-123 and 125-128 - An SI was completed for nine CERCLA sites at OLF Barin.

FY92

OLF - An SI at OLF Barin detected soil contaminated with mercury, lead and methylene chloride. RI/FS activities at the OLF Barin began.
Sites 29-33 and 39 - RI/FS begun at six Whiting Field NAS sites.
Site 39 - IAS for one CERCLA site at Whiting Field NAS started.
Site 127 - RI/FS started at one OLF Barin site.
USTs 1- 6 - Removal actions of tanks and soil at all the USTs were completed. During the removal action, the installation determined that seven sites had subsurface petroleum contamination and would require further assessment. During the assessment of the UST sites, chlorinated hydrocarbon contaminants and 19 tanks were identified to be present on the sites.

FY94

NAS - Completed several RI/FS Technical Memorandums: NO 1, Geologic Assessment; NO 3, Soils Assessment; and NO 4, Hydrogeologic Assessment.
OLF - A Baseline Risk Assessment and Residential Well Sampling report for OLF Barin were completed. Completed additional RI/FS Technical Memorandum: NO 1, Water and Sediment; NO 2, Geology and Hydrogeology; NO 3, Soils; NO 4, Groundwater and NO 5, Data Summary.
Sites 34-38 - IAS for five CERCLA sites at Whiting Field NAS started.
Site 8 - Completed RI/FS for Site 8; Florida Department of Environmental Protection issued a No Further Remedial Action Planned (NFRAP).
USTs 4 and 6 - Site Assessments (SAs) is complete and site is RC.

FY95

NAS - Three projects scheduled for accelerating cleanup of Whiting Field NAS sites were canceled due to rescinding of funds; two Interim Remedial Actions (IRAs) and a baseline groundwater model project to be used for RD of groundwater cleanup.
NAS - Completed final RI/FS Technical Memorandums; NO 5, Groundwater Assessment and NO 7, Phase 111B Workplan. Numerous interim documents were produced for both Whiting Field NAS and OLF Barin.
NAS - ATSDR preliminary visit was performed at Whiting Field NAS. ATSDR will return in FY96 to do full public health assessment. A Baseline Risk Assessment Workplan for Whiting Field NAS was complete. Site 8 is RC.
OLF - Completed Investigative Derived Waste (IDW) Management Plan and Technical Memorandum Addendum for OLF Barin.
Sites 119 and 124 - Completed Performance Criteria Plans for two OLF Barin sites.
Site 119 - Began an Interim Removal Action (IRA) for tank removal.
Site 124 - Began an IRA for soil removal. Completed the RI/FS. Began an Remedial Design (RD).
Sites 121, 123, 127 and 128 - Completed RI/FS and received No Further Action (NFA) Decision Documents for four OLF Barin sites. All 4 sites are RC.
UST 3 - Corrective Action Plan (CAP) for one UST site was completed.
UST 5 - CAP is complete and began RD.

PROGRESS DURING FISCAL YEAR 1996

FY96

FFA and SMP undergoing regulatory review and negotiation. Not expected to be signed until FY98. Delayed from FY96 signing due to a desire to coordinate multiple FFA negotiations.
NAS - Site 30 - Groundwater investigation at Site 30 began. Objective is to delineate the vertical and lateral extent of the TCE plume.
NAS - Sites 1, 2, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18 and 31 - Baseline Risk Assessment workplan completed and Baseline Risk Assessment started. The 13 RI reports were delayed until FY97 due to late start on full funding in FY96.
Site 17 - An IRA for soil removal was completed.
OLF - Site 119 - RI/FS completed.
Sites 119 and 124 - IRAs and RDs are complete. RAs were initiated in September 96. The Removal Action at Site 119 includes removal of six abandoned wash rack underground storage tanks and contaminated soil removal. The Removal Action at Site 24B includes removal of the fire training pit, liner and contaminated soil.
OLF - Sites 125 and 126 - RI/FS is complete and NFA received. Sites are RC. Site 120 RI/FS is complete.
UST 5 - RD is complete. IMP was begun, with completion scheduled for FY99.

WHITING FIELD NAS
PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

FFA and SMP undergoing regulatory review and negotiation.
Sites 1, 2, 9, 10, 11, 12, 13, 14, 15 and 16 - RI reports, RI/FS and Baseline Risk Assessment for 10 CERCLA sites will be complete. Site 12 expected to be listed as NFA at that time and become RC.
Sites 17, 18 and 31 - RI reports will be complete. Baseline Risk Assessment will be complete and RI/FS reports will be submitted with final approval in 1st quarter FY98.
Site 32 - Soil and groundwater investigation for Site 32 will begin.
Sites 30 and 31 - Soil investigation will begin.
Site 30 - Remedial Design will begin for groundwater investigation.
Sites 119 and 124 - RAs will be complete. Sites will be RC.
Site 122 - RI/FS is complete.
UST 1 - Expected to receive an RC.
UST 2 - SA will be complete.

FY 98

FFA will be signed. SMP will be implemented.
Sites 17, 18 and 30 - RI/FS will be complete.
Site 30 - RD will be complete. RA will be complete and LTO will begin for groundwater remediation.
Site 32 - RI/FS will be complete and Remedial Design for groundwater investigation will begin.
Sites 31 and 33 - RI/FS will be complete.
UST 2 - CAP will be completed and RD will begin.

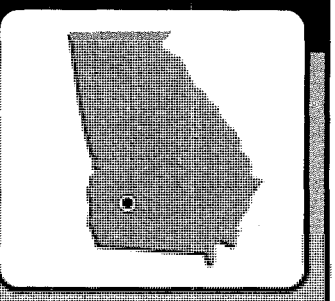
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	33				1			4
RI / FS	6	4	11	6		2	1	8
RD		2		1	2		1	23
RAC			2	1		1		25
RAO								11
IRA		3(3)						
RC	5	2	3			1		27
Cumulative % RC	13%	18%	26%	26%	26%	29%	29%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	2		1					
CAP	2			1				
DES		1			1			
IMP					1			1
IMO								2
IRA								
RC	3		1					2
Cumulative % RC	50%	50%	67%	67%	67%	67%	67%	100%

ALBANY MARINE CORPS LOGISTICS BASE

ALBANY, GEORGIA



Engineering Field Division/Activity:

Major Claimant: CMC

Size: 3,397 Acres

Funding to Date:

Estimated Funding to Complete:

Base Mission: Acquires, maintains, repairs, rebuilds, distributes and stores supplies and equipment to sustain combat readiness of world wide Marine Corps forces; provides Quality Assurance Program; conducts training.

Contaminants: Heavy metals (arsenic), pesticides, phthalates, polynuclear aromatic hydrocarbons, volatile organic compounds (trichloroethylene)

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	23	High:	9	Not Evaluated:	6
RCRA Corrective Action:	6	Medium:	3	Not Required:	6
RCRA UST:	0	Low:	5		
Total Sites:	29				

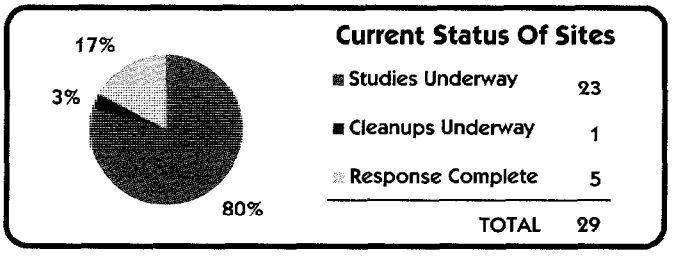
NPL

Sites Response Complete: 5

EXECUTIVE SUMMARY

The Marine Corps Logistics Base (MCLB), Albany is located in the southwestern portion of Georgia, about midway between Tallahassee, Florida, and Macon, Georgia. The Marine base was commissioned as the Marine Corps Depot of Supplies in 1952. In 1954, a large maintenance facility was completed on the base and began functioning as a Marine Corps Maintenance Activity. In 1976, additional functions to support the Marine Corps weapons systems and equipment were moved to the base and the name was changed to the Marine Corps Logistics Base. The typical operations associated with equipment and weapons maintenance and support have previously contributed to the contamination on the base. Primary contamination site types include disposal areas, storage areas, and landfills. Primary contaminants of concern are the organic solvent trichloroethylene (TCE) and its degradation products, the chemical additive polychlorinated biphenyls (PCB), and heavy metals. Current operations include pollution prevention technologies to prevent further contamination. The primary pathway for contaminant migration on the base is movement through the surficial soil. If contamination were to migrate into the deeper aquifer, there would be potential for off-base impact. The primary reason for placing MCLB Albany on the National Priorities List (NPL) on December 21, 1989, was a potential for contaminated groundwater to migrate into off-base drinking water wells. A Federal Facility Agreement (FFA) was signed between the U.S. Environmental Protection Agency (USEPA) Region IV, Georgia Environmental Protection Division (GEPD), and the Navy in 1991.

The Installation Restoration program (IRP) investigations were started at MCLB, Albany in Fiscal Year (FY) 1984. The initial assessment study (IAS), equivalent to a preliminary assessment (PA), was completed for eight sites in FY85. A confirmation study was completed in FY87 for nine sites, including six of the original eight IAS sites. These nine sites were identified as solid waste management units (SWMU) by the GEPD in the Part B Resource Conservation and Recovery Act (RCRA) permit for the base, which specified requirements for a RCRA facility investigation (RFI). The RFI was completed for the nine sites in FY 89. These three studies led to the Hazard Ranking System scoring that placed MCLB, Albany on the NPL, which mandated an FFA.



During development of the FFA in 1991, a total of 21 sites were listed, including the 11 previously studied sites. All of the sites were grouped into operable units (OUs) based on geographic proximity, contaminant types, and other factors, with the intent of facilitating investigation and remediation efforts. As investigations progressed, 8 additional sites were added to the list, for a total of 29 sites. There are 23 CERCLA sites and 6 RCRA CA sites. The CERCLA sites are currently grouped as follows:

OU 1 - Sites 1, 2, 3 and 26
OU 2 - Site 11
OU 3 - Sites 16 and 17
OU 4 - Sites 6, 10, 12, 13 and 22
OU 5 - Sites 8 and 14 (RCRA)
OU 6 - Sites 3 and 26 (GROUNDWATER ONLY)
Screening Sites - Sites 4, 5, 7, 9, 15, 18-21 and 25

Although the original intent was to investigate groundwater as part of individual OUs, it was determined that a basewide investigation of groundwater will be more efficient. Based on this determination, a value engineering approach was implemented in FY96 to expedite Records of Decision (RODs) for all media except groundwater at each OU, and to address groundwater as a separate, basewide unit now identified as OU 6.

There has been a variety of other successful accomplishments at MCLB, Albany. For reduction of risk at Site 3, where there was a possibility that a plume of the organic solvent TCE was migrating offbase, an IRA pump and treatment system was installed to contain the plume and potential migration. Four other response actions have been implemented at MCLB, Albany to reduce the potential risks to the public and environment.

A major accomplishment in terms of timesaving has been the use of Global Positioning Satellite surveys and an Electronic logbook to enable the success of a "paperless project". This project has reduced the field time and level of effort, to incorporate data into report format.

Making use of other innovative technologies, a pilot-scale treatment system has been designed and installed at Site 1. This system involves treating groundwater contaminated with the organic solvent TCE and its breakdown products with (1) a peroxone oxidation treatment system, (2) methanotrophic rotating biological contactor (mRBC), and (3) insitu anaerobic bioremediation in combination with the mRBC.

ALBANY MCLB
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - The two notable surface water bodies on the MCLB, Albany facility are Covella Pond and Indian Lake. Covella Pond is located in the central, administrative area of the base. The pond is filled with water from the base potable water supply system. Indian Lake is located at the northeast portion of the base and is surrounded by 40 acres of wetlands. Two other significant surface water bodies in the vicinity are the Flint River, located approximately 3 miles west of the base, and Piney Woods Creek, which drains the northeast corner of the base. In general, surface drainage for the western portion of MCLB, Albany drains through a system of culverts and unlined ditches to the west, eventually into the Flint River, which eventually discharges into Lake Seminole, at the Florida-Georgia border. The eastern portion of the base drains into Indian Lake.

The two principal hydrogeologic units of interest at the base are the overburden and the Upper Floridan aquifer. The overburden, consisting predominantly of clay, serves as a confining unit for the underlying aquifer and inhibits vertical seepage. The Upper Floridan aquifer is a contributing source of drinking water for the area, although most of the municipal water supply wells that draw from this aquifer also draw from deeper aquifers. The primary pathway for contaminant migration on the base is vertical groundwater movement through the surficial soil. If contamination were to migrate into the deeper portion of the Upper Floridan aquifer, there is a potential for off-base impact.

NATURAL RESOURCES - On the Marine base, there are both a wildlife preserve and a fishing lake (Indian Lake). Of the 26 species of animals that the State of Georgia has placed on the endangered or threatened list, there are 9 that have the potential to inhabit MCLB, Albany. They are the Georgia blind cave salamander, American alligator, eastern indigo snake, ivory-billed woodpecker, peregrine falcon, bald eagle, wood stork, red-cockaded woodpecker and Bachman's warbler. There is also a potential for 10 endangered or threatened plant species to be on or near the base.

RISK - The Agency for Toxic Substance and Disease Register (ATSDR) performed a public health assessment for groundwater in the MCLB, Albany area and released the Initial Assessment Report in 1992. Among ATSDR's recommendations was that groundwater in private wells immediately north of Sites 1, 2 and 3 be sampled. Based on the results of these sampling results several residents were connected to the city of Albany's water supply and are no longer exposed to potentially contaminated groundwater. An interim measure was also installed along the northern boundary of Site 3 to provide hydraulic containment of the groundwater. Studies are ongoing to confirm the source of contaminated groundwater detected offbase.

The Navy completed a Relative Risk Ranking for the installation in FY95 and 9 sites were ranked high. Water passing through the surface soil causes the contaminants to migrate down into the Upper Floridan aquifer. The Floridan aquifer is a source for public water supply in the Albany area. OUs 1 and 4 have been found to contain contaminated groundwater plumes. Potential sources of these plumes include former disposal areas and landfills, the Depot Maintenance Activity, and the industrial wastewater treatment plant (IWTP). Aquatic life, which inhabit Indian Lake and the Flint River, and wildlife, which live nearby, could be impacted by the contamination. Hunters and fishermen are the main human receptors in the wildlife preserve, lake, and river areas.

Several response actions have been implemented at MCLB, Albany to reduce the potential risks to the public and environment. A sludge pile was removed from Site 3. Soil from Site 8, found to contain elevated levels of metals and PCBs in the surface soil, and Site 17, contaminated with metals, were excavated and disposed of off-base. A cap was constructed at Site 16 to reduce the potential exposure to contaminated subsurface soil.

Human health and ecological risk assessments have been performed at OUs 1-5, addressing 14 of the 26 sites. The risk assessments of the OUs listed below have addressed surface and subsurface soil, sediment, and surface water.

OU 1 (Sites 1-3 and 26) - The risk assessments for Sites 1, 2 and 3 were completed in 1995; resulting in the identification of a potential risk to the public from a sludge pile located on the surface of site 3. This sludge pile was removed and disposed of off-base in 1996. The risk assessment for Site 26 will be finalized in FY97.

OU 2 (Site 11) - The risk assessment for Site 11 was completed in 1995, confirming that all risks associated with non-groundwater media were below the acceptable regulatory risk range.

OU 3 (Sites 16 and 17) - The risk assessments for Sites 16 and 17 were completed in 1992 and determined that Site 16 did not pose a potential risk above regulatory guidance, however, the Navy felt it was prudent to implement a RA for subsurface soil to ensure public safety. Site 17 was found to pose a potential ecological risk; thereby, requiring a RA for surface and subsurface soil.

OUs 4 (Sites 6, 10, 12, 13 and 22) and 5 (Sites 8 and 14) - Draft Risk Assessments have been reviewed by the regulatory agencies and will be finalized in FY97.

The risk assessment of basewide groundwater is currently being addressed in OU 6.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - MCLB, Albany was placed on the NPL on December 21, 1989, with a Hazard Ranking System (HRS) score of 44.65. There was a potential for contaminated groundwater to migrate into off-base drinking water wells. Based on an RCRA investigation of Site 12 (IWTP area), it was suspected that contamination was entering the groundwater and had a potential to migrate off-base.

LEGAL AGREEMENTS - An FFA was signed between the USEPA Region IV, GEPD, and the Marine Corps in July 1991. The FFA initially identified 21 sites, including 11 previously studied sites. Subsequently, the agreement currently list 24 CERCLA sites.

PARTNERING - An informal partnering agreement for cooperative effort in expediting document review is already in place. GEPD is unwilling to participate in a formal partnering agreement between the Marine Corps and State and Federal regulators. However, each party has agreed to review and provide a response to the many documents that are required for the investigation, remediation, and/or closure of the 29.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - The MCLB, Albany TRC was established in September 1989. It met once a year, with additional public meetings as needed. The membership of the TRC consists of representatives from the local utility company, the Marine Corps Public Works Office, Darton College, GEPD, USEPA Region IV, U.S. Department of Commerce and U.S. Department of Fish and Wildlife. To date, there has been little community attendance at meetings, and therefore it will not be made into a RAB. However, efforts are being made to identify individuals who are interested in assisting the TRC in improving two-way communications between the MCLB and the public. The TRC will met on December 3, 1996 and meet quarterly in 1997.

ALBANY MCLB
RELEVANT ISSUES

COMMUNITY RELATIONS PLAN - The CRP was finalized in December 1991.

INFORMATION REPOSITORY - The Information Repository is located in the Dougherty County Library, 300 Pine Avenue, Albany, Georgia. The Administrative Record is located and maintained at MCLB, Albany Environmental Branch (Code 505), Building 5501. These were established in FY92.

HISTORICAL PROGRESS

FY85

Sites 1-8 - IAS, equivalent to a PA, was completed.

FY87

Sites 1-3, 5-7 and 9-11 - Confirmation study was completed.
SWMU 2 (IWTP) - The Navy completed the RFA/RFI for Site 12 (SWMU 2 IWTP), resulting in the recommendation for groundwater treatment at the IWTP.

FY88

SWMU 2 (IWTP) - Corrective Measure Study (CMS) was completed and the Corrective Measure Implementation (CMI) was started, including the installation of a recovery well and connection to the IWTP for GW treatment.

FY89

SWMU 1 (TSDF) - The CMS was completed at RCRA site SWMU 1.
SWMU 2 (IWTP) - The CMI was started, an Interim Remedial Action (IRA) was completed that consisted of sludge/soil removal and capping of the IWTP sludge beds.
Sites 1-3, 5-7 and 9-11 - RFI activities were completed.

FY90

SWMU 3 (DWTP Site) - An Administrative Order was issued by the State of Georgia for the RCRA closure for the Domestic Wastewater Treatment Plant (DWTP) sludge beds. Sampling results indicated heavy metal concentrations remaining from decontamination activities.

FY91

The FFA was finalized and signed in July by the Navy, USEPA Region IV and GEPD.
Site 14 - PA was performed.

FY92

Sites 1-3 and 11 - An RI/FS workplan was completed, and field investigations were implemented.
Sites 16 and 17 - The RI/FS was completed. The proposed plan and Public Meeting were completed. IROD was signed.

FY93

Sites 16 and 17 - RDs were completed.
Sites 6, 10, 12, 13 and 22 - RI/FS workplan completed and field investigation initiated.
SWMUs 4 and 5 - RFI Plan was started.

FY94

Site 3 - Final Design of Interim Corrective Measure (ICM) to provide hydraulic containment of contaminated groundwater was submitted and a ROD for the ICM was signed.
Sites 1 and 3 - A treatability study workplan was prepared for these two sites and the bench-scale studies initiated for the study of bioremediation and chemical oxidation of contaminated groundwater.
Sites 16 and 17 - Construction of the RAs was completed and Remedial Action Report (RAR) started.
Sites 6, 10, 12, 13 and 22 - Field investigation completed.
Sites 8 and 14 - Final RI/FS workplan completed.
SWMU 3 - CMS, CMI and a Final Remedial Action (FRA) for soil removal from domestic sludge drying beds were completed
SWMUs 4 and 5 - RFI and RCRA Closure Plan was completed. RFI field work was completed.

FY95

Site 26 - An RI/FS Workplan Addendum was prepared and the field investigation implemented.
Site 3 - ICM at Site 3 was completed (Full scale operation).
Sites 1 and 3 - Technical Memorandum submitted for bench-scale studies and recommendation for pilot-scale studies at Site 1.
Site 1 - Underground Injection Control permit submitted to support insitu bioremediation pilot-scale tests. Final design of pilot-scale treatment systems completed.
Sites 1-3 - The RI/FS was submitted.
Site 26 - The Draft RI/FS was submitted to regulatory agencies for review.
Site 11 - The RI/FS was submitted.
Site 22 - An Engineering Evaluation and Cost Analysis (EE/CA) and Final Action Memorandum were completed for the interim treatment of elevated concentrations of VOCs in groundwater.
Sites 6, 10, 12, 13 and 22 - Draft RI/FS submitted for review.
Site 8 - Focused Feasibility Study and Proposed Plan were completed for interim RA (contaminated surface and subsurface soils). IROD and IRA design completed.
SWMUs 4 and 5 - Draft RFI report was submitted. Modified RFI Plan.

PROGRESS DURING FISCAL YEAR 1996

FY96

Site 1 - Pilot-scale systems construction started. Peroxone pilot-scale test conducted by U.S. Army Corps of Engineers Waterways Experiment Station in November 1995. Remainder of pilot-scale construction completed in May 1996. mRBC pilot-scale test was operated during June and July 1996. Tracer study associated with testing of enhanced insitu bioremediation pilot-scale test initiated in September 1996. The mRBC continued operating and will support ongoing operation of insitu bioremediation tests. RI/FS continues.
Site 3 - Final Action Memorandum was submitted to support the removal action for the excavation and offbase disposal of sludge. IRA completed. ROD for OU1 was not signed for all media except groundwater. More work needed to be done to get to a NFA ROD on all media except groundwater.
Site 11 - Final Proposed Plan released to the public, recommending No Action. No Action ROD was signed. Groundwater deferred to OU 6 Basewide Groundwater (BWGW). IRA was completed, RI/FS was completed and site is RC.
Site 22 - A removal action was not implemented after further evaluation of aquifer characteristics and pumping test data revealed that the recovery goals initially set for reducing contaminant levels would not be met. ROD was not signed due to these changing conditions.
Site 8 - An IRA was completed for the excavation and off-base disposal of

ALBANY MCLB
PROGRESS DURING FISCAL YEAR 1996

surface soil contaminated with metals and PCBs.
Site 8 - Draft RI/FS submitted for review.
Site 14 - Draft RFI/CMS submitted for review.
SWMUs 4 and 5 - Completed supplemental RFI field investigation.
Site Screening sites
Site 9 - PA/SI was completed.
SWMUs 4 and 5 - RFA was completed. RFI/CMS was begun.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Site 1 - Treatability study of enhanced, insitu bioremediation to be completed.
Site 3 - Closure documentation for Sludge Pile Removal Action to be submitted. Hydraulic containment system (ICM) will continue to be monitored and modified, as necessary pending coordination with regulatory agencies.
Site 26 - Final Addendum for OU 1 RI and Risk Assessment will be completed.
Sites 1-3 and 26 - No Further Remedial Action Planned ROD for all media except groundwater will be signed. Groundwater deferred to OU 6 Basewide Groundwater.
Sites 1 and 2 - RI/FSs will be complete and sites will be RC.
Site 6 - Additional RI to be completed. Focused Feasibility Study to be completed. RD to be completed.
Site 13 - RD will be completed.
Sites 8 and 14 - Final Risk Assessment will be completed.

PSC SCREENING SITES:
Sites 4, 5, 7, 15, 18-21 and 25 - PA/SI will be complete and all sites will be RC.
Site 9 - Site being evaluated for further action.
SWMUs 4 and 5 - Designs will be complete.
SWMU 5 - CMI will begin.

FY98

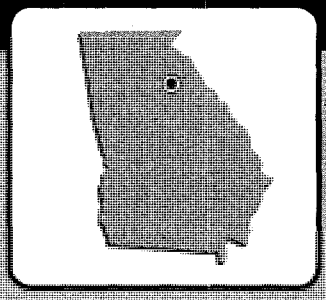
Sites 3 and 26 RI/FS will be complete.
Site 6 - RI/FS will be completed. RA will be completed and site will go RC.
Sites 10, 12 and 22 - RI/FS will be completed and sites will go RC.
Site 13 - RI/FS will be completed and an RA will be completed. Site will go RC.
Sites 8 - No Further Remedial Action Planned (NFRAP) ROD to be signed. RI/FS will be complete and sites will be RC. Groundwater deferred to OU 6.
Site 14 - NFRAP ROD to be signed. RFI/CMS will be complete and sites will be RC. Groundwater deferred to OU 6.
SWMUs 4 and 5 - RFI/CMS will be completed.
SWMU 4 - CMI will begin.
SWMU 5 - CMI will be completed. Site will be RC.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	7	1	9					
RI / FS	2	1	2	8				1
RD	2		2					2
RAC	2			2				2
RAO								1
IRA	2(3)	3(3)						2(2)
RC	2	1	11	6				3
Cumulative % RC	9%	13%	61%	87%	87%	87%	87%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	1	2						
RFI / CMS	2			3				
DES			2					
CMI	2			1	1			
CMO								1
IRA	2(3)							1(1)
RC	2			2	1			1
Cumulative % RC	33%	33%	33%	67%	83%	83%	83%	100%

ATHENS NAVY SUPPLY CORPS OFFICER SCHOOL
ATHENS, GEORGIA



Engineering Field Division/Activity: SOUTHDIV
Major Claimant: CNET
Size: 58 Acres
Funding to Date: $3,551,000
Estimated Funding to Complete: $100,000

Base Mission: Provides Supply Corps training for personnel ashore and afloat

Contaminants: POLs

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

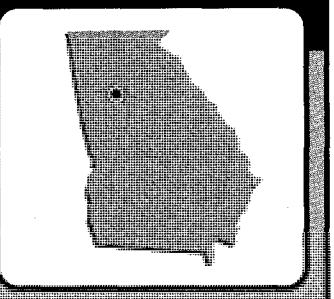
Sites Response Complete: 0

PROGRESS AND PLANS

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	1							
CAP	1							
DES	1							
IMP		1						
IMO							1	
IRA							1(2)	
RC							1	
Cumulative % RC	0%	0%	0%	0%	0%	0%	100%	100%

ATLANTA NAVAL AND MARINE CORPS RESERVE READINESS CENTER

ATLANTA, GEORGIA



Engineering Field Division/Activity: SOUTHDIV

Major Claimant: COMNAVRESFOR

Size: 5 Acres

Funding to Date: $170,000

Estimated Funding to Complete: $0

Base Mission: Provides training for reserve units

Contaminants: POLs

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

Sites Response Complete: 1

PROGRESS AND PLANS

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	1							
CAP	1							
DES								
IMP		1						
IMO								
IRA								
RC		1						
Cumulative % RC	0%	100%	100%	100%	100%	100%	100%	100%

KINGS BAY NAVAL SUBMARINE BASE
ST. MARY'S, GEORGIA

Engineering Field Division/Activity: SOUTHDIV

Major Claimant: CINCLANTFLT

Size: 16,719 ACRES

Funding to Date: $9,055,000

Estimated Funding to Complete: $22,597,000

Base Mission: Provides a full service submarine base; develops support facilities for Fleet ballistic missile submarines.

Contaminants: Diesel fuel, paint, PCBs, POLs, solvents, volatile organic compounds

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	16	High:	1	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	2	Not Required:	13
RCRA UST:	1	Low:	1		
Total Sites:	17				

Sites Response Complete: 13

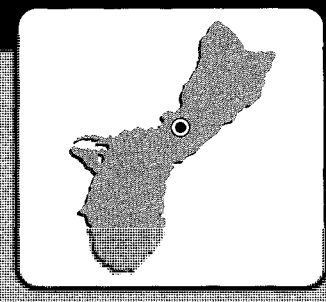
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	16							
RI / FS				2	1			1
RD			1					
RAC						1		
RAO								1
IRA			1(1)					
RC	12			1	1			2
Cumulative % RC	75%	75%	75%	81%	88%	88%	88%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	1							
CAP								
DES	1							
IMP	1							
IMO								
IRA	1(1)							
RC	1							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

AGANA NAVAL AIR STATION

AGANA, GUAM



Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible]

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	30	High:	2	Not Evaluated:	19
RCRA Corrective Action:	0	Medium:	17	Not Required:	0
RCRA UST:	0	Low:	4		
Total Sites:	30				

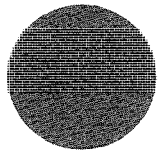
BRAC III

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 groundwater 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.



Current Status Of Sites

Studies Underway	30
Cleanups Underway	0
Response Complete	0
TOTAL	30

100%

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 (COMNAVMARIANAS). 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

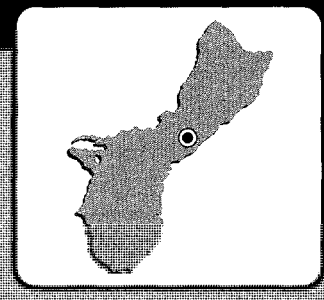
Sites 17-19, 22, 24 and 26 - Conduct Remedial Investigation.
Sites 2, 7 and 10 - Prepare removal design.
Sites 21 and 23 - Conduct non-time-critical removal action. Prepare EE/CA and removal design.
Sites 4 and 16 - Implement Interim removal action.
Site 29 - Implement long term monitoring at NAS-1. 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: [illegible]

Major Claimant: COMNAVCOMTELCOM

Site: [illegible] Acres

Funding to Date: $501,200

Estimated Funding to Complete: $13,442,000

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, PCBs

Number of Sites:

CERCLA:	9
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	9

Relative Risk Ranking of Sites:

High:	0	Not Evaluated:	1
Medium:	0	Not Required:	8
Low:	0		

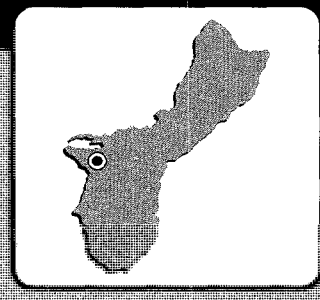
Sites Response Complete: 8

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/COMNAVFACENGCOM

Size: 8,999 Acres

Funding to Date: $70,631,000

Estimated Funding to Complete: $67,162,000

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 radiological, organic compounds, paint, PCBs, pesticides, plating wastes, POLs, solvents

Number of Sites:	
CERCLA:	27
RCRA Corrective Action:	25
RCRA UST:	0
Total Sites:	53

Relative Risk Ranking of Sites:			
High:	31	Not Evaluated:	4
Medium:	3	Not Required:	15
Low:	0		

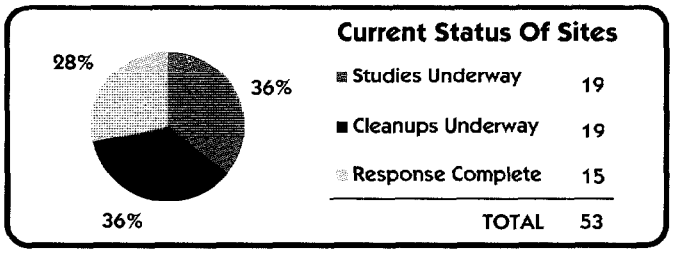
BRAC IV

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 fenceline (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 acres	0 acres	0 acres	0 acres	0 acres	0 acres	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, NRMC 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: 955 Acres

Funding to Date: $75,000

Estimated Funding to Complete: $0

Base Mission: Conducts oceanographic observations in the Pacific Ocean.

Contaminants: PCBs, paint, refuse with hazardous waste, solvents, plating waste

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

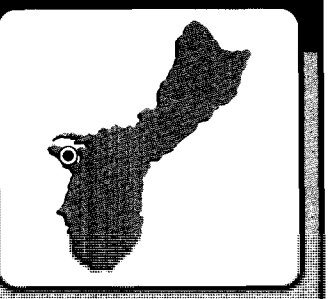
Sites Response Complete: 1

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: $31,000

Estimated Funding to Complete: $0

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

Contaminants: Heavy metals

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

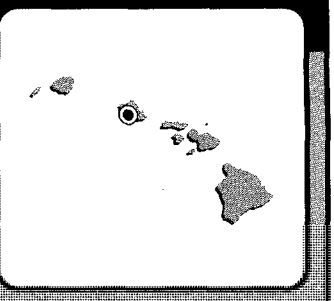
Sites Response Complete: 1

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%

BARBERS POINT NAVAL AIR STATION

BARBERS POINT, HAWAII



Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible]

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

Number of Sites		Relative Risk Ranking of Sites			
CERCLA:	31	High:	3	Not Evaluated:	8
RCRA Corrective Action:	0	Medium:	12	Not Required:	9
RCRA UST:	4	Low:	2		
Total Sites:	65				

BRAC III

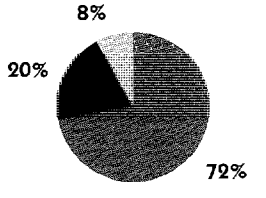
Sites Response Complete: 9

EXECUTIVE SUMMARY

Barbers Point Naval Air Station (NAS) is located on the island of Oahu, 13 miles west of Honolulu, Hawaii. The main base encompasses approximately 3,709 acres on the leeward coast of Oahu. Aviation activities began at Barbers Point in the 1930's. Originally, an emergency landing field, with the added requirements from World War II (W.W.II), it quickly grew and NAS Barbers Point was completed in 1943. Typical air station operations that contributed to contaminated sites on the facility include disposal pits, a pesticide shop, a landfill, transformer sites. The primary contaminants of concern, affecting both groundwater and soil, include the chemical additive PCB, heavy metals, petroleum products, pesticides and solvents. Current operations include pollution prevention measures to prevent further contamination.

NAS Barbers Point is located toward the west end of the southern coastal plain. Streams do not enter or exit the base, and there is only one small pond on the station. The groundwater found on the base is brackish. Due to the highly permeable bedrock and poorly developed soils at the NAS, any leachates or liquid wastes in the ground can be expected to readily migrate to the water table. Two factors mitigate the danger from the migration potential: the groundwater discharge is probably toward the ocean and the salinity of the groundwater precludes its use as a domestic water source without pretreatment. Three endangered plant and animal species and six "depleted" plant species are present on the base. The base also contains several sensitive habitats. The land adjacent to the base, to the north and east, is used for small-scale agriculture and residential developments. The land to the west is used for industrial activities. Since the air station obtains its potable water from a well two miles north of the station, and most of the site-related contaminants do not appear to have migrated very far from the sites, there is little potential for human exposure to contaminants.

To increase public involvement, a Restoration Advisory Board (RAB) was established for Barbers Point in FY94. A draft of the Community Relations Plan (CRP) was completed December 1994. An Administrative Record has been updated and there is a copy of its index available for viewing in the Information Repository in Ewa Beach, Hawaii. All CERCLA documents are also available at the Information Repository.



Current Status Of Sites

Studies Underway	18
Cleanups Underway	5
Response Complete	2
TOTAL	25

Nine CERCLA sites were identified during the initial Preliminary Assessment (PA), completed in FY83. Three sites were identified for further investigation. In FY94, a second PA (the Environmental Baseline Survey (EBS)) was completed. Seventeen sites were identified for further investigation (including six sites included in the initial PA). Two of the sites identified in the initial PA and listed as Response Complete (RC) in FY87 were determined to require No Further Action (NFA). Seventeen sites are scheduled for Remedial Investigation/ Feasibility Study (RI/FS). Two RI/FS will be complete in FY97, the remaining sites will have a RI/FS completed between FY99 and FY04. Sixteen Interim Removal Actions (IRAs) will be completed at 16 sites between FY99 and FY04. Two Underground Storage Tank (UST) site groups were added in FY94, following an Initial Site Characterization (ISC). Two sites requiring further action were identified for LTM which is scheduled to be completed in FY98. The Implementation (IMP) phase will be completed in FY98 for the other UST group. Cleanup for this site will be complete after the IMP is completed.

Five sites (Sites 1, 2, 9, and 13 and 20) may require groundwater remediation prior to final cleanup, which is expected in FY04. Site 20 will also require removal of contaminated concrete and/or soil. Most of the other sites at the installation will require some soil removal and are expected to be clean by FY04. Site 19 does not require Remedial Actions (RAs), but will have Long Term Monitoring (LTM) will be conducted until the property is transferred. Some sites are expected to require NFA following the completion of the evaluations for the Remedial Investigations (RIs) in FY96.

Barbers Point NAS was selected for closure by the Base Realignment and Closure Commission (BRAC III) of 1993. Base closure procedures began in September 1993 with the initiation of the EBS and a BRAC Cleanup Plan (BCP). Operational closure of the base is set for July 1999. The final property transfer date is anticipated to be in FY04, when IRAs at seven of the sites are completed. Some property is expected to be available for transfer as early as FY96 97. The BRAC Cleanup Team (BCT) was formed in FY94. A draft Land Reuse Plan for the installation is expected to be complete in early FY97.

BARBERS POINT NAS
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - The island of Oahu was formed by two large volcanoes. NAS Barbers Point is located toward the west end of the southern coastal plain, in an area where deposition of coral reef limestone predominate in the uppermost sedimentary levels. It is a coral outcrop. There is very little soil cover. Streams do not enter or exit the base, and there is only one small pond on the station. The groundwater found on the base is brackish. The groundwater is in direct hydraulic connection with the Pacific Ocean. Below the uppermost coral aquifer, there are several layers of permeable coral limestone separated by less permeable materials. Due to the highly permeable bedrock and poorly developed soils at NAS, any leachates or liquid wastes in the ground can be expected to readily migrate to the water table. Once in the groundwater, contaminants could be subject to mixing, induced by tidal pulses within the brackish water zone. Two factors mitigate the danger posed by the migration potential; the groundwater discharge is generally toward the ocean, and the salinity of the groundwater precludes its use as a domestic water source without pretreatment. Possible causes of potential degradation of the groundwater under the station are not limited to the NAS activities. The large-scale farming irrigation that has taken place adjacent to the NAS may have affected the groundwater flowing under the installation. Any other solubles applied to the crops or soil might eventually be transported under the NAS to the ocean.

NATURAL RESOURCES - Because of the isolation of the islands, there are a great number of animal and plant species that are unique to the Hawaiian Islands. Much of the plant life in the mountain areas is still native, but the vegetation found in the lowlands of Oahu is mostly non-native, due to extensive agriculture, urban development and a number of military installations. Animals native to Hawaii are limited to birds and insects. Two federal and state listed endangered plant species and six "depleted" plant species are present on the base. One endangered bird was observed at the base. Sensitive habitats on-site consist of wetlands, mangrove swamps, the coastal salt flats, the coastal region of Barbers Point, and portions of lowland scrub forest and coastal strand. The land adjacent to the north and east of the base is used for small-scale agriculture and residential developments. Former sugar cane fields have been developed or are currently vacant. There is also an industrial park on the western boundary. A petroleum refinery in the industrial park has, in the past, injected its refinery wastes into a well near the installation boundary. Since the NAS obtains its potable water from a well two miles up gradient of far from the sites, there is little potential for human exposure to contaminants. There is potential for human exposure risk from groundwater contamination and direct soil contact. Since the groundwater flows to the southwest with some westerly gradients, it is the Station and most of the site-related contaminants do not appear to have migrated very assumed that it discharges to the ocean. Groundwater may be used as a drinking water source in the future, but the salinity of the groundwater would make pretreatment necessary.

RISK - A baseline for Human Health Risk Assessment using EPA's guidance for assessing CERCLA sites has been completed for all sites, except Sites 17 and 20, using invalidated data. The Human Health Risk Assessment will be finalized using validated data. An Ecological Risk Assessment will be performed for all sites except 9, 19, and 20.

The Department of Defense's (DOD's) Relative Risk Ranking system was used to rank the risk factors for 17 of the 19 active sites on the installation in FY95. Six sites were not evaluated at this time; they will be evaluated after further data collection. Three of the sites at Barbers Point NAS received a "High" relative risk ranking. All three sites had high scores for potential groundwater contamination, and one site had high rankings for both potential soil (and groundwater) contamination. Possible receptors of the groundwater and soil contamination include onsite workers, visitors, and construction workers. The groundwater is brackish and not used for drinking. However, it could be used as a drinking water source in the future if it is desalinated. Twelve sites received a "Medium" risk ranking.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - In FY94, public involvement at Barbers Point was enhanced with the formation of the Restoration Advisory Board (RAB). The RAB has 17 members, consisting of representatives from the State of Hawaii, EPA Region IX, the Redevelopment Commission, the Oahu Civil Defense Agency and members of several community associations. The community associations involved include Friends for Ewa, Save Ewa Beach Ohana, and Hawaii Thousand Friends. Since the RAB was established, the community has become more involved with the cleanup effort. RAB members have been provided copies of the Environmental Baseline Survey (EBS), BRAC Cleanup Plan (BCP), the Community Environmental Response Facilities Act (CERFA) documents, and all Remedial Investigation/Feasibility Study (RI/FS) documents for review. Meetings are held on an "as-needed" basis.

COMMUNITY RELATIONS PLAN - A draft of the Community Relations Plan (CRP) was completed December 1994. The final version of the CRP is on hold.

INFORMATION REPOSITORY - The Administrative Record, first established in 1993, has recently been updated and copies are available for viewing at the installation and at Naval Facilities Engineering Command, Pacific Division (PACDIV) at Pearl Harbor. An index of documents is available at the Information Repository. The Information Repository was established in 1992, and is housed at the Ewa Beach Public School and Library in Ewa Beach, Hawaii.

BASE REALIGNMENT AND CLOSURE

BRAC - Barbers Point NAS was selected for closure by the Base Realignment and Closure Commission of 1993 BRAC III Base closure procedures began in September 1993 with the initiation of the EBS and a BCP. Operational closure of the base is set for July 1999. The final property transfer date is estimated to be in FY03, when Interim Removal Actions (IRAs) at Site 1 are completed. Some property is expected to be available for transfer as early as FY97. The installation was selected for closure because existing operational units could be transferred to other military installations and still adequately perform their mission requirements.

BRAC CLEANUP TEAM - The BRAC Cleanup Team (BCT) was formed in FY94. The cleanup process was accelerated through BCT meetings, on-site visits and concurrent review of documents, including the EBS, the BCP and CERFA documents.

DOCUMENTS - A BCP and EBS have been completed. The BCT identified 14 sites and three Operable Units (OUs) that required further investigation, in FY95, and the results of these investigations will be summarized in an interim report. Final reports for all sites, except Site 17, investigated under BRAC are expected to be completed in FY97. It is anticipated that following the investigation, several of the sites will require No Further Action (NFA).

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
0 acres	0 acres	0 acres	0 acres	0 acres	50 acres	2,492 acres

RETENTION AREA - The Navy is retaining approximately 1,280 acres of property at NAS Barbers Point. There are four CERCLA sites and two UST sites within this area. Sites 6 and 7 were two of the three sites determined to require no further action in FY87 after the PA/SI phase was completed. Site 17 was identified for further investigation during the EBS.

BARBERS POINT NAS
RELEVANT ISSUES

A RI/FS will be completed for this site in FY07 after an IRA is conducted. In FY95, Site 3 was designated for retention. The RI for this site was started using BRAC III funds, and will be completed using DERA funds in FY08 after an IRA has been conducted. Pesticides and herbicides are the major contaminants of concern at both of the two active sites. A fifth site, Site 16, is also in the retention area. No further action was required for this site after the PA/SI was completed. The Implementation (IMP) phase for UST 2 will completed in FY 98 . LTM will be conducted at UST 7 until FY02.

LEASE/TRANSFER - The Environmental Condition of the Property (ECP) for the majority of the property at NAS Barbers Point is Category 7, property requiring further evaluation, because no previous investigations have been conducted to verify or deny the presence of potential contamination. The ECP will be adjusted upon completion of the RI/FS activities, which are currently underway. Investigations are expected to identify parcels suitable for transfer. Drums have been removed from sites identified in the EBS.

REUSE - A Land Reuse Plan for the installation is expected to be completed in FY96. Almost all property at the NAS was classified as Category 7 and required further investigation because the installation had not determined whether the groundwater under the base had been impacted by contaminated sites on the base. The classification will not change until the groundwater investigation is complete. The designation of parcel boundaries, and priorities for turnover of the parcels, are being developed by the Redevelopment Commission, with input from other agencies and community groups.

FAST TRACK INITIATIVES - The Navy is committed to or has implemented the following initiatives to accelerate environmental restoration efforts at Barbers Point NAS: technology review, immediate IRAs to eliminate "hot spots", overlapping phases, improved contracting procedures, interfacing with community reuse plan and schedule, emphasizing cleanup over studies, using technical input from experts, and use of innovative management techniques.

HISTORICAL PROGRESS

FY83

Sites 1-9 - A Preliminary Assessment (PA) was completed and nine CERCLA sites were identified. Sites 1-3 were identified for further investigation.

FY87

Sites 6 and 7 - Site Inspections (SIs) were completed, No Further Action (NFA) required, listed as response complete (RC).

FY93

Site 1 - An SI was completed and a Remedial Investigation (RI) was required.

FY94

Sites 1, 2, 9, 13 and 20 - A Remedial Investigation/Feasibility Study (RI/FS) was started, with completion expected in FY04.
Site 3 - An RI/FS was started, and expected completion is in FY08.
Sites 8, 10-12, 14, 15, 18 and 22 - An RI/FS was started and completion is expected in FY04.
Sites 10-20, 22 and UST 2 - Another PA, the Environmental Baseline Survey (EBS), was completed. Twelve CERCLA sites and one Underground Storage Tank (UST) site were added.
Sites 5 and 19 - An RI/FS was started and completion is expected in FY97.

FY95

Site 16 - It was determined that the site did not require further investigation, and it was listed as RC.

PROGRESS DURING FISCAL YEAR 1996

FY96

Sites 1, 2, 3, 5, 8-15, 17-20 and 22 - Continue data evaluation as part of the RI.

USTs 2 and 7 - A Removal Action for waste and soil removal started in FY95 as part of the Implementation (IMP) phase and completed the IRA.
UST 6 - A Remedial Action Plan (RAP) was started and completed.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 5 and 19 - A RI/FS will be completed.
Site 1 - An Environmental Evaluation/Cost Analysis (EE/CA) will be started as part of the RI/FS to evaluate alternatives for cleanup of soils contaminated with paint, pesticide, petroleum products, the chemical additive PCB, non-hazardous refuse, solvent, and heavy metals. LTM will be conducted until FY99.
Site 2 - An EE/CA will be started as part of the RI/FS to evaluate alternatives for cleanup of for removal of soil/sediment contaminated with ordnance compounds scrap metal, and non chlorinated solvents. After a remedy is selected, a Remedial Design (RD) will begin and be completed. An IRA will begin in FY98, with an expected completion date of FY99.
Site 5 - RC is anticipated at this site.
Site 20 - An EE/CA and RD will be completed.
UST 6 - CAP completed and RC anticipated.

FY98

Site 9 - An EE/CA and a RD for two IRAs: one for removal of soils/sediments contaminated with acid, pesticide, petroleum products, the chemical additive PCB, solvent, and heavy metals; the other for groundwater treatment for acid, pesticide, petroleum products, the chemical additive PCB, solvent, and heavy metals contamination will begin in FY98.
Site 19 - Long Term Monitoring (LTM) will begin. There is an expected completion date of FY03.
Site 20 - An IRA for removal of soil and concrete with PCB contamination will start in late FY97. There is an expected completion date of FY99 with response complete (RC).
UST 1 - Site will be response complete (RC) after Design (RD), and implementation (IMP) phase. RC after IMP phase.
UST 2 - Site will be response complete (RC) after completion of the implementation (IMP) phase.
UST 6 - LTM will be conducted quarterly for one year.

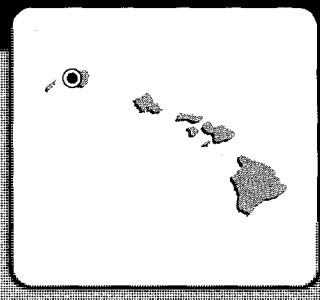
BARBERS POINT NAS
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	21							
RI / FS			2		1	1	1	12
RD			1	2	1	1	3	7
RAC								
RAO								1
IRA					1(1)	1(1)	2(2)	12(12)
RC	2		2		1	1	1	14
Cumulative % RC	10%	10%	19%	19%	24%	29%	33%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	1							
CAP			1					
DES				1				
IMP				2				1
IMO								
IRA	1(1)	2(2)						
RC			1	2				1
Cumulative % RC	0%	0%	25%	75%	75%	75%	75%	100%

BARKING SANDS PACIFIC MISSILE RANGE FACILITY

BARKING SANDS, HAWAII



Engineering Field Division/Activity: PACDIV

Major Claimant: CINCPACFLT

Size: 6,372 Acres

Funding to Date: $3,894,700

Estimated Funding to Complete: $5,070,000

Base Mission: Provides fully instrumented missile ranges and operational and base support facilities for fleet underwater, surface and air training exercises, extended Navy operational and technical evaluation programs to activities.

Contaminants: Cold tar, fuel oil, hydraulic fluid, lead, battery acid, hydrogen cyanide, JP5 fuel.

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	4	High:	1	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	1	Not Required:	2
RCRA UST:	0	Low:	0		
Total Sites:	4				

Sites Response Complete: 2

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	4							
RI / FS	1							2
RD								2
RAC								1
RAO								2
IRA								2(2)
RC	2							2
Cumulative % RC	50%	50%	50%	50%	50%	50%	50%	100%

CAMP H.M. SMITH OAHU

OAHU, HAWAII

Engineering Field Division/Activity: PACDIV

Major Claimant: CINCPACFLT

Size: 420 Acres

Funding to Date: $949,000

Estimated Funding to Complete: $2,959,000

Base Mission: Provides housing and training for Marine Corps personnel.

Contaminants: PCBs

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

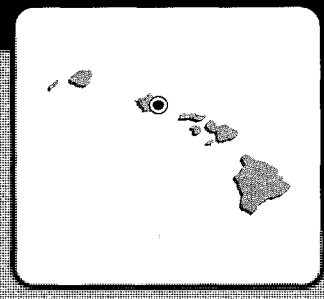
Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	1							
RI / FS								2
RD								1
RAC								
RAO								
IRA			1(1)					1(1)
RC								2
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

KANEOHE BAY MARINE CORPS BASE

KANEOHE BAY, HAWAII



Engineering Field Division/Activity:
Major Claimant:
Size:
Funding to Date:
Estimated Funding to Complete:

Base Mission: Maintains and operates facilities and provides services and materials to support operations of a Marine Corps brigade.

Contaminants: Heavy metals (cadmium, chromium, lead), POLs

Number of Sites:

CERCLA:	55
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	55

Relative Risk Ranking of Sites:

High:	0	Not Evaluated:	5
Medium:	1	Not Required:	15
Low:	4		

Sites Response Complete: 15

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	21						1	3
RI / FS								7
RD								4
RAC								2
RAO								5
IRA	1(1)							5(5)
RC	15							10
Cumulative % RC	60%	60%	60%	60%	60%	60%	60%	100%

LUALUALEI NAVAL MAGAZINE
LUALUALEI, HAWAII

Engineering Field Division/Activity: PACDIV

Major Claimant: CINCPACFLT

Size: 19,000 Acres

Funding to Date: $584,000

Estimated Funding to Complete: $0

Base Mission: Receives, renovates, maintains, stores, and issues ammunition, explosives, expendable ordnance items, weapons, and technical ordnance material.

Contaminants: Unexploded ordnance, solvents, pesticides, acid, POLs

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	6				
RCRA Corrective Action:	0	High:	1	Not Evaluated:	3
RCRA UST:	1	Medium:	0	Not Required:	3
Total Sites:	7	Low:	0		

Sites Response Complete: 3

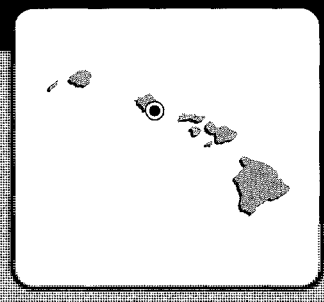
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	4							
RI / FS								1
RD								1
RAC								1
RAO								
IRA								
RC	3		1					2
Cumulative % RC	50%	50%	67%	67%	67%	67%	67%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								1
CAP								
DES								
IMP								
IMO								
IRA								
RC								1
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

PEARL HARBOR NAVAL COMPLEX

PEARL HARBOR, HAWAII



Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible] Acres

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	57	High:	44	Not Evaluated:	6
RCRA Corrective Action:	14	Medium:	1	Not Required:	18
RCRA UST:	1	Low:	3		
Total Sites:	72				

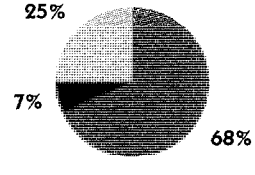
NPL

Sites Response Complete: 18

EXECUTIVE SUMMARY

Pearl Harbor Naval Complex consists of six installations: Naval Station (NS), Public Works Center (PWC), Naval Shipyard (NSY), Fleet and Industrial Supply Center (FISC), Inactive Ship Maintenance Detachment (INACTSHIPDET), and Naval Submarine Base (NSB). The Navy's first installation, NS, was established in 1901. Most landholdings lie within the southern coastal plain of Oahu, west of Honolulu. NS contains maintenance, administrative, supply, and training buildings, bachelor housing, and personnel support facilities. PWC maintains Navy family housing units and utilities systems. NSY provides overhaul, repair, and conversion of surface craft and submarines. FISC includes aboveground and underground fuel storage facilities and a petroleum drumming plant. INACTSHIPDET provides for the inactivation, security, maintenance, cannibalization, disposal, readiness, and preparation for activation of naval ships and craft. NSB is homeport for almost 20 nuclear and conventional submarines, and provides facilities for operations, training, maintenance, housing, and personnel support. These operations have contaminated the soil and groundwater with volatile and semi-volatile organic compounds, heavy metals, the chemical additive PCB, pesticides, petroleum products, and solvents. The Navy has changed its operational processes to prevent further contamination. A Federal Facility Agreement (FFA) was signed in March 1994. EPA Region IX issued a Final RCRA Part B Permit in 1988. Pearl Harbor Naval Complex was included on the National Priorities List (NPL) on 14 October 1992. Dry cleaning solvents from a site located over a drinking water aquifer were primarily responsible for raising the Hazard Ranking System (HRS) score.

Installations within the Pearl Harbor Complex are situated either at the Harbor itself or at the Pacific Ocean. Adjacent land use remains agricultural, however, fields are gradually being converted to housing and commercial uses. There are four significant wetland habitats in the Pearl Harbor area. Contaminants in this area could potentially migrate slowly toward the harbor or the Pacific Ocean, driven by low groundwater gradients induced by infiltration of local rainfall, or surface water runoff.



Current Status Of Sites

Studies Underway	49
Cleanups Underway	5
Response Complete	18
TOTAL	72

A Technical Review Committee (TRC) was formed in September 1990 and was converted to a Restoration Advisory Board (RAB) in 1994. The Board meets quarterly. A Community Relations Plan (CRP) was completed in June 1992 and updated in January 1996. Three Information Repositories were established in FY90, and an Administrative Record was established in FY92.

All cleanups have been completed at 18 sites. Currently, under CERCLA, 50 PA/SIs have been performed. Two Remedial Investigation/Feasibility Studies (RI/FSs) have been completed and 24 are underway. Fourteen Interim Remedial Actions (IRAs) have been completed, and 12 are underway.

Of the RI/FSs underway, four are expected to be completed in FY98, and 36 others by FY06. Thirty-three Remedial Designs (RDs) are scheduled through FY08. Seventeen Remedial Actions (RAs) are expected to be completed by FY15. Of the IRAs underway, one is expected to be completed in FY98, seven by FY01. A total of 27 IRAs are expected to completed after FY01.

Currently, under RCRA, 14 RCRA Facility Assessment (RFA) have been performed and none are underway. Five RCRA Facility Investigation (RFI)have been completed and eight are underway. No IRAs have been performed or are currently underway. Of the eight RFIs underway in the future, all are expected to be completed FY09. There are no RFIs planned beyond FY09. Eight IRAs are planned for the future and should be completed by FY05. There is one Underground Storage Tank (UST) site (UST 1) currently undergoing remediation. An IRA at the UST site was initiated and was completed in FY96.

PEARL HARBOR NAVAL COMPLEX
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - The Hawaiian Archipelago is composed of a series of immense volcanic ridges, the Hawaiian Islands being located at the southernmost end. The island of Oahu is the result of two large shield volcanoes. The caprock in the vicinity of Pearl Harbor is composed of alternating layers of shallow marine limestone and volcanic alluvium. Local fracturing and bedding structures may complicate migration pathways. The Navy installations are underlain by a shallow water table which approximates the elevations of sea level. This groundwater probably migrates generally toward either Pearl Harbor or the Pacific Ocean and is replenished by rainfall infiltration. For near shore areas it is reasonable to assume that waterborne contaminants would reach the harbor. Groundwater in near-shore areas must be subject to some degree of tidal influence, which would result in increased dispersion of contaminants migrating toward the harbor. For inland areas influenced by the Honolulu volcanics, migration pathways are less certain. Contaminants in the shallow groundwater system should eventually reach the harbor or the Pacific Ocean. Several streams cross Navy lands before emptying into Pearl Harbor or the Pacific Ocean. Some groundwater flow may discharge to the streams crossing Navy land. The streams would also constitute possible pathways for potential contaminant migration. Potable water supplies for the Pearl Harbor and Honolulu areas are developed further inland in the Koolau Range basalts. In the Pearl Harbor area, water in the Koolau basalt is confined under artesian pressure by several tens to several hundreds of feet of the caprock sequences. No contamination in the Pearl Harbor area can migrate downward into the artesian system or upgradient to supply areas, except in the Red Hill area, where Koolau basalt is exposed at the surface and not covered by caprock. Water in the basalt aquifer is trapped by the confining layers of the coastal plain caprock, creating an artesian condition. In the early part of the century, numerous wells were drilled in the vicinity to develop increasing water supplies from the artesian portion of the basalt aquifer. Extensive withdrawals eventually caused a decline in the pressure and induced more saline waters to rise into the producing zone. Many wells had to be abandoned. The naval base obtains 70-90 percent of its potable water supply from a water tunnel located in Waiawa. The remainder is supplied by tunnels at Red Hill and Halawa.

NATURAL RESOURCES - In the vicinity of Pearl Harbor, wetland areas support a variety of plant and animal life. There are four significant wetland habitats in the Pearl Harbor area. Sport fish and commercial bait fish are caught in Pearl Harbor. Endangered species in Hawaii include one Hawaiian mammal and 28 Hawaiian birds - more than half of the nation's endangered birds. Threatened or endangered species that may be found near known sites include the plant 'Ewa Plains 'akoka and birds: the Hawaiian coot or 'Alae Ke'oke'o, the Hawaiian duck or Koloa, the Hawaiian gallinule or 'Alae 'ula, the Hawaiian stilt or Ae'o, and the Hawaiian owl or pueo. Pearl Harbor Naval Complex has been designated as a National Historic Landmark.

RISK - There are 44 sites currently ranked with a high relative risk. The high ranking was primarily due to contamination in the soil and marine sediment. There have been various releases of contaminants to the soil. The pathway of concern is direct contact with the soil by humans. Also, contaminants have been identified in the marine sediment of Pearl Harbor. Contaminants reach the harbor via surface runoff or subsurface migration. Pathways of concern are consumption of fish and shellfish by humans and endangered species.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - Pearl Harbor Naval Complex was included on the National Priorities List (NPL) on 14 October 1992 based on a Hazard Ranking System (HRS) score of 70.82. Dry cleaning solvents from a site located over a drinking water aquifer were primarily responsible for raising the HRS score.

LEGAL AGREEMENTS - A Federal Facility Agreement (FFA) was signed on 17 March 1994 and became effective on 10 Jun 1994 after a public comment period. The agreement is updated only when new environmental issues arise which require negotiations. The FFA also covers four sites at Lualualei Naval Magazine West Loch Annex which are not currently counted in the Pearl Harbor Naval Complex site count. They are still under NAVMAG Lualualei in Defense Site Environmental Restoration Tracking System (DSERTS). EPA Region IX issued a Final RCRA Part B Permit (HI1170024334) effective 15 September 1988, to operate a hazardous waste storage facility. The permit required that a RCRA Facility Investigation (RFI) work plan be prepared for the 182 Solid Waste Management Units (SWMUs) listed in the RCRA Facility Assessment (RFA) within 450 days after the effective date of the permit. An RFI work plan was completed in December 1989 and was approved by EPA Region IX and Department of the Navy (DON) in 1991. During the development of the RFI work plan, the DON identified 32 additional SWMUs and recommended three of these SWMUs for further investigation. A petition to close the NSY Spent Abrasive Grit Storage Area SWMU was submitted to EPA Region IX in May 1993.

PARTNERING - In 1994, several partnering sessions were held with the installation, the state and EPA Region IX. The partnering relationship resulted in the identification and resolution of problems prior to implementation of work at various sites. The installation also holds meetings with the state to reach a consensus on investigation and cleanup goals, which help expedite the review process and reduce impediments to cleanup.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in September 1990 and was converted to a Restoration Advisory Board (RAB) in 1994. The board meets quarterly. There are ten RAB members from the community. Two members represent local neighborhood boards, two members represent environmental interest groups, three members represent elected officials, one member represents a group of employees on the installation, and two members are interested citizens from the local community. The RAB has recommended changes in the scope of an investigation that has helped to identify contamination in an area previously regarded as clean and to prepare a more comprehensive risk assessment. The RAB has also identified the need to initiate work to mitigate possible further migration of contaminants from a site.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was completed in June 1992 and updated in January 1996. In addition, a Fact Sheet was completed in September 1990 and revised in August 1992. Several new Fact Sheets have been prepared for TRC/RAB meetings.

INFORMATION REPOSITORY - Three Information Repositories were established in FY90, and an Administrative Record was established in FY92. The Information Repository for the sites within the Pearl Harbor Complex is located at the Aiea Public Library. The Information Repository for sites at outlying areas is located at the Pearl City Public Library. A third Information Repository is located at the Ewa Beach Public and School Library for sites at Naval Magazine Lualualei. The Administrative Record is located at Pacific Division (PACDIV), Naval Facilities Engineering Command. A copy of the Administrative Record documents are contained in the Information Repositories.

PEARL HARBOR NAVAL COMPLEX
HISTORICAL PROGRESS

FY84

Sites 1-30 - An Initial Assessment Study (IAS), equivalent to A Preliminary Assessment (PA), was completed in October 1983. Site 3 is located under Highway 1; clean fill was used to cover the site and no contaminated soil was excavated. The Department of the Navy (DON) has notified EPA of No Further Action (NFA) and the site has been closed out. Sites 5, 6, 9, 11, 12, 14, 15, 20, 23 and 26 were found not to pose a threat to human health or the environment and NFA was recommended. EPA Region IX requested additional investigation for Site 30, but later agreed not to pursue further investigation.
Site 43 (PWC) - This site was originally identified as part of Site 4. However, because the site was a burn area and not a landfill, it was designated as a separate site.

FY87

All SWMUs - A RCRA Facility Assessment (RFA), completed in January by EPA Region IX, identified 182 potential Solid Waste Management Units (SWMUs). Several of the 182 SWMUs are being managed under the Installation Restoration Program (IRP) or the Underground Storage Tank (UST) program, or were recommended for NFA.

FY88

Site 7 (NS) - A Site Inspection (SI) was completed. The report found minimal presence in the soil of the chemical additive PCB and recommended NFA.
Site 4 (PWC) - An SI was completed. Petroleum products in groundwater were significantly below cleanup action guidelines. Petroleum products in sediment were very low or below the detection limit. Biological samples were within expected ranges except for calcium and aluminum. Semi-volatile organic compounds (SVOCs) were found at low concentrations indicating no threat to human health or the environment.
Site 33 (FISC) - A PA was completed in August.

FY89

Site 2 (PWC) - An SI was completed. The report found soil contaminated with pesticides, arsenic, and unidentified organic compounds.
Site 31 (NS) - This additional site was identified during a DON safety inspection.
Site 36 (FISC) - This site was added to the IRP when free floating product was discovered during the installation of new underground tanks.
Site 22 (FISC) - An SI was completed. The report found soil contaminated with petroleum products and SVOCs.
SWMU SB-37 (NSB) - An RFA was completed.

FY90

Site 31 (NS) - An SI was completed. The report confirmed the presence of the organic solvent PCE in the soil.
Sites 35 and 38 (NS) - A PA was completed that identified these two new sites. Site 35 was recommended for further action due to the potential subsurface transport of contaminants. Site 38 was not recommended for further action because there was no indication of hazardous material used or generated at the site.
Site 37 (NSY) - This new site was discovered in 1990. The site consists of a sump in an abandoned building.
Site 36 (FISC) - A PA was completed; the site was recommended for a Remedial Investigation/Feasibility Study (RI/FS) without an SI.
Sites 21, 24 and 27 (FISC) - An SI was completed. The report found evidence of sludge contaminated with petroleum products at Site 21, petroleum products contaminated soil at Site 24, and free product accumulation in a trench, but found no indication that free product had migrated beyond the trench at Site 27. The report recommended that floating product in the trench be removed, and recommended all three sites for an RI/FS.
Site 28 (NSB) - An SI was completed in July. The report found no significant contamination, and the site was recommended for NFA.
SWMU SB-37 (NSB) - A RCRA Facility Investigation (RFI)/Corrective Measures Study (CMS) was initiated.

FY91

Site 31 (NS) - Additional characterization of this site was completed in January 1991 to identify areas of significant contamination requiring a Removal Action (RA). The organic solvents TCE and Stoddard Solvent were detected in soils.
Site 32 (NS) - This additional site was identified during the RA at one transformer station contaminated with the chemical additive PCB. An SI was completed in April. The report confirmed the presence of the chemical additive PCB in the soil at the site. An Interim Remedial Action (IRA) was completed in September. This action involved the excavation and off-site disposal of the presence of PCB in the soil. NFA is anticipated at Site 32.
Site 35 (NS) - An SI was completed in June and petroleum product contamination was confirmed.
Site 39 (FISC) - This new site was identified prior to proposed property transfer to the State of Hawaii.
Site 34 (PWC) - This new site was identified in April upon completion of a Preliminary Assessment/Site Inspection (PA/SI). The report found that the concrete floor under approximately 139 transformers have PCB-contaminated concrete floor slabs. Twelve of these sites have PCB contamination. The remaining 127 sites will be characterized further in an RI/FS.
Site 44 (FISC) - This new site was added due to concerns regarding possible fuel leaks.

FY92

Sites 10 and 13 (NSY) - The Remedial Investigation (RI) field work was completed in June.
Site 19 (NS) - An SI was completed in June. The report confirmed silver, petroleum products, and the chemical additive PCB contamination at the site.
Sites 10, 13 and 16-18 (NSY) - An SI, completed in June, found lead in the soil at Site 10, the chemical additive PCB in sediment at Site 13, metals in soil at concentrations below regulatory action levels at Site 16, concentrations of chromium, lead, and zinc at levels allowable for industrial land use at Site 17. Site 18 could not be located. The SI recommended NFA at Sites 16-18, and further investigation for Sites 10 and 13.
Site 37 (NSY) - A PA was completed in March; the site was recommended for an RI/FS without an SI.
Site 13 (NSY) - An RA involving the removal of sludge and sediment containing the chemical additive PCB was completed in February.
Site 34 (PWC) - An IRA was completed. Transformers with oil containing the chemical additive PCB were removed, fencing was installed around the areas of containment, and a monitoring program was implemented for retrofitted transformers.

FY93

Site 8 (NS) - An SI was completed in September. Sediments were sampled in several locations offshore of Ford Island. Metals, volatile organic compounds (VOCs), petroleum products, pesticides, and the chemical additive PCB were detected in the sediments; metals, volatile organics, and pesticides were detected in the groundwater; and metals, petroleum products, volatile and semi-volatile organic compounds, chlorinated solvents, pesticides, herbicides, and the chemical additive PCB were detected in soils.
Site 4 (PWC) - An Expanded Site Inspection (ESI) was completed in March. The ESI found the chemical additive PCB, the Navy fuel JP-4, benzene, mercury, and lead, and the site was recommended for RI/FS.
Site 39 (FISC) - An SI was completed in January. Test results showed elevated concentration of the chemical additive PCB, petroleum products, the pesticide dieldrin, and heavy metals in the soil. Further investigation and a risk assessment to examine the pesticide dieldrin contamination were recommended. Based on the SI recommendations and the need to

PEARL HARBOR NAVAL COMPLEX
HISTORICAL PROGRESS

expedite cleanup for the property transfer, DON decided to move directly to Remedial Design/Remedial Action (RD/RA) without an RI/FS. The IRA involving the excavation of soil contaminated with the chemical additive PCB was completed in March.
SWMUs NAS-3, NAS-4 and NAS-6 (NS); SY-5, SY-17, SY-35, SY-44 and SY-84 (NSY); NSC-13, PWC-1, PWC-10, PWC-13 and PWC-15-18 (PWC) - The RFI Report was completed and submitted to EPA Region IX.

FY94

Site 31 (NS) - An RA was completed in December. This action involved the excavation and off-site disposal of contaminated soil, removal of four USTs, and removal of one drain line.
Sites 40-42 (NSY) - Three new sites were identified by the activity. Site 40 was found during the RI phase. A PA/SI began in June.
Site 43 (PWC) - An SI began in June (converted to an SI at the planning document stage).
Site 33 (FISC) - An SI was completed; the site was recommended for an RI/FS.
Site 44 (FISC) - A PA was initiated in August.
Sites 19 and 31 (NS) and 33 (FISC) - An RI/FS began.
Site 34 (PWC) - A second RA was initiated to remove contaminated soil.
Site 36 (FISC) - An IRA involving a free floating fuel recovery system was completed in March. A pilot-scale extraction test pumped groundwater and skimmed free product. No hazardous waste was generated because the free product was recovered and recycled in the Navy's Fuel Reclamation Facility.
Site 37 (NSY) - A removal action was initiated to prepare a performance design package (removal site evaluation, EE/CA, AM, and design) to remove free-floating product at Building 8.
Site 39 (FISC) - The RA involving the excavation of soil contaminated with the pesticide dieldrin was completed in February.

FY95

Site 2 (PWC) - An RI was completed. Contamination is minimal.
Site 10 (NSY) - The RI/FS was completed.
Site 44 (FISC) - A PA was completed.
Site 36 (FISC) - A performance design package for a removal action was initiated to remove free-floating product at the gas station.
Site 48 (PWC) - A PA was completed.
Site 50 (NS) - Site 50, the NEX Warehouse site, was added to the IRP in FY95. An IRA was completed. Soil contaminated with petroleum products was removed.
Site 10 (NSY) - Two IRA were initiated: one for dust control measures, the other for a removal site evaluation, EE/CA, AM, and performance design package.
Site 13 (NSY) - Two IRAs were completed.
Sites 46 (NSY) - An IRA (a removal site evaluation, EE/CA, AM, and design package) was initiated to prepare a performance design package for a removal action.
Site 47 (PWC) - An IRA was initiated.
Site 22 (FISC) - An IRA was completed. It involved the removal and closure of a stilling basin which contained oily wastes, mainly sludge from UST cleaning. The stilling basin structure and the grossly petroleum product contaminated soil beneath and surrounding the stilling basin were removed. Soils were treated by a low temperature thermal desorption facility. Treated soils were returned to the site and used to backfill the excavation. The area was then capped.
UST 1 (NS) - An RA was initiated.

PROGRESS DURING FISCAL YEAR 1996

FY96

Site 27 (FISC) - Phase II of the RI (involving off site sampling) began in January.
Site 22 (FISC) - Phase II of the RI began in December 95.
Site 47(PWC) - An IRA was completed.
Site 4 (PWC) - An IRA (EE/CA, AM, draft design) was initiated to prepare a performance design package for a removal action at the landfill.
Site 8 (NS) - Removal Action (Designed and install a cap and a ground water monitoring system for the landfill) in progress.
Site 19 (NS) - RI/FS in progress.
Site 31 (NS) - Removal Action (Designed and installed a soil vapor extraction system for PCE and degradation compounds) in progress. RI/FS in progress.
Site 33 (FISC) - Completed the removal of arsenic-contaminated soil and transferred the property to the City and County of Honolulu. Other removal work is in progress.
Site 34 (PWC) - Continued work on the preparation of a performance design package for removal of PCB-contaminated soil and concrete.
Site 36 (FISC) - Awarded construction contract delivery order for installation of the extraction system.
Site 43 (PWC) - RI planning documents were completed.
The Community Relations Plan (CRP) for the Pearl Harbor Naval Complex was updated in January 1996.
UST 1 (NS) - An IRA was completed.
Site 9 (NSY) - Completed a RI/FS with a response complete (RC).

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Site 4 (PWC) - Preparation of a performance design package for the landfill is expected to be completed. The IRA will continue with the implementation of the designed cleanup of the site.
Site 8 (NS) - Removal work is on going. LTM to continue for 5 years.
Site 13 (NSY) - The RI/FS is expected to be completed.
Site 19 (NS) - RI/FS to be in progress.
Site 31 (NS) - LTO/LTM for Removal Action to continue for 3 years. RI/FS to be in progress.
Site 33 (FISC) - The IRA is expected to be completed.
Site 34 (PWC) - An IRA for preparation of a performance design package for the cleanup of PCB-contaminated soil and concrete is expected to be completed. The IRA will continue with the implementation of the designed cleanup of the site.
Site 36 (FISC) - Plan to award Post Construction Award Service (PCAS) and Operation and Maintenance (O&M) for two years for the extraction system.
Site 37 (NSY) - An IRA is expected to be initiated to install an extraction trench for the removal of Bunker C fuel. PCAS and O&M is also planned to be initiated.
Sites 40-42 (NSY) - A PA and an SI are expected to be completed.
Site 42 (NSY) - An IRA is expected to be initiated.
Site 43 (PWC) - RI/FS field work is expected to be initiated.
Site 44 (FISC) - An SI is expected to be completed in FY97.
Site 45 (NS) - Plan to initiate an IRA for an EE/CA, AM, performance design package for a removal action near Quarry Loch (M4 docks).
Site 46 (NSY) - Plan to award PCAS and O&M for two years for the extraction system.
SWMU 6 (NS) - An IRA (EE/CA, AM, design) is expected to be initiated.
Site 22 (FISC) - Plan to complete an IRA.

PEARL HARBOR NAVAL COMPLEX
PLANS FOR FISCAL YEARS 1997 AND 1998

Sites 44 (FISC), 40 (NSY), 41 (NSY), 42 (NSY) and 2 (PWC) - Planned to complete the PA/SI.
Site 40 (NSY) - Expect to complete the RD.

FY98

Site 8 (NS) - LTM continuing.
Site 19 (NS) - RI/FS continuing.
Site 22 (FISC) - Phase II of the RI is expected to be completed.
Site 27 (FISC) - Phase II of the RI is expected to be completed.
Site 31 (NS) - LTO/LTM continuing.
Sites 4 and 34 - (PWC) - Removal Actions to be in progress.
Site 45 (NS) - Plan to award an IRA for implementing the selected alternative for controlling fuel seepage at M4 docks. PCAS and O&M is expected to be initiated.
SWMU 6 (NS) - Removal Action to be in progress.
SWMUs 4 (NS), 12 (SB), 13 (SB), 44 (NSY) and 84 (NSY) - An IRA (EE/CA, AM, design) is expected to be initiated.
SWMU 4 (NS), Sites 40 (NSY), 41 (NSY) and 22 (FISC) - Planned to complete the RI/FS.
Site 33 (FISC) - Expect to complete an IRA.
Site 4 (PWC) and SWMU 18 (PWC) - Expect to complete the RD.
Sites 40 (NSY) and 14 (NSY) - Expect to be response complete (RC).

PROGRESS AND PLANS

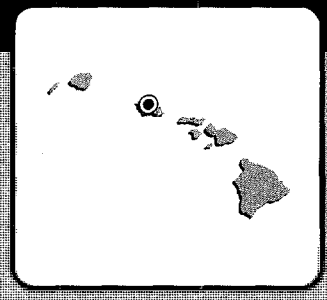
CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	50		5					
RI / FS	1	1		4		3	3	30
RD			1	1	3	5	5	18
RAC								17
RAO								23
IRA	8(12)	1(1)	1(3)	1(1)	1(1)	3(4)	3(4)	27(27)
RC	11	1		2		3	4	36
Cumulative % RC	19%	21%	21%	25%	25%	30%	37%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	14							
RFI / CMS	5					1		7
DES				1				
CMI								
CMO								
IRA						3(3)		5(5)
RC	6					1		7
Cumulative % RC	43%	43%	43%	43%	43%	50%	50%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	1							
CAP						1		
DES	1							
IMP						1		
IMO								
IRA		1(1)						
RC						1		
Cumulative % RC	0%	0%	0%	0%	0%	100%	100%	100%

WAHIAWA NAVAL COMPUTER AND TELECOMMUNICATIONS AREA MASTER STATION EASTERN PACIFIC

WAHIAWA, HAWAII



Engineering Field Division/Activity: PACDIV

Major Claimant: COMNAVCOMTELCOM

Size: 3,422 Acres

Funding to Date: $5,342,000

Estimated Funding to Complete: $19,544,000

Base Mission: Operates and maintains communications facilities and equipment for naval shore installations and fleet units in the Eastern Pacific.

Contaminants: Metals, petroleum, hydrocarbons

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	28	High:	17	Not Evaluated:	6
RCRA Corrective Action:	0	Medium:	0	Not Required:	1
RCRA UST:	4	Low:	4		
Total Sites:	28				

NPL

Sites Response Complete: 1

EXECUTIVE SUMMARY

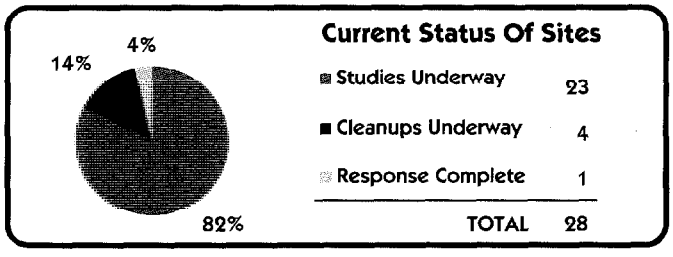
Naval Computer and Telecommunications Area Master Station (NCTAMS), Eastern Pacific, EASTPAC is located on the island of Oahu, the third largest of the 132 islands that comprise the Hawaiian archipelago. As the area master station, NCTAMS EASTPAC is tasked with operating and maintaining communications facilities and equipment for naval shore installations and fleet units in the eastern Pacific area. In order to carry out this mission, NCTAMS EASTPAC operates the following facilities: NCTAMS Wahiawa; Naval Radio Transmitting Facility (NRTF) Lualualei, a small satellite communications system (Opana), a microwave relay station at Kokekole Pass; satellite Naval Telecommunications centers at various areas on Oahu, and a special position operator switchboard at Pearl Harbor. Industrial operations are primarily conducted at NCTAMS Wahiawa and NRTF Lualualei, and have been the focus of the Navy's Installation Restoration Program (IRP). At these two facilities, maintenance and operation of electrical transformers and switches has been the primary source of contamination. Transformers containing the chemical additive PCB have resulted in contamination of the soil surrounding electrical transformers. Due to PCB contamination in the soil of working and residential areas (Site 14), NCTAMS EASTPAC was added to the National Priorities List (NPL) on May 31, 1994. Other contamination resulting from operations and maintenance activities include metals, petroleum and Underground Storage Tanks (USTs). The Navy has changed its operational processes to prevent further contamination.

NCTAMS Wahiawa is located on approximately 700 acres of land in the central plateau region of Oahu. Lands adjacent to the station are largely devoted to the cultivation of pineapples. The nearest towns of Wahiawa and Whitmore Village each lie approximately one mile southwest and west, respectively, from the station. Due to the heavy rainfall (50 to 60 inches per year) and topography of the station, contaminant migration via surface water is of primary concern. NCTAMS Wahiawa is drained by Poamoho Stream and its tributaries to the west, and North Fork Kaukonahua Stream to the extreme south. The North Fork Kaukonahua Stream empties into the Wahiawa Reservoir which is located less than three miles from the southern edge of the station. NRTF Lualualei occupies approximately 1,700 acres of the Lualualei Valley, which is a large coastal valley near the southwestern shoreline of Oahu. The nearest urban town is the town of Maili, which lies approximately one mile west from the station. The semi-arid conditions, flat to gently rolling topography, and permeable surface soils restrict the runoff from the base. Since there are no known downstream users of the groundwater or surface water, direct exposure to contaminated media is of primary concern.

Since NCTAMS EASTPAC is comprised of two installations, two Restoration Advisory Boards (RABs) have been established. The Wahiawa RAB was established in February 1995, and the Waianae/Lualualei RAB was established in March 1995. The Community Relations Plan (CRP) was finalized in August 1995. Information Repositories have been set up at the Wahiawa and Waianae Public Libraries.

Of the 28 sites in the IR program, one is Response Complete (RC), 4 have cleanups underway and the remaining 23 are in the study phase. An Interim Remedial Action (IRA) has been delayed due to funded shortfall at eight transformer sites to remove PCB-contaminated soils that poses a threat to public health.

A removal action for soils contaminated with the chemical additive PCB at Sites 18 is scheduled in FY01. This clean up will reduce potential exposure of workers and residents to PCB contaminated soils. Implementation of the Remedial Investigation/ Feasibility Study (RI/FS) planning documents at Sites 1 and 5 is underway.



WAHIAWA NCTAMS EASTPAC RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - NCTAMS Wahiawa is located on the east side of the Schofield Plateau in north central Oahu. Most of the station is drained westward by the Poamoho Stream and its tributaries. The extreme southern edge of NCTAMS Wahiawa is drained by the North Fork Kaukonahua Stream less than three miles to the Wahiawa Reservoir. The soils of Wahiawa are derived from weathered Koolau volcanics, and are mostly silty clay or silty clay loam. The soil zone extends down about 20 feet from the surface, where it grades into deeply weathered volcanics of the Koolau range. The Koolau volcanics are mostly basaltic flows in this area. The Schofield groundwater body underlies the Schofield Plateau. The water table at NCTAMS Wahiawa is probably more than 700 feet below the surface. Because of water table depth, underlying clays, and steep ravines edging the property which intercept groundwater, contamination of the deep groundwater is unlikely. The 50 to 60 inches per year of rainfall tends to come in intense tropical cloudbursts, most of which would tend to run off rather than infiltrate the soils. For these reasons, contaminants would more likely migrate by surface water than groundwater pathways. Potable water at this station is supplied by the Army from deep wells at the east end of Schofield Barracks, just south of Wahiawa.

NRTF Lualualei is located on the central west side of Oahu, near the flat center of the Lualualei Valley. This station is drained by Mailiilii Stream on the north side of the base. The semi-arid conditions, flat to gently rolling topography, and permeable surface soils restrict the runoff from the base. The soils and rock underlying NRTF Lualualei consist of coral or calcareous deposits intermixed with alluvium from weathered volcanics of the Waianae Range. Alluvium and other debris in the area of NRTF Lualualei range in depth from less than 75 feet to 1,200 feet before Waianae volcanics are encountered. Groundwater in the area of NRTF Lualualei is shallow and brackish. There are no known downstream users of either groundwater or surface water. Upstream, in the southwest corner of the base, are a series of sewage treatment/oxidation ponds. Potable water is supplied by Naval Magazine (NAVMAG) Lualualei from deep wells in the Waianae Range, which would not be threatened by potential contamination from NRTF Lualualei.

NATURAL RESOURCES - Wildlife associated with NCTAMS Wahiawa and NRTF Lualualei include many exotic species that are commonly found in Hawaii. A 31-acre wildlife refuge has been established at NRTF Lualualei in cooperation with the U.S. Department of the Interior and the state of Hawaii. The area of the refuge which includes the Niulii Reservoir and NRTF oxidation ponds has been identified as habitat for three endangered bird species. An endangered fern is found near the Old NRTF Landfill, Site 13.

RISK - NCTAMS EASTPAC sites have been ranked for risk under the Department of Defense (DOD) Relative Risk System. Under this system, sites are qualitatively ranked High, Medium, or Low relative risk to prioritize sites for funding. Seventeen CERCLA sites have received a high ranking due to soil contamination and potential for direct exposure as well as via surface water and sediment runoff exposure. During Phase I Remedial Investigation/Feasibility Study (RI/FS) work, Human Health and Ecological Risk Assessments will be performed. The Navy has performed a Public Health Assessment on the eight transformer sites following the removal action, and deemed that institutional controls (e.g. fences) and further removal action activities were unnecessary.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - NCTAMS EASTPAC has been on the National Priorities List (NPL) since May 31, 1994 with a Hazard Ranking System (HRS) score of 50.00. NPL listing was determined by the identification of the chemical additive PCBs in soil surrounding electrical transformers in residential and general work areas at NCTAMS Wahiawa and NRTF Lualualei (Site 14). In addition to PCB contamination in the soil, elevated levels of lead and mercury have been confirmed at the Old Wahiawa Landfill and Building 6 Disposal Area. Contamination at both sites has the potential to migrate to nearby gulches.

LEGAL AGREEMENTS - A Draft Federal Facility Agreement (FFA) between the EPA Region IX and the Navy was established on 26 October 1994. On 16 November 1994, the Navy acknowledged the receipt of the draft FFA and its willingness to start negotiations on the FFA. Since then, through informal communications, it was agreed that the need for a FFA is a low priority since the Navy is progressing with the cleanup program at NCTAMS EASTPAC.

PARTNERING - An informal partnering agreement exists between the Navy, EPA Region IX, and State of Hawaii Department of Health. This facilitates implementation of the Navy's Installation Restoration Program (IRP).

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - The Technical Review Committee (TRC) has been converted to a Restoration Advisory Board (RAB). Since NCTAMS EASTPAC is composed of two installations, two RABs exist: the Wahiawa RAB and the Waianae/Lualualei RAB. The Wahiawa RAB was established in February 1995, and the Waianae/Lualualei RAB was established in March 1995. Each RAB meets quarterly and is headed by Navy and community co-chairs. RAB meetings are open to the public and announced in newspapers as well as at neighborhood board meetings. Any citizen interested in becoming a community RAB member may apply for membership. Community RAB members vote on the new individual. Currently, each RAB has 24 to 25 permanent community members. The agenda items of the RAB meetings include the Navy's IRP, technical presentation of ongoing environmental work, funding and schedules, and the roles and responsibilities of RAB members.

COMMUNITY RELATIONS PLAN - The final Community Relation Plan (CRP) was completed in August 1995. Fact sheets are issued prior to RAB meetings. Site tours were conducted at NCTAMS Wahiawa and NRTF on 13 May and 3 June 1995 for RAB members and any other interested personnel.

INFORMATION REPOSITORY - Two Information Repositories were established in 1991. They are located at the Wahiawa Public Library in Wahiawa, HI, and the Waianae Public Library in Waianae, HI. The Administrative Record is maintained by the Navy at three locations: Pacific Division (PACDIV), Naval Facilities Engineering Command, Pearl Harbor, Hawaii, NCTAMS Wahiawa, and NRTF Lualualei.

WAHIAWA NCTAMS EASTPAC HISTORICAL PROGRESS

FY86

Sites 1-14 - An Initial Assessment Study (IAS) was completed. Four sites were recommended for Confirmation Study (CS): Sites 1, 5, 11 and 14. No Further Action (NFA) was recommended for Sites 2-4, 6-10, 12 and 13.

FY89

Sites 1, 5, 11 and 14 - A Site Inspection (SI) was completed. Analysis of soil samples indicated no volatile or semi-volatile organics, there were some petroleum hydrocarbons, and significant quantities of lead and mercury.

FY91

Sites 1, 5, 11 and 14 - An Extended Site Inspection (ESI) was completed. The study recommended implementing a downgradient monitoring program to detect any contaminant migration. Further investigation was recommended for Sites 1 and 5, and NFA for Site 11. The planning documents for Remedial Investigation/Feasibility Study (RI/FS) at Sites 1, 5, 11 and 14 were initiated.
An investigation was conducted for approximately 12 Underground Storage Tanks (USTs) to determine whether any releases had occurred in the past.

FY92

Sites 14-16 - A removal action was completed at Site 14, PCB transformer site. PCB-contaminated soils were removed from eight transformer sites. An SI was completed for Sites 15 and 16. An NFA was recommended for these sites. Approximately eight out-of-service USTs were removed. Four tank areas were identified as contaminated with petroleum hydrocarbons and recommended for site characterization during tank removal.

FY93

USTs 5-8 - An Initial Site Characterization (ISC) was completed for four UST sites (USTs 5-8). A Corrective Action Plan (CAP) was completed for UST 7.
Site 14 - Site 14 was regrouped so that the eight transformer sites which had undergone a Remedial Action (RA) were retained as Site 14, and the remaining transformer sites became Sites 17-19.

FY94

Site 20 - Four additional transformer sites were identified by activity personnel and added to the Navy's Installation Restoration Program (IRP) as Site 20.
Sites 1, 4-6, 10-13, 17, 18 and 20 - The planning documents for RI/FS were initiated.
UST 6 - Completed Corrective Action Plan (CAP), site is Response Complete (RC).

FY95

Sites 4-6, 10, 12, 13, 17, 18 and 20 - RI/FS planning documents were completed.
Sites 21-24 - New sites were identified for inclusion in the Navy's IRP.

PROGRESS DURING FISCAL YEAR 1996

FY96

Sites 1 and 5 - Remedial Investigation (RI) (implementation of RI/FS planning documents) underway.
Sites 17, 18 and 20 - Awarded Removal Action.
UST 5 and 7 - Awarded correction action designs.
Many of the removal actions at the PCB transformer sites were delayed due to funding shortfall.
UST 8 - Completed Study Area (SA) & Design (RD) is underway.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 1 and 5 - Remedial Investigation/Feasibility Study (RI/FS) expected to be continued.
Sites 17, 18 and 20 - Removal Action expected to be continued.
USTs 5, 7 and 8 - Expect to complete Design (RD).

FY98

Sites 1 and 5 - Remedial Investigation/Feasibility Study (RI/FS) is expected to be completed.

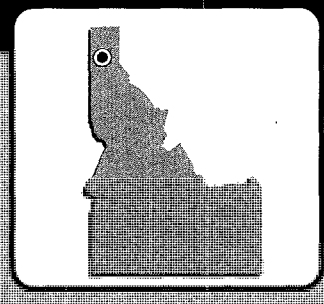
WAHIAWA NCTAMS EASTPAC
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	18							1
RI / FS				2		1		19
RD					4	1	1	13
RAC							1	12
RAO								
IRA								6(6)
RC							1	23
Cumulative % RC	0%	0%	0%	0%	0%	0%	4%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	3	1						
CAP	1							3
DES			3					
IMP								3
IMO								
IRA								
RC	1							3
Cumulative % RC	25%	25%	25%	25%	25%	25%	25%	100%

BAYVIEW NAVAL SURFACE WARFARE CENTER, ACOUSTIC RESEARCH DETACHMENT

BAYVIEW, IDAHO



Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: 25 Acres

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: Laboratory facility for demonstrating submarine stealth technology

Contaminants: Copper, zinc in two sediments

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

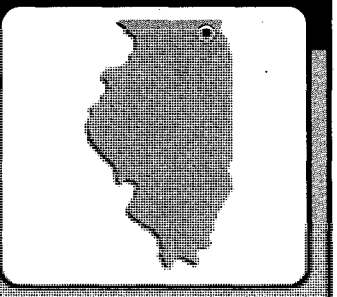
Sites Response Complete: 0

PROGRESS AND PLANS

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

GLENVIEW NAVAL AIR STATION

GLENVIEW, ILLINOIS



Engineering Field Division/Activity: SOUTHDIV

Major Claimant: COMNAVFACENGCOM

Size: 1,085 Acres

Funding to Date: $19,911,000

Estimated Funding to Complete: $41,257,000

Base Mission: Provides facilities, services, training, and support operations of aviation activities of Naval and Marine Corps Air Reserve Commands; administers the Naval Air Reserve program and trains assigned units for mobilization.

Contaminants: POLs, solvents, PCBs, POL sludge

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	40	High:	14	Not Evaluated:	9
RCRA Corrective Action:	0	Medium:	15	Not Required:	2
RCRA UST:	3	Low:	3		
Total Sites:	43				

BRAC III

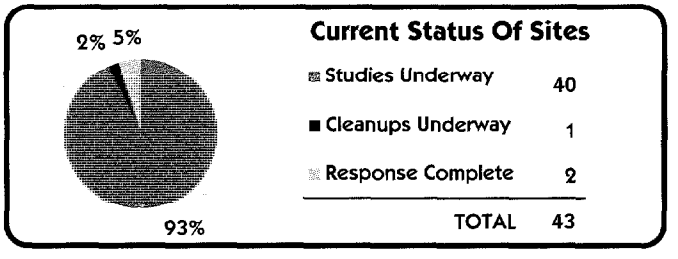
Sites Response Complete: 2

EXECUTIVE SUMMARY

Glenview Naval Air Station (NAS) (1121 acres) is located in the center of the town of Glenview Illinois, and about 20 miles north of Chicago. Lake Michigan is approximately 6 miles east of the station. The Libertyville Training Site (LTS) (164 acres) is located approximately 13 miles northwest of NAS Glenview. The Libertyville site was a former NIKE missile air defense location. Due to the limited facilities of the Great Lakes airfield, NAS Glenview was established in 1937 to provide accommodations for service type aircraft. At the outbreak of World War II, it was used for flight training and in 1946 reverted to a Reserve Command training facility. Typical past operations on the station in support of flight training that resulted in contaminated sites are operations such as aircraft and vehicle maintenance, fueling, and washing; fire fighting training; support shops such as machining, metal working, painting, carpentry, and plumbing; storage of supplies and materials such as fuels, pesticides, transformers, and chemicals; sludge disposal; and disposal in landfills. Of the sites identified, those that present the greatest risk are the fire fighter training areas, landfills and areas of past surface disposal. The majority of the future cleanup of the NAS Glenview and Libertyville training site will be conducted under CERCLA.

Glenview is surrounded by densely populated residential areas and industrial areas. The local community is most concerned about fast track cleanup so that the infrastructure necessary to support a changed land use and a new economic development plan can be constructed as soon as practical.

There are a total of 43 sites at the bases. 33 CERCLA sites and 2 UST sites are at Glenview. 7 CERCLA sites and 1 UST site are at Libertyville. Three of the CERCLA sites (Sites 4, 19, and 20) at Glenview are proceeding under the Environmental Restoration Navy Account, with the rest proceeding under BRAC. These three sites will be transferred to NTC Great Lakes which is taking receivership of some housing areas. Non-Time Critical Removal Actions at Glenview are in the planning phase for a ditch in Site 00010 (High Semi-Volatile Organics), the indoor firing range Site 00019 (Lead), the Golf Course Maintenance Shack Site 00028 (Pesticides) and a former Hazardous Waste Satellite Accumulation Area Site 00030 (Metals). A remedial action (Glenview) at Site 8 was completed in March 1995 to remove PCB contaminated soils. This action resulted in a Response Complete determination.



In FY96, all tanks at NAS Glenview were removed. UST 1 is still undergoing soil cleanup and will complete cleanup in FY97 and go RC. A Finding of Suitability to Transfer (FOST) has been signed for the Golf Course and a FOST is in preparation for the majority of the airfield property. In partnership with the Local Reuse Authority, approximately $500,000 in demolition and disposal costs were avoided by coordinating to have the Local Reuse Authority to remove and recycle concrete in the airfield at there own cost. Contaminated soils under the airfield were removed and backfilled with clean soils excavated from an area of the base designated for the construction of a lake as part of the future reuse plan. This resulted in a win-win situation for the community as well as the Navy and netted another $780,000 in cost avoidance.

In 1993, the Base Realignment and Closure (BRAC) commission recommended NAS Glenview and the Libertyville Training Site for closure. Operational closure occurred in September 1995. The final property transfer date has not yet been set since environmental cleanup has not been completed. A BRAC Cleanup Team was formed in 1993 for NAS Glenview and the Libertyville Training Site. A reuse committee was established for each property and each has published a reuse plan, which specifies a mixture of industrial, commercial, recreational, and residential uses. Since the base has already closed, and the Reuse Plan does not include an airfield scenario, a completely new utility and transportation infrastructure must be constructed. Close coordination between the LRA (Village of Glenview) and the BCT allows priority areas to be identified and addressed in cleanup plans. As a result, key areas can be turned over to the LRA as expeditiously as possible.

GLENVIEW NAS
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Glenview NAS is located in the Chicago Lake Plain, a low, flat surface sloping gently towards Lake Michigan. Surface drainage on the station is primarily toward a tile drainage system installed under the runway area which diverts the water toward the North Branch of the Chicago River where an oil/water separator retention basin is located. A second drainage channel, the South Branch to the Chicago River also drains the station. Surface migration of contaminants is a pathway of concern, since the River terminates in Lake Michigan which is a drinking water supply. The geologic setting of the NAS Glenview region of northeast Illinois is typically characterized by a dolomite limestone bedrock, overlain by 100-120 feet of glacial till sediments, which consists primarily of clay and silty clay interspersed with water saturated sand and gravel lenses, which include occasional gravel pebbles and broken shale.
Groundwater in the area is found in four aquifers, one in the glacial material and the lower three in the bedrock formations. Groundwater in the glacial till is found in the saturated sand and clay lenses. Beneath NAS Glenview, these lenses are not continuous and are not a significant production source of potable water. Over 300 groundwater wells are located within three miles of the station and are used for drinking water, industrial, and agricultural purposes. These wells are developed into the various bedrock aquifers and no contaminants have been detected in the wells to date. Based on environmental investigations, extensive groundwater investigations are not expected to be a part of the cleanup process at NAS Glenview.

The geology of the Libertyville Training Site is characterized by a limestone bedrock, overlain by 110-130 feet of glacial till sediments, which consists primarily of clay and silty clay interspersed with water saturated sand and gravel lenses, which include occasional gravel pebbles and broken shale. In the LTS area, these lenses are not significant water production areas. The environmental investigations at the LTS have included the placement of 14 groundwater monitoring and sampling wells to a maximum depth of 55 feet. These wells did not encounter continuous and significant water bearing zones, Groundwater flow in the till and outwash is primarily to the southeast. Past groundwater water well monitoring has indicated minor contamination in the area of the well. The contaminants identified in soils and groundwater include low levels of petroleum related contaminants (poly-Nuclear Aromatics, lead, chromium and arsenic). There are approximately 70 private wells within a 1 mile radius of the site. The wells are used for drinking water and agricultural purposes. The nearest private well is 700 feet from the site boundary.

NATURAL RESOURCES - Glenview is surrounded by densely populated residential areas to the south, southeast and northwest. To the west and northeast are small industrial areas. Due to the highly developed nature of the area around the station and on the station, the only wildlife are those species that have adapted well to urban areas. Native species such as fox, coyote, muskrat, skunk, raccoon, weasel, opossum, woodchuck, various squirrels and rabbits, as well as birds may still be present in the general area. The surface ditches and stormwater management ponds flowing off base provide habitat for migrating birds and waterfowl. Most of the vegetative cover consists of planted grasses, shrubs and trees not native to the area. Since airfield operations have ceased, portions of the runway area have been discovered to contain high quality prairie remnants that are of great interest to the community. No rare, threatened or endangered species are known to inhabit the area. Libertyville is surrounded by densely populated areas on all sides except the North which is an industrial park. The vacant 164 acre site has attracted the same species as those found at NAS Glenview, as well as deer.

RISK - A Baseline Risk Assessment following EPA guidelines will be conducted for NAS Glenview Sites 00003 (North Burn Area Landfill) and Site 00025 (Fire Fighter Training Area). An Ecological Risk Assessment was performed during sites screening for sites on the airfield. The findings indicate that risk to ecological habitat on base derives from surface water runoff area. Those areas investigated during site screening have resulted in a finding of further action due to a lack of ecological receptors. An inventory of biological resources compiled for the Environmental Impact Statement found no federal endangered or threatened species, nor habitat to support them. State of Illinois threatened prairie plants have been documented in the area of the airfield and a state threatened bird, a sandpiper has been observed; however, available habitat has been termed inadequate to support this species.
Under the DOD Relative Risk system, 14 sites were ranked as High relative risk. 11 high ranked sites are at Glenview and 3 are at LTS.

RESTORATION PROJECTS - A portion of the base in the airfield area contains plants that habitat a prairie environment. The Reuse Plan calls for a park in that area in order to preserve this prairie remnant.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - Glenview NAS did not qualify for the NPL and Libertyville Training Site has not been ranked.

LEGAL AGREEMENTS - There are no legal agreements at either site.

PARTNERING - Formal facilitated partnering with Region V and Illinois is scheduled to begin in the late Fall 1996.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee for Glenview was formed to address the Site investigation that began in 1989. However, the TRC was not active at the time of BRAC closure legislation. A newly formed Restoration Advisory Board (RAB), was created around the core of the former TRC members . The RAB (24 members) was formed in May 1994 and initially met every month, though now it meets bi-monthly. The RAB has received training/presentations on risk assessment, environmental baseline surveys, underground storage tank program, and CERCLA requirements. The RAB has reviewed documents for the UST efforts, FOSLs, a FOST, and preliminary assessments. The RAB has provided community input on sampling results. In FY96 the RAB approved the community relations plan as well as provided comments and preferences on natural/historical preservation ideas, historical data, sampling and analysis plans/data.

There was no TRC established for Libertyville. A RAB was started in May 1994 and meets quarterly. The Libertyville RAB has 12 members community members and has selected a community co-chair. The Libertyville RAB has had training/presentations on CERCLA and background sampling methods.

The Libertyville RAB has reviewed documents including the background soil and groundwater sampling plan. Site Investigations for Libertyville are planned for FY97. In FY95, the Libertyville RAB conducted a community survey. The survey questioned residents about knowledge of environmental issues at the site, their personal concerns about Libertyville, and their preferred methods for feedback. The survey indicated that there was a high level of trust that the Navy would address the contamination, there was a high level of community knowledge, preferred information communicated by fact sheets, local media and public meetings and their top concern was the schedule for final cleanup and reuse.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was prepared in July 1995 and is expected to be updated during FY97.

GLENVIEW NAS
RELEVANT ISSUES

For Libertyville the Community Relations Plan was prepared in July 1993 and will be updated in 1997.

INFORMATION REPOSITORY - A publicly available Information Repository was established in 1994 at Glenview and Northbrook public libraries. Libertyville Information Repositories are located at the community hall and local libraries.

BASE REALIGNMENT AND CLOSURE

BRAC - The Base Realignment and Closure (BRAC) committee recommended Glenview NAS and the Libertyville Training Site for closure in 1993, during the BRAC III round. The mission cease date was March 1995 and operational closure occurred in September 1995. The final property transfer date has not been determined, but expected to occur by the end of FY2000 for both Glenview and Libertyville.

BRAC CLEANUP TEAM - A BRAC Cleanup Team (BCT.) was formed in October 1993 and membership includes the Navy, Illinois Environmental Protection Agency, EPA Region V. The BCT is for both the Glenview property and the Libertyville property. The BCT is supported by the Caretaker Site Office Staff, EFA Midwest (Libertyville) and SOUTHNAVFACENGCOM personnel. . The BCT works closely with the Reuse committee and the environmental cleanup program to ensure that the cleanup strategy is compatible with the reuse plans.

DOCUMENTS - A BRAC Cleanup Plan (BCP) was completed in February 1994. The Environmental Baseline Survey (EBS) was conducted in October 1993 and the final report published May 1994. The present environmental condition of property is shown below:

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
1 acres	57 acres	223 acres	1 acres	98 acres	9 acres	818 acres

LEASE/TRANSFER - One hundred and twenty acres have been leased on the Glenview property, 109 of which is suitable for transfer.

REUSE - A Reuse committee for Glenview was formed in August 1993 and has 25 members. A reuse plan for Glenview has been published June 1995 which identifies a mixture of uses such as industrial and residential. A reuse committee for Libertyville was formed in 1994. A reuse plan for Libertyville was published in April 1995 in which the Federal Aviation Administration has requested a large portion of the property for use as a radio navigation range. This proposed use is still under discussion as there are competing parties interested in the property, the FAA and the Village of Vernon Hills.

FAST TRACK INITIATIVES - Using backfill from on-site sources saved $780,000 versus using off-site sources. By allowing the village of Glenview to demonstrate a concrete recycling project on an area where the concrete needed to be removed in order to get access to a leaking fuel line, the Navy saved $500,000. The BCT developed risk based contaminant screening criteria prior to the state developing criteria, which saved 2 years time. The BCT did extensive research on the original site investigation reports. The team determined that many of the conclusions drawn which indicated additional sampling were too conservative. This reduced the number of sites needing further investigation.

HISTORICAL PROGRESS

FY88

Sites 1-6 (Glenview) - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA) was completed which identified six potentially contaminated sites on Glenview NAS. All six sites were recommended for further investigation in a Site Inspection (SI).

FY89

Sites 1-9 (Glenview) - A Site Investigation performed in 1989 increased the number of identified sites to 9.
Sites 1-7 (Libertyville) - An Environmental Evaluation was completed in April which recommended further study for all seven sites.

FY90

Sites 1-9 (Glenview) - The Site Inspection (SI) work plan was finalized in April.

FY92

Sites 1-9 (Glenview) - A Site Inspection (SI) was completed which recommended Sites 1, and 3 should proceed to a Remedial Investigation (RI) phase. An extended SI should be conducted for Site 5 and 9, Sites 6 and 7 should be further investigated under the UST program, Sites 2, 4, and 8 require no further investigation, and surface water and sediment areas warrant further investigation.
Sites 1-7 (Libertyville) - A Removal Plan was completed in July for the removal of asbestos and lead contaminated material from five of the seven areas. A Remedial Investigation (RI) work plan was under development for the seven sites covering both soil and groundwater contamination.

USTs 1 and 2 (Glenview) - An Initial Site Characterization study was completed. Evidence of product leak was found around several tanks at both sites. A work plan for Contaminant Assessment Reports (CAR) was prepared.

FY93

Environmental Baseline Survey for Glenview and Libertyville began.

FY94

Sites 1-5 (Libertyville) - Removal actions were completed at five Libertyville sites to remove asbestos containing material. Also 1 leaking tank was removed and remediated.
Sites 1-30 (Glenview) - Initiated sampling and screen of potential areas of concern to determine the extent of contamination.

FY95

(Glenview) - Continued investigation of Gray Sites. Background Soil and Groundwater investigation completed.
Sites 1, 3, 25 and 26 - Initiated RI/FS
Sites 11, 12, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27 and 30 - Initiated PA/SI
Site 8 - Completed PA/SI and site is RC.
UST 1 - tank removal project and soil cleanup for all tanks at Glenview was begun.
UST 3 (Libertyville) - Initiated the Site Assessment (SA)

GLENVIEW NAS
PROGRESS DURING FISCAL YEAR 1996

FY96

Sites 28-31 (Glenview) - Initiated PA/SI to characterize contamination; with completion planned for 1997.

(Glenview) - Completed Gray Site Sampling. Significant portions of the airfield have been reclassified as suitable for transfer.
UST 1 - Continued removal of all tanks at NAS Glenview. Contaminated soil will require further remediation.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

(Glenview) - Further site screening will be completed to identify which areas are available for transfer and which need further action. Removals are planned for sites warranting further action to expedite the process of site restoration. The RI sites will be considered for Removals where action is required to expedite their transfer.
Sites 1, 4, 5, 6 and 25 - Complete RI/FS.
Sites 4, 5, 6, 10, 11, 14, 18, 21-31 and 125 - Complete PA/SI.
Sites 1 and 25 - RD to be completed.
Sites 3-6 - RD to be initiated.
Sites 10, 14, 21, 22, 23, 24, 28, 29, 30, 31 and 125 - RI/FS to be initiated.
Sites 5, 9, 10, 12, 14, 15, 16, 21, 25, 28, 30 and 32 - IRAs to be initiated.
Sites 3 and 25 - RAs to be initiated.
UST 1 - Complete the IMP phase and site will be RC.
(Libertyville) - Site 2 complete PA/SI.
Sites 1-4 - Begin RI/FS.
UST 3 - SA to be completed and IMP phase begun for all tank removals and soil cleanup.

FY98

Sites 9, 12, 15, 16 and 32 (Glenview) - PA/SIs will be completed.
Sites 4-6 - RD will be completed.
Sites 1, 4 and 25 - RA will be completed and sites will be RC.
Sites 3, 5, 9, 10, 12, 14, 15, 16, 21, 24, 25, 28, 30 and 32 - 14 IRAs will be completed and 11 of these sites will be RC, with Sites 3, 5 and 21 continuing.
Site 18 - RI/FS will be completed and site will be RC.
Sites 5 and 21 - RA will be initiated.
Sites 6, 7, 17, 22, 23, 29, 31 and 125. - IRAs will be initiated.
UST 3 (Libertyville)- IMP phase will be completed and site will be RC.
Site 1 - RD will be begin.
Sites 5-7 - RI/FS to begin.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	4		21	12	3			
RI / FS			6	7	7	8		2
RD			2	4	2			1
RAC				3	1	2		
RAO								1
IRA	7(7)			13(14)	10(10)	8(8)		3(3)
RC	1		1	12	12	10		4
Cumulative % RC	3%	3%	5%	35%	65%	90%	90%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	2		1					
CAP	1							
DES								
IMP			1	1				
IMO								
IRA								
RC	1		1	1				
Cumulative % RC	33%	33%	67%	100%	100%	100%	100%	100%

GREAT LAKES NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

Engineering Field Division/Activity: SOUTHDIV
Major Claimant: CINCLANTFLT
Size: 1,620 Acres
Funding to Date: $[illegible]
Estimated Funding to Complete: $19,979,000

Base Mission: Provides basic training for enlisted personnel and initial and advanced and other specialized training for Navy and Reserve officers and enlisted personnel

Contaminants: Fuel, pesticides, PCBs, heavy metals, solvents, unexploded ordnance, dredge spoils, industrial liquid waste, PCBs

Number of Sites:

CERCLA:	13
RCRA Corrective Action:	0
RCRA UST:	5
Total Sites:	18

Relative Risk Ranking of Sites:

High:	1	Not Evaluated:	4
Medium:	4	Not Required:	8
Low:	0		

Sites Response Complete: 8

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	11	1		1				
RI / FS	1							6
RD								5
RAC								5
RAO								4
IRA	2(2)	1(1)						
RC	7							6
Cumulative % RC	54%	54%	54%	54%	54%	54%	54%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	5							
CAP								4
DES	1							4
IMP	1							4
IMO								1
IRA	1(1)							
RC	1							4
Cumulative % RC	20%	20%	20%	20%	20%	20%	20%	100%

CRANE NAVAL SURFACE WARFARE CENTER

CRANE, INDIANA

Engineering Field Division/Activity: SOUTHDIV

Major Claimant: COMNAVSEASYSCOM

Size: 62,443 Acres

Funding to Date: $28,504 (0)

Estimated Funding to Complete: $71,819,000

Base Mission: Provides quality engineering, testing and technical interest to support fleet combat systems, small arms, microelectronic technology, underwater warfare acoustical sensors, pyrotechnics

Contaminants: Acid, chemical agents, explosive and ordnance chemicals, heavy metals, low-level radiation, paint, PCBs, pesticides, POLs, plating waste, solvents, unexploded ordnance

Number of Sites:

CERCLA:	0
RCRA Corrective Action:	30
RCRA UST:	1
Total Sites:	32

Relative Risk Ranking of Sites:

High:	21	Not Evaluated:	0
Medium:	5	Not Required:	1
Low:	4		

Sites Response Complete: 1

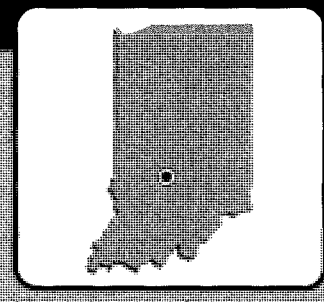
PROGRESS AND PLANS

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	26	2	1					3
RFI / CMS	1		1	4		1	1	23
DES				1		1	1	28
CMI						1		30
CMO								30
IRA	3(4)	7(10)	2(2)	2(2)	1(1)	1(1)		
RC	1							31
Cumulative % RC	3%	3%	3%	3%	3%	3%	3%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP						1		
DES							1	
IMP								1
IMO								1
IRA								
RC								1
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

INDIANAPOLIS NAVAL AIR WARFARE CENTER

INDIANAPOLIS, INDIANA



Engineering Field Division/Activity:

Major Claimant:

Size:

Funding to Date:

Estimated Funding to Complete:

Base Mission:

Contaminants:

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	1	High:	1	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	0	Not Required:	2
RCRA UST:	2	Low:	0		
Total Sites:	3				

BRAC IV

Sites Response Complete: 2

EXECUTIVE SUMMARY

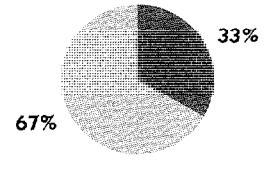
Indianapolis Naval Air Warfare Center (NAWC) is located in the city of Indianapolis, Indiana in the south central part of the state. The NAWC was commissioned in 1942 as the Naval Ordnance Plant Indianapolis, a Government-Owned, Contractor Operated (GOCO) facility. It produced the then top-secret Norden Bombsight. In 1945, it was converted to a Government Owned, Government Operated (GOGO) facility, and expanded its capability to include more aviation electronics items. In 1977, the mission was redefined to add space, undersea and surface weapons as well. Typical operations conducted at the facility in support of its mission include machining, electroplating, degreasing of metal parts, carpentry shops, painting, photographic labs, test and evaluation, document burning, and storage of materials, supplies and fuels. The majority of the wastes produced by the operations on the facility were shipped off site for recycling or disposal, or were discharged to the sanitary sewer system. Recent surveys have indicated the potential for contamination from leaking floor drains due to deterioration of the drainage structures. These areas are under investigation to determine if they are sites requiring cleanup. The NAWC is not under any kind of legal agreement prescribing cleanup requirements.

NAWC is in a completely developed and urbanized setting in the northeast quadrant of the city of Indianapolis. The land in the area is flat, surrounded by commercial and residential areas. Due to the impervious nature of the surfical soils, most rainfall and snowmelt result in surface runoff that is channeled to a retention pond before being discharged to the storm sewer system. Groundwater is within 10 feet of the ground surface and is being investigated for potential contamination. Due to the highly developed nature of the area, little wildlife is present except those species that have adapted to an urban environment. The most likely receptor to any contamination present would be the local population and on-site workers. The greatest concern to the public and worker is surface and sub-surface soil contamination.

In order to better address the concerns of the public, a Restoration Advisory Board (RAB) was formed in April 1996 and meets every month. A publicly available Information Repository has been set up at Warren Library, Indianapolis, IN to provide information on the environmental cleanup program.

Currently, there is one active site in the IR program which is currently undergoing an RI/FS investigation. Two Underground Storage Tank (UST) sites have been investigated and remediated at NAWC. UST 1, a 15,000 gallon fuel oil tank at Building 6000 was found to leak and was taken out of service. UST 2, a 2,000 gallon gasoline tank was removed. Both sites are Response Complete (RC), with no further remedial action planned. The final Environmental Baseline Survey (EBS) identified 38 Areas of Concern (AOCs) which were reduced to 18 AOCs by consolidation and removal of 16 petroleum tank compliance sites. These 18 AOCs are incorporated into the RI/FS that began on Site 1. Some of these AOCs are expected to be converted to official Sites or SWMUs as sampling information is obtained revealing contamination. The petroleum sites will be addressed under the UST program as compliance sites.

In 1995, The Base Realignment and Closure (BRAC) commission recommended NAWC Indianapolis for closure. Operational closure is planned for 4 January 1997. Operations will be transferred to a private company. A BRAC Cleanup Team (BCT) was formed in December 1995, and a BRAC Cleanup Plan (BCP) will be completed in November 1996. An Environmental Baseline Survey (EBS) was conducted in the fall of 1995 and a final report was produced in March 1996. A local reuse committee, the NAWC Indianapolis Reuse Planning Authority (NAWC-RPA) has been formed and is in the process of privatizing the facility. A lease was signed with the City of Indianapolis in September 1996, with a turn-over to a private company scheduled for January 1997.



Current Status Of Sites

Studies Underway	1
Cleanups Underway	0
Response Complete	2
TOTAL	3

INDIANAPOLIS NAWC
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Indianapolis NAWC is located in the northeast quadrant of the city of Indianapolis, Indiana and the facility is surrounded by commercial and industrial developed areas. The topography in the area is generally a flat plain gently sloping to the southeast. Rainfall and snowmelt in the area are relatively heavy. The surface soils in the area are composed of 12 to 14 inches of topsoil over a yellow hard pan clay, indicating that minimal amounts of precipitation would percolate into the ground to the water table. Most precipitation would either pond in depressions or become surface runoff. If undeveloped, natural surface drainage would be to Pleasant Run, an intermittent stream approximately 1000 feet southeast of NAWC that flows in a south-southwesterly direction. Due to the highly developed nature of the area and amount of paved surfaces and roof areas, more than a normal amount of precipitation is runoff which then ponds in low areas. As a result, the NAWC recently constructed rip-rap swales to channel the runoff and constructed a storm water retention pond in the southwest region of the facility to collect the runoff. The unlined retention pond, having a capacity of 1.2 million gallons, discharges to the city storm sewer system. The city storm sewer system eventually discharges to the White River watershed. Any contaminants from NAWC carried by surface runoff would end up in Pleasant Run.

A waste water treatment plant was built on the property in 1990 to handle industrial waste waters. The geological structure under the facility is composed of till with outwash deposits of sand at approximately 25 and 100 feet below ground surface. There are three aquifers underlying the Center. The water table aquifer located about 10 feet below ground surface and is thought to flow towards the southeast and discharge to Pleasant Run. Other aquifers are the Principle Pleistocene Aquifer, thought to underlie the facility at a depth of 75 to 100 feet and is estimated to be 10 feet thick, and the Bedrock Aquifer located approximately 170 feet below ground surface in the limestone geological unit. Due to the impervious nature of the local upper soil layers and the storm sewer system, it is not expected for contaminants from the NAWC to migrate to the groundwater. The Silurian/Devonian limestone bedrock aquifer is used for drinking water supplies and at least 25 privately owned drinking water wells are located within 3 miles of the NAWC. Monitoring wells installed as part of the UST program has so far detected only petroleum products in the groundwater.

NATURAL RESOURCES - Because the NAWC is located in the middle of a metropolitan area, natural resources are limited to those species common in developed areas. Common birds and rodents frequent the property, but no rare, threatened or endangered species have been observed on the compound or are known to frequent the area.

The facility is surrounded by urban residential, commercial and industrial development. Most of the commercial establishments within the immediate vicinity of NAWC Indianapolis are located along the northern and western boundaries. Businesses in the area include gas stations, car washes, dry cleaners, and office buildings. The areas immediately beyond the businesses lining the boundaries of the NAWC are predominantly residential, as are the areas south and east of the facility.

RISK - A draft Baseline Human Health and Ecological Risk Assessment will be completed in February 1997.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - The facility is not listed on the National Priorities List (NPL).

PARTNERING - From 31 January through 2 February 1996, the NAWC Indianapolis BCT met for the first time in a session facilitated by a contractor, the Galileo Quality Institute. The team , comprised of members from NAWC, SOUTHDIV, EPA Region V, Indiana Department of Environmental Management, EFD Midwest, and the CLEAN and RAC contractors, was introduced to the concept of "partnering" and each member explained his or her role in the process. Partnering was defined as a collaborative relationship that creates an environment where trust and teamwork prevent disputes from developing and where all team members seek to achieve common goals and objectives. Various training sessions were conducted by Galileo in the areas of meeting management, decision making, managing conflict, and team building. At the end of the sessions, the NAWC Indianapolis team had accomplished the following:

- Developed team mission statement and charter
- Identified roles and responsibilities
- Developed team Code of Conduct
- Developed meeting management rules
- Developed a decision making model
- Began to work together as a team

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Restoration Advisory Board (RAB) was formed in April 1996. The RAB has nineteen members and a community co-chair has been selected. The RAB meets every month and has received training/ presentations on ecological and human health risk assessment. In FY96, the RAB made several site visits and observed at least one tank removal.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was completed in FY96.

INFORMATION REPOSITORY - To make cleanup information easily accessible by the public, an Information Repository was set up in April 1996 at Warren Library, Indianapolis, IN. The Information Repository contains a copy of the Administrative Record (the official file) and other documents describing the program. The Information Repository is updated and maintained on a regular basis by the Navy.

BASE REALIGNMENT AND CLOSURE

BRAC - NAWC Indianapolis is slated for operational closure on 30 September 2000 as recommended by the Base Realignment and Closure (BRAC) Commission in 1995. The operations at NAWC will be relocated to three other activities: Naval Surface Warfare Center, Crane, Indiana; NAWC Aircraft Division Patuxent river, Maryland; and NAWC Weapons Division, China Lake, California. The actual property transfer date has not been determined yet.

BRAC CLEANUP TEAM - The BRAC Cleanup Team (BCT) was established in December, 1995 and meets monthly. The BCT members include the Navy, Indiana Department of Environmental Management, and US EPA Region V.

DOCUMENTS - A draft BRAC Cleanup Plan (BCP) was completed in July 1996. The final BCP will be completed by November1996. An Environmental Baseline Survey (EBS) was begun in September 1995, completed in November 1995 and a final report was produced in March 1996. The EBS identified 38 Areas of Concern (AOCs), which were then consolidated into 18 AOCs and 16 UST compliance sites, that will be further investigated to determine if they are contaminated sites. Currently there is one active site, a leaking waste machining coolant pit, which was removed in September 1995 and revealed high levels of volatile organics in the soil underneath. The Environmental Condition of Property is given below.

INDIANAPOLIS NAWC
RELEVANT ISSUES

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
132 acres	15 acres	1 acres	1 acres	1 acres	0 acres	13 acres

LEASE/TRANSFER - No acreage has been leased or transferred yet. The EBSL/FOSL was signed on 29 August 1996.

REUSE - A Reuse committee was formed in February 1996 and is known as the NAWC Indianapolis Reuse Planning Authority (NAWC-RPA). The RPA is working with the Navy to facilitate privatization as an approach to closure. The RPA has developed a Preliminary Privatization Business Plan which will become part of the Reuse Plan. The Final Reuse Plan was completed in August 1996.

FAST TRACK INITIATIVES - Fast track initiatives being implemented include employing lessons learned from previous BRAC rounds, applying an integrated team approach to decision making, overlapping remedial investigation/feasibility studies (RI/FSs) planning phases, applying Indiana Department of Environmental Management (IDEM) voluntary cleanup criteria to risk based corrective actions, expediting contracting procedures, optimizing acquisition strategies and compressing work schedules where feasible.

HISTORICAL PROGRESS

FY88

Base-Wide - A Preliminary Assessment (PA) determined there were no hazardous waste disposal sites at NAWC, and no hazardous waste known or suspected to have been released.

FY90

USTs 1 and 2 - An Initial Site Characterization study was begun for these two UST sites.

FY92

USTs 1 and 2 - The Initial Site Characterization study was completed for these two sites. No remedial action was required and the sites are considered to be Response Complete (RC).

PROGRESS DURING FISCAL YEAR 1996

FY96

Site 1 - PA/SI completed at Site 1. Initiated an RI/FS at Site 1 and 18 AOCs. This work included developing a comprehensive and Site-specific Sampling Plan.

BRAC- Initiated an RI/FS at all 18 AOCs. BCT was established and is meeting at least once a month. Final EBS report completed in March. Local Reuse committee formed. Lease was signed with the City of Indianapolis. CRP was completed. An Information Repository was setup. RAB was formed in April. The FOSL for the property was completed in August. The Final Reuse Plan was completed in August.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Site 1 - Complete RI/FS at Site 1 and AOCs. At this time several of these areas might be identified as Sites or SWMUs by April 1996. Begin RD at Site 1 and any necessary AOCs (which would be identified as new Sites/ SWMUs. A draft Baseline Human Health and Ecological Risk Assessment will be completed in February 1997. IRA completed at Site 1.
BRAC- Initial BCP will be completed in November. Initial BCP abstract will be completed in October. BCP abstract will be modified in the spring. BCP will be modified in the spring.

FY98

Site 1 - Site 1 RD to be completed and RA to begin. Continue work on the AOCs, to include RD and RA work if necessary. Any RD and RA work would be conducted under the IR program as official Sites or SWMUs. Complete Final Baseline Human Health and Ecological Risk Assessment. BRAC BCP will be modified. BCP abstract will be updated.

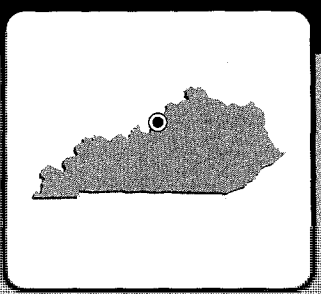
INDIANAPOLIS NAWC
PROGRESS AND PLANS

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

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	2							
CAP								
DES								
IMP								
IMO								
IRA								
RC	2							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

LOUISVILLE NAVAL SURFACE WARFARE CENTER

LOUISVILLE, KENTUCKY



Engineering Field Division/Activity:

Major Claimant:

Size:

Funding to Date:

Estimated Funding to Complete:

Base Mission: Engineering support of conventional and electronic warfare systems; production of missile hardware, gun barrels, electronic components and parts for warfare systems.

Contaminants: Acid, heavy metals, paint, POLs, solvents, ash, plating waste.

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	6	High:	0	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	0	Not Required:	6
RCRA UST:	0	Low:	0		
Total Sites:	6				

BRAC IV

Sites Response Complete: 6

EXECUTIVE SUMMARY

Naval Surface Warfare Center Ordnance Station, (NAVSURFWARCEN ORDSTA), Louisville is a highly industrialized facility located on 143 acres of land within the city limits of Louisville, Kentucky, seven miles south of the center of downtown and one-half mile from Louisville International airport. Its primary functions are to overhaul, procure and produce weapon systems and components needed by combat vessels of the Navy. Typical NAVSURFWARCEN ORDSTA operations that contributed to the contaminated sites on the installation include machining, assembling, overhauling and refurbishing of gun mounts and other Naval ordnance equipment, and supporting research, design, development and testing. Support operations include machining, welding, draining of lubricating fluids, painting, electroplating, degreasing and cleaning, and paint stripping. The NAVSURFWARCEN ORDSTA includes the following site types: waste storage areas, plating shop areas and disposal areas. Current operations include pollution prevention technologies to prevent further contamination. The installation has applied for a renewal of a RCRA Part B permit including corrective action requirements to clean up the contaminated sites.

The installation is discontinuously underlain with a layer of weathered shale and clay over bedrock composed of layers of shale and limestone. There is a semi-perched aquifer in the upper layer of clay with leakage into lower water bearing zones. Contaminants appear to have migrated downward through the soil layer to the groundwater. The clay layer may not be continuous or an effective barrier to contaminant migration to aquifers in the lower bedrock formations, although further study is needed to investigate this. Due to the station's developed character, rain and snowfall result primarily in surface runoff. Surface runoff is a possible migration pathway for contamination from the station's sites. The runoff is carried by a series of manmade drainage channels to the municipal combined sewer system. A portion of the runoff drains off-site to a series of drainage ditches discharging to area streams, eventually flowing into the Ohio River. These off-base drainage ditches throughout the area are polluted from a number of off-site industrial sources. Terrestrial wildlife on the base is generally typical of urban areas. During a wildlife survey conducted in June 1990, rock doves and mourning doves were observed in the vicinity of the base buildings. Species observed in the limited areas of natural vegetation on the base include starlings, common grackles, house sparrows, and gray squirrels. Other species of wildlife expected to occur on the base include raccoons, house mice, other mice, Norway rat, and eastern garter snake. Drinking water is supplied by a municipal water supply system.

Current Status Of Sites

Studies Underway	0
Cleanups Underway	0
Response Complete	6
TOTAL	6

100%

To better inform the public of the environmental cleanups underway at the station, a Restoration Advisory Board (RAB) was established in January 1996 and the Community Relations Plan was published in July 1996. In January 1996, an Information Repository was set up on the base in Building 134 and is accessible to the public.

Of the six original sites at Louisville NAVSURFWARCEN ORDSTA, all are Response Complete (RC). Three of the six sites (Site 2, 3 and 5) listed RC are also listed as Site Close Out (SCO) following the Initial Site Assessment (IAS) in FY86. A fourth site (Site 1) received SCO in FY91. The other two sites (Sites 4 and 6), since they were being evaluated by the RCRA Facility Assessment (RFA), were classified RC for tracking purposes. A final RFA was published in May 1996. Sixty nine SWMUs and eighteen AOCs were identified in the RFA. Nine SWMUs and two AOCs were recommended for RCRA Facility Investigation (RFI) while 33 SWMUs and 14 AOCs were recommended for confirmatory sampling. In FY97, the preliminary results will allow for multiple SWMUs and AOCs to be placed into the official IR program as Sites and SWMUs.

Louisville NAVSURFWARCEN ORDSTA was recommended for privatization/closure by the 1995 Base Realignment and Closure (BRAC) commission. The base was privatized 18 August 1996. Of the 1,800 or so employees who worked at the station before going on the BRAC list, about 1,000 remained after privatization. Of the original 1,800 employees 650 moved or retired, 150 lost jobs, 410 remained navy employees at the base, and 585 became employees of private contractors. Approximately 180 of the 410 Navy employees will remain for only up to 15 months for operational closure. Also the appropriate functions, equipment and support remained for privatization.

LOUISVILLE NSWC
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - The area is underlain by a thin zone of very fine grained unconsolidated sediments on a soft and weathered shale. The very flat ground results in poor natural drainage conditions and large areas of standing water after rainfall or snow melt. Manmade drainage channels were constructed throughout the area to increase the usability of the land surface. The primary hydrogeologic unit in the area is glacial outwash sediment composed of unconsolidated gravels, sands, silts and clays. This outwash sediment located west of NAVSURFWARCEN ORDSTA comprises the upper aquifer material in the general area. Beneath the outwash sediments, the bedrock is composed of several limestone and shale formations. Aquifers in these formations do provide well water in the surrounding areas, however, most of the drinking water is provided by a municipal water supply. Under the installation, the outwash sediment has been found in some areas and in other areas is a surficial layer (5 to 10 feet) of clay and silt derived from terraces deposits (glacio-fluvial) and the weathering of the underlying shale. This layer consists of relatively low permeability materials.

Annual rainfall averages 44 inches and annual snowfall averages 16 inches. The area is subject to cyclonic storms and thunderstorms with intense rainfall. The area is highly industrialized and surface water drainage is through a series of manmade ditches and storm drains that discharge eventually into the local combined storm water/sewer system and enter the Metropolitan Sewer District system. Along the northeast and eastern portion of the station, the surface runoff drains off-site, merging with runoff from the local area and entering nearby streams that eventually empty into the Ohio River. This surface drainage route is a potential migration pathway for contaminants from the station.

Surface water drainage could potentially carry contaminants into the perched aquifer. Migration potential to the lower aquifers has not yet been defined.

NATURAL RESOURCES - Terrestrial wildlife on the base is generally typical of urban areas. During a wildlife survey conducted in June 1990, rock doves and mourning doves were observed in the vicinity of the base buildings. Species observed in the limited areas of natural vegetation on the base include starlings, common grackles, house sparrows, and gray squirrels. Other species of wildlife expected to occur on the base include raccoons, house mice, other mice, Norway rat, and eastern garter snake. Drainage ditches in industrial areas adjoining the base are reported to support a poorly diverse aquatic fauna indicative of polluted water. Flow from these ditches ultimately reaches the Ohio River by way of Northern Ditch, Southern Ditch, Pond Creek, and Salt River. No federal or state designated threatened, endangered, or special status plant or animal species or critical habitat were known to occur on NAVSURFWARCEN ORDSTA as of 1990. The state endangered Kirtlands snake, state species of concern Cooper's Hawk, and federally endangered Indiana bat are known to occur within a 50-mile radius of the base. Due to the lack of suitable habitat, none of these species likely occur on the base. A 3 June 1996 letter from the Department of the Army , U.S. Army Engineer District, Louisville, Corps of Engineers found, based on information provided and a site visit on 16 May, 1996, no jurisdictional wetlands exist on the base.

RISK - Of the six original sites at Louisville NAVSURFWARCEN ORDSTA, only Site 6 has been ranked "high" using the DOD Relative Risk Ranking model. Although, groundwater is the media receiving the ranking, the migration pathway for the contaminants was only potential, not evident. The high ranking indicates there is a strong potential for the plating shop contaminated wastes to enter the groundwater.

REGULATORY ISSUES

LEGAL AGREEMENTS - The station was issued a RCRA Part B permit on 30 October 1985. A draft RCRA Part B with corrective action requirements (for renewal) was submitted for public comment on 05 August 1996. An initial search identified 69 Solid Waste Management Units (SWMUs) and 18 Areas of Concern (AOC's). Of these, nine SWMUs and two AOC's were recommended for a RFI. SWMU #1, Northeast Corner Liquid Disposal Area, SWMU. #2, Old Station Landfill, SWMU #22, 1972 to 1976 Drum Storage Area, SWMU #23, Former Building C Drum Storage Area, SWMU #25, Waste Oil Tank 95 Drum Staging Area, SWMU #26, Waste Oil Tanks 98 and 61 Drum Staging Area, SWMU #37, Former Wastewater Treatment System, SWMU #51, Station Salvage Yard SWMU #53, Building E-Former Plating Building, AOC B, Building 81 Release Area and AOC F, Building B Excavation Area. Recommendations for the remaining 60 SWMUs and 16 AOCs were as follows: No Further Action (NFA) at the present time for 27 SWMUs and 2 AOCs; confirmatory sampling to determine if further action would be necessary for 33 SWMUs and 14 AOCs; and the remaining SWMU was determined to be a RCRA regulated unit under the permit. Since the permit renewal included all the sites on base (RCRA Facility Assessment and BRAC process), all site cleanups will be handled under the RCRA Corrective Action Program.

PARTNERING - In January 1996, an Environmental Restoration Management Alliance (ERMA) team was formed, made up of Navy Remedial Project Managers (RPMs) from NAVSURFWARCEN ORDSTA and Southern Division Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), Region 4 EPA regulator (on BRAC Cleanup Team (BCT)), Commonwealth of Kentucky representatives (on BCT), the BRAC Environmental Coordinator (BEC), CLEAN and RAC contractors and installation personnel.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - The Restoration Advisory Board (RAB) was established in January 1996 and has met every month since.

COMMUNITY RELATIONS PLAN - The Community Relations Plan was completed in July 1996.

INFORMATION REPOSITORY - In January 1996, an Information Repository was established and is located on the base in Building 134 to provide public access to all environmental documents. The Administrative Record (the official file) documents is also housed in this building. Also, an Information Repository/Administrative Record has been established at the Iroquois Public Library.

BASE REALIGNMENT AND CLOSURE

BRAC - Louisville NAVSURFWARCEN ORDSTA was recommended for privatization/closure by the 1995 BRAC commission. The base privatized 18 August 1996. Of the 1,800 or so employees who worked at the station before going on the BRAC list, about 1,000 remained after privatization. Of the original 1,800 employees 650 moved or retired, 150 lost jobs, 410 remained navy employees at the base, and 585 became employees of private contractors. Approximately 180 of the 410 Navy employees will remain for only up to 15 months for operational closure. Also the appropriate functions, equipment and support remained for privatization.

BRAC CLEANUP TEAM - In FY96, a BRAC Cleanup Team (BCT) was formed.

DOCUMENTS - An Environmental Baseline Survey (EBS) and a BRAC Cleanup Plan (BCP) contract was awarded 2 October 1995. A field survey for the EBS was completed 3 November 1995. The final EBS was completed in March 1996. A BCP is scheduled for 1 November 1996.

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
75 acres	6 acres	1 acres	1 acres	0 acres	1 acres	62 acres

LOUISVILLE NSWC
RELEVANT ISSUES

REUSE - A Base Reuse Plan was completed in April 1996 by the Louisville/Jefferson County Redevelopment Authority (LJCRA).

HISTORICAL PROGRESS

FY86

Sites 1-5 - An Initial Assessment Study (IAS), similar to a Preliminary Assessment (PA), was completed in July 1986. The IAS identified five sites, and only one was recommended for further study. However, both Sites 1 and 4 proceeded to the Site Inspection (SI) phase.

FY91

Sites 1, 4 and 6 - An SI Report was published 13 May 1991. Of the sites to continue to the SI phase, one (Site 1) was determined to require no further study. Site 4, the Northeast Corner Liquid Disposal Area sample results showed low levels of metals and volatile organic solvents such as TCE, DCE and acetone. A risk assessment concluded none of the low levels represented a risk to workers on the site. An additional site was identified during the SI phase, Site 6, the Building E Plating Shop.

FY93

Site 6 - An SI report was published on 6 January 1993. At Site 6, Building E Plating Shop, high concentrations of organic compounds were detected in the soil and groundwater. The report recommended further study in the Remedial Investigation (RI) phase.

FY94

Site 6 - Site 6 (Building E), the only site to have Relative Risk Ranking, was ranked "high" due to contamination of groundwater. The Remedial Investigation/Feasibility Study (RI/FS) phase for Building E was stopped and the investigation was grouped in with a base wide RCRA Facility Investigation (RFI). Site went RC.

FY95

SWMUs and AOCs - The field survey for an RFA was completed.

PROGRESS DURING FISCAL YEAR 1996

FY96

An Information Repository was established.
RAB was established.
EBS was completed.
BCP abstract was completed.
A FOSL was completed.
110 of 143 acres privatized by a lease.
Final RFA was completed (defined 69 potential SWMUs and 18 potential AOCs).
Draft Part B Permit with corrective action requirements renewal.
Final Comprehensive Workplan,
Final Master Health and Safety Plan.
Final Community Relations Plan.
Final Sampling and Analysis Plans for ZONE 1 (Main Industrial Area containing the permitted facility, 9 SWMUs and 2 AOCs requiring RFI, 29 SWMUs and 14 AOCs requiring conformation sampling) and ZONE 2(Building 102 Area containing 4 SWMUs requiring conformation sampling).
Field Sampling began.
When sampling is analyzed in FY97, new sites will be identified and placed into the official IR program. FY96 focused only on privatization and the BCT did not have time to evaluate the RFA for this purpose.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

BCP will be completed. BCP will continue to be modified once a fiscal year.
The BCP abstract will be modified twice a fiscal year.
Complete round one Field Sampling, Draft and Final RFI Report for round one sampling will be completed, and Draft and Final Environmental Assessment Report w/ Sampling and Analysis Plans for round two will be completed. At this time, sites will be placed into IR program as SWMUs or Sites.

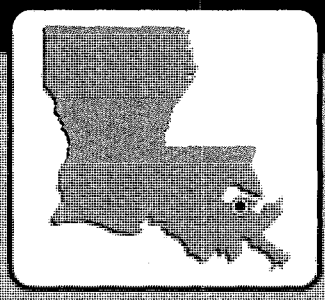
FY98

Continue to modify the BCP and BCP abstract.
Draft and Final Corrective Measures Study (CMS) from round one sampling on SWMUs having a defined nature and extent will be completed. Start and complete Field Sampling for round two sampling, Draft RFI for round two sampling will be completed.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	6							
RI / FS								
RD								
RAC								
RAO								
IRA								
RC	6							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

NEW ORLEANS NAVAL AIR STATION
NEW ORLEANS, LOUISIANA



Engineering Field Division/Activity: SOUTHDIV
Major Claimant: COMNAVRESFOR
Size: 4,066 Acres
Funding to Date: $1,839,000
Estimated Funding to Complete: $0

Base Mission: Provides training and logistic support to Naval, Marine, Air Force and Louisiana Air National Guard Reserve Units.
Contaminants: Heavy metals, solvents, POLs, unexploded ordnance, inert material, plating gill

Number of Sites:
CERCLA: 13
RCRA Corrective Action: 1
RCRA UST: 1
Total Sites: 15

Relative Risk Ranking of Sites:
High: 0 Not Evaluated: 1
Medium: 0 Not Required: 13
Low: 1

Sites Response Complete: 13

PROGRESS AND PLANS

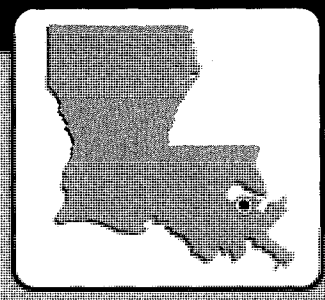
CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	1							
RI / FS		7						
RD								
RAC			1					
RAO								
IRA								
RC	5	7	1					
Cumulative % RC	38%	92%	100%	100%	100%	100%	100%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	1							
RFI / CMS	1							
DES								
CMI			1					
CMO								
IRA	1(1)							
RC			1					
Cumulative % RC	0%	0%	100%	100%	100%	100%	100%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	1							
CAP								
DES								
IMP								
IMO								
IRA								
RC	1							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

NEW ORLEANS NAVAL SUPPORT ACTIVITY

NEW ORLEANS, LOUISIANA



Engineering Field Division/Activity: SOUTHDIV

Major Claimant: COMNAVRESFOR

Size: 945 Acres

Funding to Date: $982,000

Estimated Funding to Complete: $0

Base Mission: Provides appropriate logistic support for activities and commands assigned by CNO including performing host functions for tenant commands.

Contaminants: Solvents, POLs

Number of Sites:

CERCLA:	5
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	5

Relative Risk Ranking of Sites:

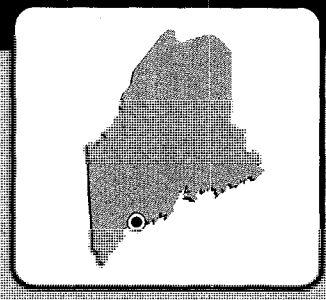
High:	0	Not Evaluated:	0
Medium:	0	Not Required:	5
Low:	0		

Sites Response Complete: 5

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	2							
RI / FS	1	4						
RD								
RAC								
RAO								
IRA								
RC	1	4						
Cumulative % RC	20%	100%	100%	100%	100%	100%	100%	100%

BRUNSWICK NAVAL AIR STATION
BRUNSWICK, MAINE



Engineering Field Division/Activity: NORTHDIV
Major Claimant: CINCLANTFLT
Size: 7,972 Acres
Funding to Date: $42,439,000
Estimated Funding to Complete: $19,554,000

Base Mission: Provides facilities, services, materials and aircraft for submarine warfare.

Contaminants: Benzene, dichloroethenyl trichloroethane, PCBs, polynuclear aromatic hydrocarbons, trichloroethene, trichloromethane, xylene, volatile organic compounds

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	17	High:	4	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	0	Not Required:	16
RCRA UST:	3	Low:	0		
Total Sites:	20				

NPL

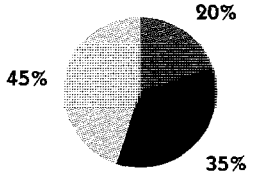
Sites Response Complete: 9

EXECUTIVE SUMMARY

Brunswick Naval Air Station (NAS) is located within the town of Brunswick, Maine, approximately two miles east of the city's main business district, in Cumberland County, Maine, five miles inland from the Atlantic Ocean. The air station was commissioned in April 1943 and its size and mission grew during the 1940's and 1950's. The station's current mission is to provide facilities, services, materials, and aircraft for submarine warfare. Typical station operations that contributed to contaminated sites on the facility include operation of an all-weather air station, intermediate aircraft maintenance, material support for maintenance, aircraft fueling services, and explosive ordnance storage and disposal. Prominent site types at the installation include landfills, a groundwater plume, and two Underground Storage Tank (UST) sites. The media most affected by contamination are groundwater and soil. Current operations at the station include pollution prevention technologies to prevent further contamination. The installation was placed on the National Priorities List in July 1987. A Federal Facility Agreement was signed in 1989 between the Navy and EPA, and revised in 1990 to include the state of Maine.

In the developed portion of the base, most of the natural drainage is directed to the storm sewer system. The potential for migration of contaminants to groundwater is enhanced by the high permeability of surface soils. Because of this, contaminants introduced at the surface rapidly enter the groundwater system. Brunswick NAS contains a significant amount of undeveloped areas, both natural woodlands and wetlands. Several endangered animal species may be present in the state of Maine, but none are known to be in the vicinity of the air station.

A Technical Review Committee was formed in February 1988, and met regularly until it was converted to a Restoration Advisory Board (RAB) in FY95. The first RAB meeting was held on July 19, 1995. Another community group, known as the Brunswick Area Citizens for a Safe Environment, is also active at Brunswick NAS. The Community Relations Plan (CRP) is presently being updated and is scheduled to be completed in 1997. An Administrative Record and an Information Repository were established in August 1987.



Current Status Of Sites

Studies Underway	4
Cleanups Underway	7
Response Complete	9
TOTAL	20

There are 20 IR sites with four in the study phase. Ten of the 20 IR sites at the NAS were established with an Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), in FY83. Nine additional sites were added with PAs between FY84 and FY95. One site, Site 17, was added without a PA; it started with a Remedial Investigation/Feasibility Study (RI/FS) phase in FY92. Site 10 was transferred out of the Brunswick's Installation Restoration Program into the Defense Logistics Agency (DLA) program following the IAS. Site Inspections have been completed for 17 sites; 13 sites in FY85 and five more between FY91 and FY95. Nine of the seventeen active IR sites have completed the RI/FS phase; 8 completed in FY91, Site 11 in FY96 and Site 12 is planned for F97. The other three sites will complete the RI/FS by FY02. Seven sites completed Remedial Design (RD) in FY93 and Site 2 is planned for completion in FY97. Five sites were Response Complete by FY95. An additional three sites (Site 5, 6, and 8) are Response Complete in 1996. There are three RCRA UST sites at Brunswick NAS. One site completed all cleanup work in FY95. The other two UST sites, complete scheduled cleanup in FY99.

Innovative technologies are being employed, along with conventional cleanup practices, in the restoration of a major contamination concern, the Eastern Plume (Sites 4, 11 and 13). The Eastern Plume is a groundwater plume of dissolved organic solvents, primarily TCA and TCE. An Interim Remedial Action for the sites, started in September 1993, consists of extraction, treatment and discharge of the contaminated groundwater. For treatment, the extracted groundwater will be precipitated and filtered to remove iron and manganese, then treated by ultraviolet light and oxidation to remove organic solvents, and then discharged into the public Wastewater Treatment Plant. Following treatment, Long Term Monitoring will continue. At Site 13, in addition to the groundwater treatment, three underground waste storage tanks were removed and replaced with new tanks. Downgradient monitoring wells have shown decreasing VOC levels since the tank removals and Site 13 is no longer considered a major contributor to the plume.

BRUNSWICK NAS
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Both surface water and groundwater are important at the station. Contaminants can be transported to streams via surface runoff or can infiltrate into the ground and enter the groundwater system. In the developed portions of the base, most of the natural drainage is directed to the storm sewer system. In the undeveloped portions of the facility, runoff enters the surface watershed system. Surface water from the station ultimately flows to nearby wetlands or to the Androscoggin River. The Androscoggin River is the major surface water body in the Brunswick area and one of three major Maine rivers to flow into the Atlantic Ocean. At its closest point, the Androscoggin River is approximately 3,000 feet from the northern boundary of the air station. Groundwater in the Brunswick area occurs both in unconsolidated sediments and in underlying bedrock. The potential for migration of contaminants to groundwater is enhanced by the high permeability of surface soils and the shallowness of the bedrock. Because of these factors, contaminants introduced at the surface will enter the groundwater system rapidly. The direction and flow of the migration is determined by the structural orientation of the fractures in the bedrock. The most productive aquifers in the area are in the unconsolidated sand and gravel aquifers. The aquifers in bedrock produce a limited quantity of groundwater in wells and the groundwater in the bedrock aquifers is under local artesian pressure, which limits the downward migration. The two bedrock wells on the air station are no longer in use.

NATURAL RESOURCES - Brunswick Naval Air Station (NAS) contains a significant amount of undeveloped, natural areas. These are predominantly woodlands. Roughly 45% of the base is managed as a forest. Much of the area surrounding the air station is also undeveloped. The woodlands afford a suitable habitat for a variety of animals, including deer, squirrel, moose and migratory birds. In the southern area of the base, there are about 90 acres of wetlands and the area immediately south of the station is comprised of tidal coves and wetlands. The tidal wetlands are an ecologically important area used by a variety of aquatic and terrestrial animals. Several endangered animal species may be present in the state of Maine, but none are known to be in the vicinity of the air station.

RISK - A baseline Human Health Risk Assessment (HHRA) and Ecological Risk Assessment (ERA) was performed as part of the Remedial Investigation (RI). The findings were: Sites 1 and 3 (the Landfill Plume) and Sites 4, 11 and 13 (the Eastern Plume) present a current public health risk for groundwater contamination, Sites 8 and 9 present a current health risk for soil and sediment contamination, and Sites 1, 3, 8 and 9 present current risk due to leachate/sediment contamination.

DOD's Relative Risk Ranking system was used to rank the risk factors for all the sites on the installation in FY95. Four of the 20 sites at the installation received a high relative risk ranking. Groundwater contamination is listed as a concern driving the high risk ranking for all four sites. The reason for the high groundwater rating was the potential for the contaminants migrating into drinking water wells, and in some cases the groundwater had the potential for off-base migration. Three of the four sites had additional high rating for surface water contamination and one site (Site 9, a former disposal site) also had a high ranking for sediment.

The Agency for Toxic Substance and Disease Registry (ATSDR) performed an initial site scoping visit in April 1991. At that time, ATSDR projected initiating the Health Assessment in FY94, but it has not been performed and no new date has been set.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - The installation was placed on the NPL on 22 July 1987 with a Hazard Ranking System score of 43.38. The driving force for placement on the NPL were seven areas, including landfills, storage and disposal sites, where pesticides, solvents and waste oils threatened groundwater, surface water and adjacent wetlands.

LEGAL AGREEMENTS - A Federal Facilities Agreement (FFA) was signed in 1989 by the EPA and the Department of the Navy (DON). In 1990, this FFA was revised to include the state of Maine.

PARTNERING - No formal partnering arrangement is in place at Brunswick NAS.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in February 1988 and held regular meetings until it was converted to a RAB in FY95. The first RAB meeting was held on July 19, 1995. The RAB has 24 members, including community members. In addition to the regular quarterly RAB meetings, the Navy schedules technical meetings with the RAB to expedite decision-making and site management. Additional public meetings and fact sheets for public certification started in the FY90 time frame.

A community group known as the Brunswick Area Citizens for a Safe Environment sought out a Technical Assistance Grant (TAG) from EPA with which they hired a consultant (Gerber Associates of Freeport, Maine) to provide public oversight of the Navy's environmental remediation actions. This group also participates in TRC meetings and produces a public newsletter. This was the first TAG for a DOD installation.

COMMUNITY RELATIONS PLAN - The CRP was completed and released to the public in September 1988. Brunswick NAS is currently updating the CRP and it will be completed in FY 97.

INFORMATION REPOSITORY - An Administrative Record and an Information Repository were established in August 1987. The Information Repository is located at the Brunswick Curtis Memorial Library.

HISTORICAL PROGRESS

FY81

UST 1 - The first site, a RCRA Underground Storage Tank (UST) site was identified during an Initial Site Characterization (ISC), equivalent to a Preliminary Assessment (PA).

FY83

Sites 1-10 - An Initial Assessment Study (IAS), equivalent to a PA, was completed. Ten sites were identified as potentially contaminated areas and all were recommended for further study.

Site 10 - Site 10 (Harpswell Fuel Depot) was dropped from the Installation Restoration Program (IRP) and was transferred to the Defense Logistics Agency (DLA). It does not belong to Brunswick NAS.

FY84

Sites 11-13 - These sites were added to the IRP based on information in the IAS completed in FY84. At Site 11, Benzene, Toulene, Exobenzene, Xylene (BTEX) was detected in the groundwater and propellant and chlorinated solvents were detected in the soils. Also during investigation, four buried drums containing unknown liquids were found at the site. At

BRUNSWICK NAS
HISTORICAL PROGRESS

Site 12, nitrates and nitrites were found only in the surface soils. At Site 13, pesticides were found in surface soils, and Volatile Organic Compounds (VOCs) and BTEX detected in the groundwater.

FY85

Sites 1-9 and 11-13 - Site Inspections (SIs) were completed and Remedial Investigation/Feasibility Studies (RI/FSs) were started for 12 sites.

FY90

Site 17 - NAS Brunswick submitted an Engineering Service Request (ESR) to Naval Facilities Engineering Command, Northern Division (NORTHDIV) to demolish the former Pesticide Shop, Building 95 (Site 17), and determine if any environmental cleanup was necessary.
UST 2 - The second UST site (UST 2) was identified during an ISC and began a Corrective Action Plan (CAP) the same year.

FY91

Site 14 - Site 14 was added as a new site and has completed a PA, SI and RI/FS phase. A geophysical survey using Ground Penetrating Radar (GPR) and a magnetometer failed to reveal any indication of the existence of a dump. Based on the results of the investigation completed in August 1991, no further investigation was recommended for this site.

FY92

Sites 1, 3, 4, 11 and 13 - Two Records of Decision (RODs) were signed between the EPA and the Department of the Navy (DON) in June 1992. The first ROD, for Sites 1 and 3 (landfills), is for Long Term Monitoring (LTM), which will continue through FY98. The second ROD was for an Interim Remedial Action (IRA) for soil removal, capping and soil vapor treatment, at the Eastern Plume Groundwater Operable Unit (OU), OU1 (Sites 4, 11, and 13).
Sites 15 and 16 - An SI was started for these newly discovered, potential sites.
Site 17 - As part of the RI/FS, sampling was performed at Site 17. The pesticide DDT was found in the soil and in unfiltered groundwater. Once filtered, the groundwater did not contain DDT, indicating that the DDT in the groundwater adheres to the sediment particles and can be filtered out. A Non-Time Critical Removal Action was planned to remove the contaminated soil to an off-site incinerator.
USTs 1 and 2 - The CAP phase, equivalent to an RI/FS, completed for USTs 1 and 2.

FY93

RODs were signed for Sites 5 and 6, and Site 8 in August 1993.
Sites 1, 3, 5, 6 and 8 - RD phases were completed and RA phases, including Final Remedial Actions (FRAs), were started for five sites. At Sites 1 and 3, the FRA will be capping; Sites 5, 6 and 8 will have soil removal actions as the FRA.
Sites 4, 11 and 13 - An RD was completed and the RA phase started. The RA phase was completed in FY95. An IRA started in September 1993, will consist of extraction, treatment and discharge of the contaminated groundwater. It also includes LTM which will continue.
Site 17 - The RI/FS and RD phases were completed and the RA phase, along with a FRA for soil incineration, were started. An Environmental Engineering Cost Analysis (EE/CA) was completed 29 November 1992, and the Action Memorandum was signed 12 April 1993.
UST 1 - Five of the seven tanks at the site were removed; the Design (DES) phase was completed; the Implementation (IMP) phase was started and a pilot air sparging system was installed at UST 1 (Fuel Farms).
UST 2 - Three tanks were removed; the DES phase and the IMP phase were started and a pilot air sparging system was installed at UST 2 (Navy Exchange Service Station).

FY94

Site 17 - A removal action was completed at Site 17 in June 1994.
Site 18 - Site 18 was added as a new site following a completed PA. SI phase also completed FY94.
UST 1 - The final two tanks were removed from UST 1.
UST 2 -At the Navy Exchange Service Station, UST 2, the Navy completed pilot operation and began full-scale operation of an air-sparging system to remediate petroleum hydrocarbon contamination in soils.

FY95

Sites 1, 3, 5, 6, 8 and 11 - Began construction of a landfill cap at Sites 1 and 3. Excavated material at Sites 5, 6, 8 and 11 and placed it under the cap at Sites 1 and 3.
Sites 1, 3, 4, 11 and 13 - Completed construction of a groundwater pump and treat system using ultra-violet (UV) oxidation for Sites 1, 3, 4, 11 and 13. Performed three rounds of monitoring at these sites, and Site 17. As part of the RA at sites 1 & 3, and as part of the IRA at sites 4, 11 and 13 groundwater monitoring will continue.
Site 9 - An IRA phase started. As part of the IRA, groundwater monitoring will continue. Performed source investigations at disposal site where incinerator ash, solvents, paint sludges, and refuse are present in trenches.
Site 17 - Completed a soil removal action for soil contaminated with the pesticide DDT at Site 17 (Former Pesticide Shop Bldg. 95), where DDT contamination was detected in soils and unfiltered groundwater samples. As part of the IRA, groundwater monitoring will continue.
Sites 1 and 3 - Completed landfill caps.
UST 2 - The IMP phase and three FRAs for groundwater treatment, soil vapor treatment and bioremediation were completed for UST 2.
UST 1 - The IMP phase and three FRAs for groundwater treatment, soil vapor treatment and bioremediation were completed at UST 1. These projects are scheduled for completion in FY96.

PROGRESS DURING FISCAL YEAR 1996

FY96

Sites 5, 6 and 8 - RA phase and FRAs were completed and three (Sites 5, 6, 8) of the five sites had a Response Complete (RC). The Remedial Action - Construction phase was completed Sites 1 and 3 - As part of the FY95 Remedial Action - Operations (RAO) phase operation of the groundwater treatment system is continuing.
Sites 4, 11 and 13 - As part of the FY95 Interim Remedial Action (IRA), operation of the groundwater treatment system is continuing.
Site 17 - As part of the FY95 IRA, groundwater monitoring is continuing. Updating the CRP and a final ROD for the Eastern Groundwater Plume was started in FY96
Site 11 - RI/FS was completed.
UST 1 - The IMP and IRA were completed.

BRUNSWICK NAS
PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Site 2 - RI/FS will be completed and a final ROD for LTM under CERCLA will be implemented and a LTM Plan will be written.
Sites 4, 11 and 13 (FY95) - The final ROD for the Eastern Plume for groundwater treatment will be completed.
Site 17 - As part of the IRA, groundwater monitoring is continuing.

FY98

Site 9 - The Navy plans a final ROD.
Site 2 - RA is planned for completion.
Site 2 - Response Complete is planned.

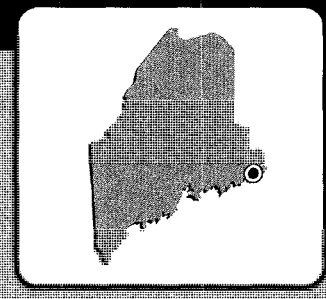
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	17							
RI / FS	8	1	1		1		1	1
RD	7		1					
RAC	3	3			1			1
RAO				1				3
IRA	3(3)				1(1)	1(1)		2(2)
RC	5	3		1	2		1	5
Cumulative % RC	29%	47%	47%	53%	65%	65%	71%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	1							
CAP	2							
DES	2							
IMP	1	1						
IMO					2			
IRA		1(1)						
RC	1				2			
Cumulative % RC	33%	33%	33%	33%	100%	100%	100%	100%

CUTLER NAVAL COMPUTER AND TELECOMMUNICATIONS STATION

CUTLER, MAINE



Engineering Field Division/Activity: NORTHDIV

Major Claimant: COMNAVCOMTELCOM

Size: 3,000 Acres

Funding to Date: $[illegible]

Estimated Funding to Complete: $6,923,000

Base Mission: Provides navigation support for Navy vessels in the North Atlantic

Contaminants: Electrolyte, solid metal, solvents, paint, POLs

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	3	High:	2	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	1	Not Required:	0
RCRA UST:	0	Low:	0		
Total Sites:	3				

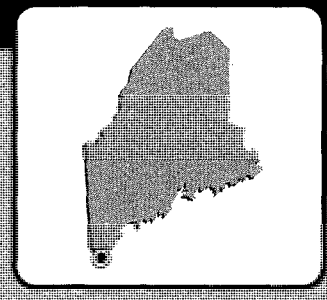
Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	2						1	
RI / FS				1			1	1
RD						1		2
RAC								3
RAO								2
IRA								
RC								3
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

PORTSMOUTH NAVAL SHIPYARD, KITTERY

KITTERY, MAINE



Engineering Field Division/Activity: NORTHDIV

Major Claimant: COMNAVSEASYSCOM

Size: 930 Acres

Funding to Date: $14,735,000

Estimated Funding to Complete: $23,997,000

Base Mission: Maintains, repairs and overhauls nuclear submarines.

Contaminants: Heavy metals, PCBs, pesticides, volatile organic compounds

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	17	High:	9	Not Evaluated:	0
RCRA Corrective Action:	16	Medium:	4	Not Required:	15
RCRA UST:	0	Low:	5		
Total Sites:	33				

NPL

Sites Response Complete: 15

EXECUTIVE SUMMARY

The Portsmouth Naval Shipyard, Portsmouth, NH (PNS) is situated on Seavey Island in the Piscataqua River, a tidal estuary that is the boundary between New Hampshire and Maine. The shipyard is about 50 miles north of Boston, Massachusetts, and 50 miles south of Portland, Maine. The shipyard is actually located in Kittery, Maine about one mile northeast of Portsmouth, New Hampshire. Portsmouth is the largest center of population in the local area. The mission of PNS is servicing the fleet of nuclear propulsion, fleet ballistic missile and attack submarines. Shipyard activities that contributed to contamination were conducted in mechanical, structural, electrical/electronic, and public works shops.

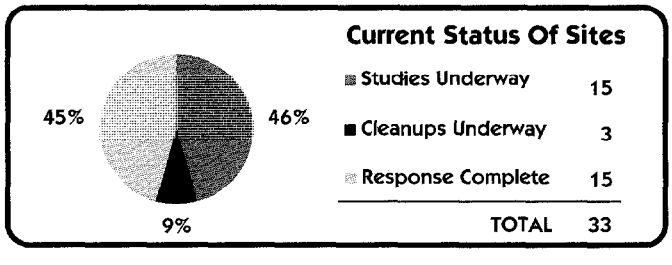
The shipyard was placed on the National Priorities List (NPL) in 1994. The current shipyard was created by filling in the areas between four small islands to create one large island near the mouth of Portsmouth Harbor in the Piscataqua River. Portsmouth, as a coastal area, has a complex hydrological environment. There are three ecological environments based on the salinity of the water. The marine ecosystem has a relatively high salt content. An estuarine ecosystem has a salinity which is highly variable depending on the tidal state and precipitation. The third environment, a freshwater ecosystem, has a very low salinity.

The Piscataqua River is part of the Great Bay Estuary. Ecological receptors specifically include lobster, shellfish, finfish, and other benthic fauna and flora. The presence of metals, oils, grease, the chemical additive PCB, cyanides, and phenols have been detected in sediment and surface water. The river, as part of the estuary, is a resource of tremendous value. The waters surrounding the shipyard are Class SB-1 which requires the water to be suitable for water contact recreation and fishing. Current use of the area includes recreational and commercial fishing, lobstering, clamming, oystering and boating.

There are no known federal or state endangered species in the area, however, the Great Bay is a wintering area for large numbers of waterfowl. Undeveloped areas serve as rookeries for birds, while mudflats around the islands provide feeding areas. The shipyard is a highly-developed industrial property and is unattractive for most species of wildlife. Because it is a small highly-developed island, the shipyard has very little natural surface runoff. An extensive storm water or collection system has been constructed at the shipyard, and most surface runoff is conveyed through the storm system to specific outlets into the Piscataqua River.

A Technical Review Committee (TRC) was established in 1987 and was converted into a Restoration Advisory Board (RAB) in FY95. There are twenty RAB members. The PNS RAB held its first public meeting in August 1995. Prior to establishing the RAB, four meetings were held for a site tour and to provide information to the new participants in the Installation Restoration Program (IRP) at Portsmouth and the role of the RAB members. An Information Repository was set up in 1987 at the Rice Public Library in Kittery, Maine and the Portsmouth Public Library in Portsmouth, New Hampshire.

At the end of FY96, 15 of the 33 sites at PNS were in the study phase, and 15 are Response Complete (RC). In FY95, a draft Feasibility Study (FS) Report for 11 of the 13 Solid Waste Management Units (SWMUs) was submitted to the EPA and the Maine Department of Environmental Protection (MEDEP). Based on review comments received, five SWMUs will be proposed for no further remedial action, and additional information will be necessary to characterize the extent of offshore migration at four SWMUs. Additional site characterization at two SWMUs is necessary due to regulatory concerns and historical information found by PNS indicating the sites are perhaps larger than originally believed. SWMUs 9,11 and 21 completed the RI/FS phase in FY96. SWMUs 8,12,13,16, and 23 are scheduled for completion in FY97. An Interim Remedial Action for SWMU 9 is expected for completion in FY97. SWMUs 12,13,16 and 23 are planned to be Response Complete in FY97. Site 30 and SWMUs 5 and 6 planned to have RI/FS completed in FY98.



PORTSMOUTH NSY, KITTERY
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Portsmouth, as a coastal area, has a complex hydrological environment. There are three ecological environments based on the salinity of the water. The marine ecosystem has a relatively high salt content. An estuarine ecosystem has a salinity which is highly variable depending on the tidal state and precipitation. The third environment, a freshwater ecosystem, has very low salinity. The marine ecosystem begins in the vicinity of the shipyard and goes eastward into the Atlantic Ocean. The estuarine ecosystem abuts the marine ecosystem and reaches inland into Great Bay. The boundary between the two is indistinct and dependent on freshwater input and tidal flux. The freshwater ecosystem is entirely in the stream regime that feeds the bays and estuaries. The boundary between the estuarine and freshwater ecosystems is also indistinct for the same reasons. The harbor is in the marine ecosystem. Because it is a small highly-developed island, the shipyard has very little natural surface runoff. An extensive storm water or collection system has been constructed at the Shipyard, and most surface runoff is conveyed through the storm system to specific outlets into the Piscataqua River.

NATURAL RESOURCES - The Piscataqua River is part of the Great Bay Estuary. There are five main habitats in the Estuary; eelgrass, mudflats (unvegetated), salt marshes, channel, and shellfish (part of other habitats). Ecological receptors specifically include lobster, shellfish, finfish, and other benthic fauna and flora. The presence of metals, oils, grease, the chemical additive PCB, cyanides, and phenols have been detected. Sediment and surface water have been impacted. The river, as part of the estuary, is a resource of tremendous value. Current use of the area includes recreational and commercial fishing, lobstering, clamming, oystering and boating.

There are no known federal or state endangered species in the area; however, the Great Bay is a wintering area for large numbers of waterfowl. Undeveloped areas serve as rookeries for birds, while mudflats around the islands provide feeding areas. The shipyard is a highly-developed industrial property and is unattractive for most species of wildlife.

RISK - A Human Health Risk Assessment was finalized for both on-shore and off-shore studies. The on-shore risk assessment found only three sites which exceed EPA's acceptable human health risk range based on current use scenarios. The Human Health Risk Assessment for off-shore exposure identified a number of risks based on recreational and subsistence fishing.

An Ecological Risk Assessment was developed for the Piscataqua River and Great Bay Estuary to determine the extent of ecological risk posed by PNS on these environments. Development of Preliminary Remedial Goals (PRGs) or Media Protection Standards in RCRA was begun. The offshore assessment has been coordinated by the Navy Marine Environmental Support Office (MESO) and has required the development of sampling and analytical methodologies for use in the marine environment, particularly regarding achieving low level detection of chemicals for sediment, surface water and biota.

Two sites and seven Solid Waste Management Units (SWMUs) have received a high relative risk ranking using the DoD Relative Risk Ranking System. One of the sites was used to incinerate wastes. Exposure can occur through contact with soils and groundwater in the area which flows to the Piscataqua River. Another site was used for galvanizing and metal cleaning. This site is now a Navy welding school. Although there is a potential for the wastes to leach into the groundwater, dermal contact with the soils is of the greatest concern. Seven SWMUs have a high relative risk ranking because metals, oils, and solvents can migrate via surface and groundwater and to the shellfish and biota in the Piscataqua River. Four of the SWMUs are Underground Storage Tanks (USTs), two are landfills, and one is an area where an oil pipeline ruptured.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - PNS was proposed for the National Priorities List (NPL) in June 1993 with a Hazard Ranking System (HRS) score of 67.70. It was listed on the NPL on 31 May 1994.

LEGAL AGREEMENTS - A Federal Facility Agreement (FFA) with EPA and the Maine Department of Environmental Protection (MEDEP) is under negotiation. A Site Management Plan (SMP) is being developed as a project management tool.

PARTNERING - PNS fostered partnering by including EPA, the MEDEP, and Natural Resource Trustees early in the decision-making process. EPA has been closely consulted to ensure smooth transition from the RCRA Corrective Action Program to a CERCLA cleanup program.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was established in 1987 and was converted into a Restoration Advisory Board (RAB) in FY95. There are twenty members on the RAB including representatives from the community, Navy, Natural Resources Trustees from Maine and New Hampshire, the US Fish and Wildlife Service, National Oceanographic and Atmospheric Agency, EPA Region I and Maine Department of Environmental Protection. The PNS RAB held its first public meeting in August 1995. Prior to establishing the RAB, four meetings were held for a site tour and to provide information to the new participants in the Installation Restoration Program (IRP) at Portsmouth and the role of the RAB members.

COMMUNITY RELATIONS PLAN - The Community Relations Plan (CRP) was established in FY93 and is being updated to reflect current informational needs of the community.

INFORMATION REPOSITORY - An Administrative Record was established in 1987. An Information Repository was set up in 1987 at the Rice Public Library in Kittery, Maine and the Portsmouth Public Library in Portsmouth, New Hampshire.

HISTORICAL PROGRESS

FY83

Sites 1-4 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), was completed in June 1983 at PNS which identified a total of four potentially contaminated sites. The study concluded that none of the sites posed an immediate threat to human health or to the environment. However, these sites went on to further study.
Site 1 (Jamaica Island Landfill) - The IAS recommended this site for further investigation based on migration potential to the surrounding Harbor waters. The remaining sites were recommended for no further investigation.

FY86

Sites 1-4 - A Confirmation Study (CS), equivalent to a Site Inspection (SI), was completed in May 1986. The CS addressed Site AA (Site 1 in the IAS) and Site BB (Defense Property Disposal Office (DPDO) Scrapyard) which was identified during the Department of the Navy (DON) review of the IAS. The CS recommended actions were postponed because the EPA was conducting a RCRA Facility Assessment (RFA), which was completed in July 1986. The RFA renamed the four previously identified sites as Solid Waste Management Units (SWMUs). All remediation work is now

PORTSMOUTH NSY, KITTERY
HISTORICAL PROGRESS

being conducted under RCRA Corrective Action rather than CERCLA.
SWMUs 1-28 - An EPA Region I contractor completed an RFA at PNS in July 1986. The assessment identified 28 SWMUs. A RCRA/Hazardous Solid Waste Amendment (HSWA) permit required additional investigation at 13 SWMUs (5, 6, 8-13, 16, 21, 23, 26 and 27). The remaining SWMUs (1-4, 7, 14, 15, 17-20, 22, 24, 25 and 28) were recommended for No Further Action (NFA) after the RFA.

FY89

SWMUs 5, 6, 8-13, 16, 21, 23, 26 and 27 - A RCRA Facility Investigation (RFI) was conducted for the 13 SWMUs identified in the HSWA permit.

FY90

SWMUs 6, 8 and 9 - Phase I RFI field work was conducted.
SWMUs 5, 6, 8-10 and 27 - Phase II RFI consisted of a groundwater evaluation; a baseline sediment study of the Piscataqua River; additional studies at SWMUs 6, 8 and 9; and initial studies at SWMUs 5, 10, 27 and the River.

FY91

SWMUs 5, 6, 8-13, 16, 21, 23, 26 and 27 - The draft RFI Work Plan was submitted for regulatory review in November 1989 and was finalized in April 1991. Phase III RFI included additional surface soil and groundwater sampling at SWMUs 6, 8, 9, 27, the Day Care Center and the Freshwater Ponds. Phase IV RFI consisted of subsurface excavation at SWMUs 8 and 9; a seismic refraction survey; additional monitoring wells at SWMUs 6, 8 and 26, additional soil sampling at all SWMUs and a comprehensive air monitoring study.

FY92

SWMUs 5, 6, 8-13, 16, 21, 23, 26 and 27 - The draft RFI report for the 13 SWMUs was submitted for regulatory review in July 1992 and was approved "with conditions" in April 1993 and seven of the SWMUs are being considered in the Corrective Measures Study (CMS).
SWMU 9 - Phase IV RFI was expanded to a Phase IV in February 1992 to do some additional rounds of groundwater sampling and some subsurface excavation at SWMU 9.

FY93

SWMUs - An Addendum to the RFI Report was submitted in May 1993. The proposed Media Protection Standards were submitted in July 1992 and disapproved in April 1993.

FY94

SWMUs - Several significant cleanup milestones were reached in FY94. Actions completed were RFI data gap field work, Onshore Media Protection Standards, and draft Offshore Ecological and Human Health Media Protection Standards.
SWMU 6 - An interim Corrective Measure at the DRMO Scrap Yard to install a cap was completed in December 1993. Results of the Human Health Risk Assessment indicated elevated levels of heavy metals posing an occupational hazard. A geotextile cap was installed to reduce inhalation of dust and direct contact with the soil and to reduce surface runoff and infiltration. The design was completed in June 1993 and construction was completed in December 1993.
SWMU 8 - A removal action was completed in October 1993 which consisted of installing a soil and geocomposite clay cap.
SWMU 11 - A groundwater and soil gas survey was completed using direct push technology, which expedited the assessment.
SWMUs 10-13, 16, 21 and 23 - Seven Underground Storage Tanks (USTs) were removed during or before the RFI. Two of these sites remain under investigation for possible further cleanup.

FY95

SWMUs - During FY95, reports for field work conducted in FY94 were finalized for the RFI Data Gap Investigation and Phase II Ambient Air Quality Monitoring. A draft work plan for a groundwater investigation was developed in FY95. Development of a work plan to conduct data gap investigations and monitoring for the Piscataqua River was begun in FY95. An Ecological Risk Assessment was continued for the Piscataqua River and Great Bay Estuary to determine the extent of ecological risk. Development of Preliminary Remedial Goals (PRGs) or Media Protection Standards (MPS), was continued. As part of the off-shore investigation, the Navy Marine Environmental Support Office (MESO) developed sampling and analytical methodologies for use in the marine environment, particularly in regards to low level detection of chemicals for sediment, surface waste and biota.
SWMUs 6, 8-13, 16, 23 and 27 - A draft Feasibility Study (FS) Report for 11 of the 13 SWMUs was submitted to the EPA and Maine Department of Environmental Protection (MEDEP). Based on review comments received, NFA is indicated at SWMUs 12, 13, 16 and 23. Additional information to characterize the extent of offshore migration at SWMUs 6, 8 and 27 is required as well as additional site characterizations at SWMUs 6 and 10 due to regulatory concerns and historical information found by PNS.
SWMUs 9 and 11 - Combine with SWMU 8 in an Operable Unit (OU).
SWMUs 10, 21 and 27 - The sites continue to be investigated to determine whether further remediation is warranted.

PROGRESS DURING FISCAL YEAR 1996

FY96

SWMUs - The March 1995 Draft FS for 11 onshore sites was separated into individual operable units (OUs) to address site characterization issues at several sites. The FS for separate OUs will begin once site characterization is complete for that OU. Records of Decisions will be developed for individual OUs. The RCRA Facility Investigation Data Gap Report was finalized during this time period. A work plan for a groundwater and seep investigation was finalized with field work scheduled for the winter. Work continued on finalizing the off-shore ecological risk assessment (ERA), specifically in interpreting the results. Development of a work plan to conduct data gap investigations and monitoring for the Piscataqua River was placed on hold pending finalization of the ERA. Development of MPS for offshore media based on ecological and human health risks was completed, these efforts will serve as the basis for future preliminary remedial goals under CERCLA. A FS to consider possible remedial alternatives for offshore media may begin once the ERA is finalized.
SWMUs 6, 8, 10 and 27 - Work plans for additional site characterization prior to finalizing the FS Report for these sites was begun, including off-shore contaminant migration modeling.
SWMUs 12, 13, 16, 23 and 26 - NFA is expected.
SWMUs 9,11 and 21 - completed the RI/FS phase.
The Community Relations Plan, developed in 1992 was updated.

PORTSMOUTH NSY, KITTERY
PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

SWMUs - Perform groundwater and seep investigation. Complete off-shore ecological risk assessment. Begin off-shore data gap investigation if necessary. Begin off-shore feasibility study if necessary.
SWMU 6, 10 and 27 - Finish work plans and complete additional site characterization.
SWMU 6, 8, 10 and 27 - Complete workplan and conduct modeling to estimate extent of off-shore contaminant migration.
SWMUs 8, 12, 13, 16 and 23 - are scheduled for RI/FS completion.
SWMU 9 - An Interim Remedial Action at Mercury Burial Vault I is expected for completion.
SWMUs 12, 13, 16 and 23 - complete No Further Remedial Action decision documents. These site will not be carried into the CERCLA program.
SWMUs 12, 13, 16 and 23 - are planned to be Response Complete.

FY98

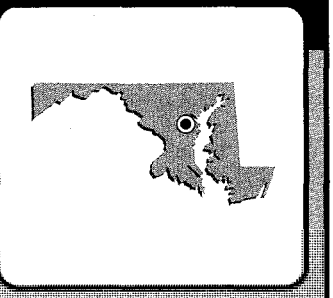
SWMUs - If necessary, conduct off-shore data gap investigation and feasibility study.
Site 33 - Initiate and complete RCRA facility Assessment at Tank Farm.
Site 30 and SWMUs 5 and 6 - planned to have RI/FS completed.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	1		1					1
RI / FS		3	5	3	1	3		2
RD					1		3	8
RAC							1	11
RAO								5
IRA	1(1)		1(1)					
RC			4		1			12
Cumulative % RC	0%	0%	24%	24%	29%	29%	29%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	15			1				
RFI / CMS								
DES					1			
CMI								1
CMO								
IRA								
RC	15							1
Cumulative % RC	94%	94%	94%	94%	94%	94%	94%	100%

ANNAPOLIS NAVAL STATION
ANNAPOLIS, MARYLAND



Engineering Field Division/Activity: [illegible]
Major Claimant: [illegible]
Size: [illegible] Acres
Funding to Date: [illegible]
Estimated Funding to Complete: [illegible]

Base Mission: [illegible]
Contaminants: [illegible]

Number of Sites:
CERCLA: 1
RCRA Corrective Action: 0
RCRA UST: 1
Total Sites: 2

Relative Risk Ranking of Sites:
High: 1 Not Evaluated: 1
Medium: 0 Not Required: 0
Low: 0

Sites Response Complete: 0

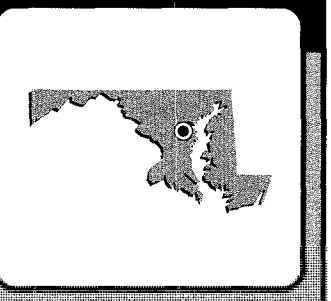
PROGRESS AND PLANS

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

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								1
CAP								
DES								
IMP								
IMO								
IRA								
RC								1
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

ANNAPOLIS NAVAL SURFACE WARFARE CENTER DETACHMENT, BAY HEAD ANNEX

ANNAPOLIS, MARYLAND



Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Site: [illegible]

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	3	High:	0	Not Evaluated:	3
RCRA Corrective Action:	0	Medium:	0	Not Required:	0
RCRA UST:	0	Low:	0		
Total Sites:	3				

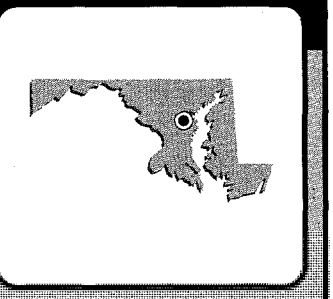
Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	1					2		
RI / FS					1		2	
RD						1	2	
RAC								3
RAO								
IRA								
RC								3
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

ANNAPOLIS U.S. NAVAL ACADEMY

ANNAPOLIS, MARYLAND



Engineering Field Division/Activity: [illegible]
Major Claimant: CNO
Size: 1,747 Acres
Funding to Date: [illegible]
Estimated Funding to Complete: [illegible]

Base Mission: Provides education, social, physical and military training for the Naval Midshipmen.
Contaminants: Heavy metals, solvents, paint, POLs, ash

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	1	High:	2	Not Evaluated:	0
RCRA Corrective Action:	6	Medium:	0	Not Required:	5
RCRA UST:	1	Low:	1		
Total Sites:	8				

Sites Response Complete: 5

PROGRESS AND PLANS

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

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	5	1						
RFI / CMS			2					
DES				1				
CMI						1		
CMO								
IRA								
RC	4		1			1		
Cumulative % RC	67%	67%	83%	83%	83%	100%	100%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP	1							
DES								
IMP	1							
IMO								
IRA	1(2)							
RC	1							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

BAINBRIDGE NAVAL TRAINING CENTER
BAINBRIDGE, MARYLAND

Engineering Field Division/Activity: [illegible]
Major Claimant: [illegible]
Size: [illegible]
Funding to Date: [illegible]
Estimated funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

Number of Sites:

CERCLA:	3
RCRA Corrective Action:	0
RCRA UST:	1
Total Sites:	4

Relative Risk Ranking of Sites:

High:	2	Not Evaluated:	1
Medium:	0	Not Required:	1
Low:	0		

Sites Response Complete: 1

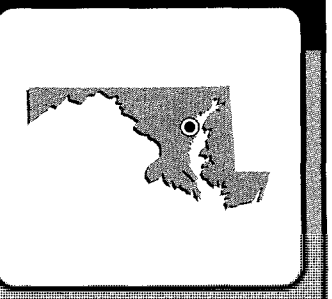
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	3							
RI / FS			2					
RD								1
RAC								1
RAO								1
IRA	1(3)	1(1)	1(1)					1(1)
RC			1					2
Cumulative % RC	0%	0%	33%	33%	33%	33%	33%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	1							
CAP	1							
DES								
IMP								
IMO								
IRA	1(1)							
RC	1							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

BALTIMORE NAVAL RESERVE CENTER

BALTIMORE, MARYLAND



Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible]

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

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

Sites Response Complete: 1

PROGRESS AND PLANS

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	1							
CAP								
DES								
IMP								
IMO								
IRA	1(1)	1(1)						
RC		1						
Cumulative % RC	0%	100%	100%	100%	100%	100%	100%	100%

BETHESDA NAVAL MEDICAL COMMAND NATIONAL CAPITOL REGION

BETHESDA, MARYLAND

Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible] Acres

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: Provides health care services throughout the assigned geographical and mission-identified areas of responsibility and acts as the central authority for cooperation with military and civilian authorities for peacetime disasters, and other emergencies.

Contaminants: Pesticides, solvents, waste oils, hazardous wastes, radioactive wastes

Number of Sites:

CERCLA:	7
RCRA Corrective Action:	1
RCRA UST:	0
Total Sites:	8

Relative Risk Ranking of Sites:

High:	0	Not Evaluated:	0
Medium:	2	Not Required:	6
Low:	0		

Sites Response Complete: 6

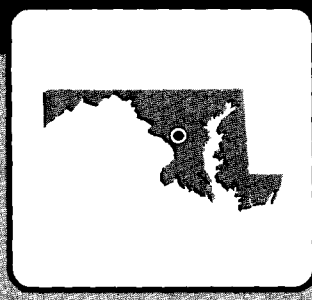
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	6							
RI / FS								
RD								
RAC								
RAO								
IRA				1(1)				
RC	6			1				
Cumulative % RC	86%	86%	86%	100%	100%	100%	100%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA							1	
RFI / CMS								1
DES								1
CMI								1
CMO								
IRA								
RC								1
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

CARDEROCK NAVAL SURFACE WARFARE CENTER

CARDEROCK, MARYLAND



Engineering Field Division/Activity: EFACHES

Major Claimant: COMNAVSEASYSCOM

Size: 184 Acres

Funding to Date: $4,369,000

Estimated Funding to Complete: $10,176,000

Base Mission: Performs Research, Development, Testing and Evaluation (RDT&E) in Naval architecture, Marine engineering, ship concepts, vehicle technology and survivability under the effect of weapons and other similar projects

Contaminants: Heavy metals, pesticides, POLs, PCBs

Number of Sites:

CERCLA:	9
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	9

Relative Risk Ranking of Sites:

High:	5	Not Evaluated:	0
Medium:	0	Not Required:	3
Low:	1		

Sites Response Complete: 3

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	9							
RI / FS						1	1	4
RD							1	5
RAC								6
RAO								3
IRA	1(4)					1(1)		
RC	3							6
Cumulative % RC	33%	33%	33%	33%	33%	33%	33%	100%

CHELTENHAM NAVAL COMPUTER AND TELECOMMUNICATIONS CENTER

CHELTENHAM, MARYLAND

Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible]

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	3	High:	2	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	0	Not Required:	1
RCRA UST:	0	Low:	0		
Total Sites:	3				

Sites Response Complete: 1

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	1			2				
RI / FS								
RD								
RAC								
RAO								
IRA			2(2)					
RC	1			2				
Cumulative % RC	33%	33%	33%	100%	100%	100%	100%	100%

CHESAPEAKE BAY DETACHMENT NAVAL RESEARCH LABORATORY

CHESAPEAKE BAY, MARYLAND

Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible] Acres

Funding to Date: $0

Estimated Funding to Complete: $0

Base Mission: Testing and development of radar, radio, optical, and fire control equipment

Contaminants: Non-chlorinated solvents, base, refuse

Number of Sites:

CERCLA:	8
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	8

Relative Risk Ranking of Sites:

High:	0	Not Evaluated:	0
Medium:	0	Not Required:	8
Low:	0		

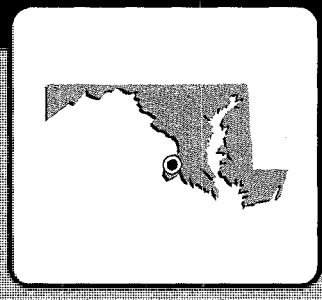
Sites Response Complete: 8

PROGRESS AND PLANS

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

INDIAN HEAD NAVAL SURFACE WARFARE CENTER

INDIAN HEAD, MARYLAND



Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible]

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	46	High:	30	Not Evaluated:	0
RCRA Corrective Action:	17	Medium:	15	Not Required:	12
RCRA UST:	0	Low:	18		
Total Sites:	65				

NPL

Sites Response Complete: 12

EXECUTIVE SUMMARY

Indian Head Division, Naval Surface Warfare Center (IHDIV NSWC) is about 35 miles south of Washington, D.C. IHDIV NSWC lies on a peninsula formed by the Potomac River and its tributary, Mattawoman Creek. The Stump Neck Annex of IHDIV NSWC lies on a non-contiguous parcel of land across the Mattawoman Creek. The town of Indian Head is in the immediate vicinity of IHDIV NSWC. The immediate land use around the Stump Neck Annex is primarily rural, residential and public use, including General Smallwood State Park.

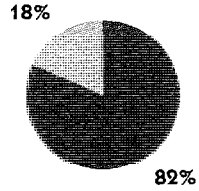
The primary mission of IHDIV NSWC is the research, development and production of propellants for use in rocket motors and torpedoes. Because of the nature of its commodity, IHDIV NSWC purchases, produces and handles complex chemicals. Wastes from ordnance operations have included waste propellants, explosives, acids, paints, solvents and metals. In addition, waste from non-ordnance operations include oils, pesticides, degreasers, acids, industrial wastewater and the chemical additive PCB. The primary contaminants of concern are lead, silver and mercury. The Navy has modified or eliminated some of its operational processes to prevent further contamination.

IHDIV NSWC was listed on the National Priority List (NPL) in FY95, with a Hazard Ranking System (HRS) Score of 50.00. Mercury contamination of surface waters is a concern as stated in the EPA listing announcement. The Stump Neck Annex is not included in the NPL.

Due to IHDIV NSWC's location along the Potomac River and its tributary, the Mattawoman Creek, contaminants in the shallow groundwater or surface runoff can enter these waterways. The surrounding marshlands provide ecological habitats, and the waters provide spawning and nursery area for several species of fish. These waterways are also used for recreational fishing and eventually empty into the Chesapeake Bay. Surficial groundwater is not used for drinking. Drinking and industrial processing water is derived from wells at a minimum of 200 to 400 feet deep. Due to the underlying geology, these deep aquifers are protected from contaminants by a number of zones of low permeability materials.

A Technical Review Committee (TRC) was formed in 1993. A Restoration Advisory Board (RAB) was established in January 1995. The community is actively involved in the 14 member RAB and meets quarterly. A Community Relations Plan (CRP) was updated in March 1995. An Information Repository is established at the Charles County Public Library, La Plata Branch and at the Indian Head Division NSWC General Library. The Administrative Record was established in 1994 (inclusive back to 1979) and is maintained at Engineering Field Activity Chesapeake (EFA CHES).

There are 65 IR sites. Fifty-three sites are in a study phase. Twelve sites are considered Response Complete. Thirty sites have Remedial Investigations/Feasibility Studies (RI/FSs) ongoing. The remaining sites are awaiting funding to complete the study phase. Removal actions (removal of contaminated soil) were completed at Sites 5 and 8 in FY95. The fieldwork for an Interim Remedial Action (IRA) underway at Site 56 (waste removal - soil contaminated with heavy metals) was completed in September, 1996, and the Navy is anticipating a post removal report before the end of the calendar year. An IRA is underway at Site 57 (groundwater treatment of chlorinated solvents) since FY95. The expected completion for this IRA is FY99. Both actions at Sites 56 and 57 are expected to decrease the contaminants on-site and migration potential.



Current Status Of Sites

Studies Underway	53
Cleanups Underway	0
Response Complete	12
TOTAL	65

INDIAN HEAD NSWC
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - IHDIV NSWC is composed of two, non-contiguous parcels of land. Indian Head Peninsula is bounded on the west by the Potomac River, east by Mattawoman Creek and north by the town of Indian Head. Stump Neck Annex is on a peninsula bounded by the Mattawoman and Chicamuxen Creeks, both tributaries to the Potomac River. The Potomac and tributaries are probably hydraulic discharge points for unconfined groundwater present in surficial deposits. Thus, contaminants in the shallow groundwater and surface drainage can potentially migrate to the Potomac River, Mattawoman, or Chicamuxen creeks. The Potomac River and its tributaries are an estuary and subject to tidal action. Surficial groundwater is not used. Deeper production aquifers exist between 200 and 400 feet below ground surface. Potential contamination of off-site wells is significantly less due to distance and the cone of depression formed by the on-base wells. These deep aquifers are somewhat protected by impermeable clay zones. Precipitation averages 47 inches per year, with 10 year probable minimum and maximum of 35 and 56 inches of rain per year, respectively. The mean annual precipitation of snow, sleet and hail is 19 inches.

NATURAL RESOURCES - About 50% of the base is considered open field and shrub, 40% forest and 10% wetlands, including a 25-acre tidal swamp and waterfowl sanctuary. The installation has 314 acres of marshland and tidal flats that provide protective ecological habitat. The Potomac River in the vicinity of IHDIV NSWC is a spawning and nursery area for stripped bass, white perch, herring and shad, and is the upstream limit of the nursery area for estuarine-dependent species that spawn in the Atlantic Ocean. The Potomac River and tributaries are used for recreational fishing. Over 80 species of birds, 22 species of mammals, 15 species of reptiles and 14 species of amphibians are common or abundant on the base. The Southern Bald Eagle, an endangered species, is indigenous to the area, but is considered an infrequent visitor to IHDIV NSWC. The Rainbow Snake found at IHDIV NSWC is recognized by Maryland as a threatened and endangered species.

RISK - Twenty of the 48 sites on IHDIV NSWC are ranked "High" relative risk in the DOD risk ranking system. Eleven of the sites are contaminated with silver, lead, mercury, or other heavy metals. Two of the sites are scrap and dump yards, containing chlorinated solvents, heavy metals and inert material. In general, contaminants at these sites could impact ecological sediment, soil, groundwater, surface water and human workers. Mercury contamination migration from four of the sites is of concern; however, a 1991 study by U.S. Fish and Wildlife of mercury levels in fish from the Mattawoman Creek concluded no abnormal amount of mercury in the fish. Of the remaining sites, 15 are ranked "Medium," and 18 are ranked "Low" relative risk.

RESTORATION PROJECTS - Excavated mercury contaminated soil during FY95 from Site 8 was placed in the soil cover of an magazine berm. Excavated silver contaminated soil from Site 5 was placed in a borrow pit. At both sites the soil was capped with clay and topsoil and revegetated.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - IHDIV NSWC was listed on the National Priorities List (NPL) on 29 September 1995 with a Hazard Ranking System (HRS) score of 50.00. The Stump Neck Annex is not included on the NPL. Mercury contamination at three sites is of concern. A main concern is mercury contamination found at Site 8, which includes a stream and pond downstream. Any mercury can ultimately be discharged to the Mattawoman Creek, affecting tidal marsh fish and fowl downstream. Waste removal of soils at this site was conducted in FY81 and FY95.

PARTNERING - An Engineering Evaluation/Cost Analysis (EE/CA) was performed on Site 56. The State of Maryland provided technical input. The EPA was not involved and this is viewed as a pro-active approach. No contractor was used during the preparation of the EE/CA.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in 1993 and met quarterly. The TRC was converted to a Restoration Advisory Board (RAB) in January 1995. The RAB has 14 members and meets quarterly. The community is actively involved in the RAB, accounting for about seven of the board members.

COMMUNITY RELATIONS PLAN - The Community Relations Plan (CRP) was updated March 1995.

INFORMATION REPOSITORY - An Information Repository is established at the Charles County Public Library, La Plata Branch and at the Indian Head IHDIV NSWC General Library. The Administrative Record was established in 1994 (inclusive back to 1979) and is maintained at Engineering Field Activity Chesapeake (EFA CHES). Copies of Administrative Record documents are maintained for public access at the Information Repositories.

HISTORICAL PROGRESS

FY81

Site 8 - Completed Interim Remedial Action (IRA) (waste removal, soil w/ heavy metals).

FY83

Sites 1-29 - Completed Preliminary Assessment (PA).

FY85

Sites 5, 8 and 12 - Completed Site Inspection (SI).

FY92

Sites 39-55 - Completed the PA phase.
Site 42 - Completed the SI phase.
Sites 51 and 52 - Listed as Response Complete (RC).

FY93

Site 5 - Completed an IRA (waste removal, soil w/ heavy metals).

FY94

Sites 39-41, 43-50 and 53-55 - Completed the SI phase.
Site 56 - An IRA (waste removal, soil w/ heavy metals) is underway. Expected completion in FY97.
Sites 40 and 41 - Listed as RC.

FY95

Sites 5 and 8 - Completed 2nd IRA (waste removal, soil w/ heavy metals).
Site 57 - An IRA groundwater treatment for chlorinated solvent is underway and expected completion is in FY 99.
Sites 5 and 8 - RI/FS is underway. Expected completion is FY02.

INDIAN HEAD NSWC
PROGRESS DURING FISCAL YEAR 1996

FY96

Site 57 - PA/SI was completed.
Sites 39, 42, 44, 46, 47, 49 and 53-55 - RI/FS is underway before FY95. Expected completion FY99.
Site 8 - IRA completed.
Site 12 - RI/FS is underway before FY95. Expected completion FY00.
Sites 43, 45, 48 and 50 - RI/FS is underway before FY95. Expected completion FY02.
Site 57 - Continued the IRA for groundwater treatment.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 12, 39, 42, 43, 44, 45, 46, 47, 48, 49, 50, 53, 54 and 55 - Continue RI/FS.
Site 57 - Continue groundwater treatment IRA at Site 57.
Site 56 - IRA will be completed. Navy to process Project Closeout Reports to conclude IRA.

FY98

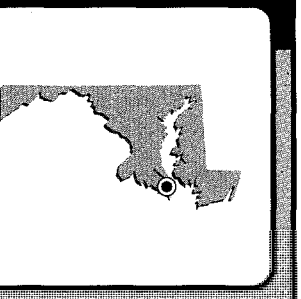
Sites 12, 39, 42-50 and 53-55 - Continue RI/FS.
Site 57 - Initiate RI/FS for site.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	21	1						26
RI / FS					5	1	1	37
RD						9	1	32
RAC								42
RAO								10
IRA	2(3)	1(1)	1(1)		1(1)			
RC	4							44
Cumulative % RC	8%	8%	8%	8%	8%	8%	8%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	8							1
RFI / CMS					2	1		6
DES						4	5	
CMI								9
CMO								3
IRA								
RC	8							9
Cumulative % RC	47%	47%	47%	47%	47%	47%	47%	100%

PATUXENT RIVER NAVAL AIR STATION
LEXINGTON PARK, MARYLAND



Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible]

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	57	High:	37	Not Evaluated:	5
RCRA Corrective Action:	0	Medium:	20	Not Required:	3
RCRA UST:	6	Low:	0		
Total Sites:	57				

NPL

Sites Response Complete: 2

EXECUTIVE SUMMARY

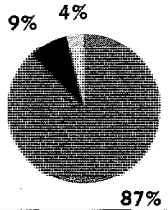
The Patuxent River Naval Air Station (NAS) is located in St. Mary's County, Maryland, approximately 65 miles southeast of Washington, D.C. The station is situated on a broad headland at the confluence of the Patuxent River and Chesapeake Bay. The unincorporated community of Lexington Park lies immediately to the southwest of the station. Basic operations are the testing and evaluation of aircraft weapons systems, fixed-wing antisubmarine aircraft and experimental and production fixed-wing attack, fighter and other aircraft; intermediate aircraft maintenance; operation, maintenance and improvement of existing facilities, grounds and utility plants and systems; and procurement and distribution of fuel, oil, chemicals and other required supplies. Typical air station operations that contributed to contaminated sites of the facility include machine shops, foundry, coatings and paint shops, paint stripping, plating shops, power plants, wastewater treatment plants, fire fighting, landfill disposal and storage of supplies, materials, fuels and limited ordnance. Current operations include pollution prevention technologies to prevent further contamination. Primary contaminants of concern are pesticides, solvents, the chemical additive PCB and metals that have contaminated soil, groundwater, sediment and surface water. Groundwater contamination at the landfills and high concentrations of pesticides in the soil and sediment at the Pest Control Shop caused NAS to be placed on the National Priorities List (NPL) in 1994.

St. Mary's County is rural in character and sparsely populated. Land use patterns in St. Mary's County are largely residential, agricultural and undeveloped open space. There are several small streams and ponds located on NAS. There is a fairly extensive storm sewer system that is composed of 18 drainage basins with discharge points on the Patuxent River, the Chesapeake Bay and various ponds and small lakes. The storm water collection system consists of reinforced concrete storm sewers receiving surface water and groundwater seepage from a network of shallow roadside ditches, natural streams, culverts, subdrains, storm sewers and laterals. Groundwater beneath NAS occurs in three principle zones: the upper-most water table aquifer and two confined aquifers. One of the confined aquifers is a major source of public water supply for southern Maryland; the other aquifer is the principle source of potable and industrial water for NAS.

A Technical Review Committee (TRC) was formed in FY90. For greater community involvement, the TRC was converted to a Restoration Advisory Board (RAB) in September 1994 and meets quarterly. The RAB has several active members composed of Navy employees, state and federal regulators and local citizens. A Community Relations Plan (CRP) was first published in FY91 and an Information Repository has been established at the local library.

There are 57 IR sites. Currently, 50 CERCLA sites are in a study phase. Sixteen CERCLA sites are in a Remedial Investigation/Feasibility Study (RI/FS) phase. Cleanup is underway at 5 sites. One RCRA Underground Storage Tank (UST) site is in the Corrective Action Plan (CAP) phase. The remaining sites under study are awaiting funding to complete the study phase. Response is complete at two sites before FY95. There are 9 completed IRAs, 4 UST sites, 1 before FY95 and 3 in FY96; and, 5 CERCLA sites all before FY95.

A major success in the cleanup program at NAS Patuxent River involves the completion of three removal actions. At Site 1 (FY94), Fishing Point Landfill, Shoreline Erosion Project was required due to landfill eroding into the Patuxent River and the Chesapeake Bay. The shoreline was recaptured with beach fill and a series of breakwaters was installed to dissipate the wave action. At Site 17 (FY91), Pest Control Shop and Site 28 (FY91), Transformer Storage Area, a removal action to remove contaminated soil was done.



Current Status Of Sites

Studies Underway	50
Cleanups Underway	5
Response Complete	2
TOTAL	57

PATUXENT RIVER NAS
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Geographically, NAS is located within the Coastal Plain province, a seaward sloping, moderately dissected to a flat plain. In the area of NAS, the Patuxent River is actually an estuary system. The station is underlain by a thick sequence of sand, clay and gravel. Sediments, which overlie hard, dense crystalline rocks, are about 2,500 feet thick. There are several small streams and ponds located on the base. Contaminant migration pathways at NAS include surface runoff and groundwater movement to the Patuxent River, the Chesapeake Bay, and small streams and ponds. The vast majority of the sites are within the lowlands area of NAS, which contains a fairly well developed storm water drainage system. The potential for pollution migration offsite via surface water depends largely on the proximity of the waste disposal site to a stream channel and the amount of runoff generated per storm event. Groundwater beneath NAS occurs in three principle zones. The uppermost zone is the water table aquifer, whose elevation varies from a high of approximately 80 feet above mean sea level in the southwest portion of the base to zero feet along the coastal areas. Flow in the water table aquifer is generally from the southwest to the northeast. Groundwater also occurs in two confined aquifers, which are separated from the water table aquifer by thick accumulations of fairly impermeable silts, clays and marls. The uppermost confined aquifer is a major source of public water supply for southern Maryland; the other aquifer is the principle source of potable and industrial water for NAS. Of the three major aquifers beneath NAS, the water table aquifer is most susceptible to contamination since most surface soils at NAS are fairly permeable. This condition provides a potential pathway for leachate originating from various NAS waste disposal sites to migrate downward until it intersects the water table aquifer. Because potable water is obtained from the deep confined aquifers, there is minimal potential for waste disposal sites to contaminate NAS or surrounding community water supplies. Because of the thick sequence of clays and silt in the Chesapeake group, there is very little potential that contaminants will migrate vertically. Additionally, the thick clays and marls that separate the aquifers from one another will also act as an effective barrier to vertical migration of contaminants.

NATURAL RESOURCES - NAS has a draft Wildlife Management Plan that identifies typical species. A Forest Management Plan was developed in 1981. Food plots ranging in size from one-tenth to two acres are maintained for wildlife. Twenty-one areas on the station have been designated for hunting on a seasonal basis. NAS ponds and creeks, as well as the Patuxent River and Chesapeake Bay, support a wide variety of aquatic animals and plants. Five man-made ponds on station are used for recreational fishing. Saltwater fishing takes place along the northern shore of NAS. Oyster beds are located in Harper and Parsons Creeks and are worked in winter months. The Wetland Management Plan, as outlined in the draft Wildlife Management Plan calls for the maintenance of existing wetlands and the creation of new ones. Two endangered species exist in the vicinity of NAS. These are the shortnose sturgeon and the bald eagle. These species should not be affected by the sites identified at NAS. The State of Maryland has designated some species that occur in the area as rare over a broad range and may become endangered. These species are the great blue heron, red-shouldered hawk, osprey and the eastern bluebird.

RISK - For the DOD Relative Risk Ranking System, 51 of the 57 sites have been ranked. Twenty-seven of these sites were ranked as high primarily due to known groundwater and soil contamination. Migration pathways have been identified and include nearby wetlands and ecological resources. Twenty-three of the sites were ranked as medium relative risk .

The Agency for Toxic Substance and Disease Register (ATSDR) performed a public health assessment for the installation in September 1995.

RESTORATION PROJECTS - At Site 1, Fishing Point Landfill, the Shoreline Erosion Project, stabilized and recaptured shoreline and installed a breakwater system to dissipate wave action. This restored the shoreline while also reducing the potential for contaminant migration.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - NAS was listed on the National Priority List (NPL) on 30 June 1994 with a Hazard Ranking System (HRS) score of 36.87. Contamination was detected in the groundwater at the Fishing Point Landfill, Site 1 and the Current and Former Sanitary Landfill, Site 11. High concentrations of pesticides were found in the soil and sediment of the Pest Control Shop, Site 17.

LEGAL AGREEMENTS - A Federal Facility Agreement (FFA) has not been signed yet.. The Site Management Plan (SMP) is being updated to include all of the IR sites.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in FY90; it meets quarterly. The first Restoration Advisory Board (RAB) meeting was 26 October 1994. The issues discussed were the components of the Installation Restoration Program (IRP), the purpose of the RAB and the Engineering Evaluation/Cost Analysis (EE/CA) for Sites 6, 17 and 24.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was completed in April 1991. The CRP was updated in July 1996. NAS had one public meeting for the proposed CRP/Record of Decision (ROD) requirement, for Site 11, Former Sanitary Landfill in September 1995.

INFORMATION REPOSITORY - An Administrative Record (the official file) was established in FY95 and is maintained by the Navy. The information in the Administrative Record was placed in two Information Repositories, established in FY95, for public access. They are located at the Lexington Park Public Library and the Public Affairs Office on the NAS. The Information Repositories are updated regularly by the Navy.

PATUXENT RIVER NAS
HISTORICAL PROGRESS

FY84

Sites 1-31 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), was completed. It identified 31 sites at NAS. Fourteen sites (Sites 1, 2, 4, 6-8, 11, 15, 17, 23-25, 28 and 29) were recommended for further investigation. The remainder of the sites were recommended for no further action.

FY85

Sites 1, 2, 4, 6, 11, 17, 23, 24, 28 and 29 - The Interim Remedial Investigation/ Feasibility Study (RI/FS) activities were initiated. Both shallow and deep monitoring wells were installed; soil borings were taken; and environmental sampling (water, soil, sediment and fish) and hydrogeologic testing was conducted.
Sites 7 and 8 - A Confirmation Study (CS), equivalent to a Site Investigation (SI), was completed.

FY86

Site 9 - An Interim Remedial Action (IRA) (drum removal) was completed.

FY87

UST 2 - Initial Site Characterization (ISC) and a Corrective Action Plan (CAP) were completed in FY87. The CAP recommended no further action at the site and the site has been closed.

FY88

SWMUs - A RCRA Facility Assessment (RFA) was conducted. One hundred sites were identified as possible Solid Waste Management Units (SWMUs). Some of these sites are being investigated under RCRA Closure plans. However, none of the Defense Environmental Restoration Account (DERA) funded sites are being covered under the RCRA Corrective Action (CA) program. All DERA funded sites are being handled under CERCLA or the RCRA Underground Storage Tank (UST) program.

FY89

UST 1 - An ISC was completed.

FY91

Sites 1, 2, 4, 6, 11, 15, 17, 23-25, 28 and 29 - A Confirmation Study (CS) was completed in FY91. Sites 15 and 25 were recommended for no further action. Sites 6-9 were recommended for interim remedial or removal actions. Sites 1, 2, 4, 6, 11, 17, 23, 24, 28 and 29 were recommended for a Remedial Investigation (RI). Sites 7 and 8 were later moved to the UST program and are now part of UST 1.
Site 10 - An IRA for drums and ordnance removal and ordnance sweep to remove remaining live ordnance was completed
Site 17 - An IRA (pesticide-contaminated soil removal) was completed.
Site 28 - An IRA (PCB-contaminated soil removal) was completed.
UST 3 - The ISC and a CAP were completed. Implementation of the Corrective Measures Plan (CMP), which includes groundwater treatment, was initiated and is expected to continue until FY96.

FY92

A draft IRI report was completed in February 1992 and submitted to the State of Maryland and EPA for review. The State requested that additional field work be conducted.
USTs 4 and 5 - The ISCs were completed.

FY93

Site 34 - Site was identified during a geophysical survey and was added to the program. A PA was completed in FY93.
UST 1 - Groundwater treatment was initiated as an interim measure.
UST 4 - A CAP was completed. Implementation of the CMP, which includes groundwater treatment, was initiated and is expected to continue until FY96.
UST 6 - An ISC was completed.

FY94

Site 1 - An IRA (shoreline stabilization) was completed.
Sites 9 and 34 - An SI was completed in April 1994. Both sites were recommended for an RI.
Sites 35 and 43-46 - A PA was completed.
UST 5 - A CAP was completed in November 1993; soil removal was initiated in August 1994.

FY95

Sites 35 and 47-52 - PAs were completed.
USTs 1 and 5 - An IRA is underway and expected to be completed in FY96.
UST 3 - Implementation of Corrective Measures began

PROGRESS DURING FISCAL YEAR 1996

FY96

Site 11 - Record of Decision was signed by EPA and CO of NAS, July 1996.
Sites 11 and 24 - Site 11 (cap of landfill) and Site 24 (removal of drywell and sediments)- IRA started.
Sites 6 and 17 - Pre-Design/Design for IRA started.
USTs 1-5 - Implementation of the Corrective Measure Design began.
USTs 3-5 - Interim Removal Actions were implemented.
UST 6 - Corrective Action Plan was completed.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 1, 2 and 12 - RI/FS completion expected.
Site 1 - Corrective Action Plan completion expected.
Sites 3, 31, 35-39 and 47 - SIs are expected to start.
Sites 11 and 24 - Scheduled IRAs are expected to be completed.
USTs 4 and 6 - Implementation of the Corrective Measure is expected to be completed.
UST 6 - Interim Remedial Actions to be completed.
USTs 1, 2, 3 and 5 - Remedial Designs are scheduled for completion.
USTs 4 and 6 - Response Complete expected.

FY98

Sites 3, 31, 39, 41 and 47- PA/SI completion expected.
Sites 1, 2 and 12 - Remedial Designs completion expected.
Sites 4-6, 9, 11, 12, 17, 23, 24, 27-29, 34 and 46 - An RI/FS is scheduled to be completed
Site 6 - IRA completion expected.
USTs 2 and 5 - Corrective Actions completion expected.
USTs 2 and 3 - Expect sites to be Response Complete.

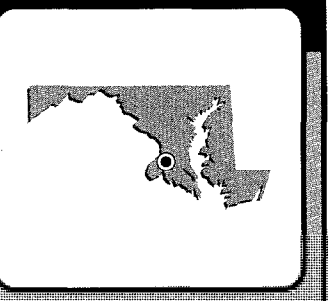
PATUXENT RIVER NAS
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	20			5		1	4	20
RI / FS			3	13			4	29
RD				3	5	2	1	38
RAC						1	3	45
RAO								21
IRA	5(5)		2(2)	1(1)	1(1)			
RC	2							49
Cumulative % RC	4%	4%	4%	4%	4%	4%	4%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	6							
CAP	4	1	1					
DES			4					
IMP			2	2	1	1		
IMO								2
IRA	1(1)	3(3)	1(1)	1(1)				1(1)
RC			2	2				2
Cumulative % RC	0%	0%	33%	67%	67%	67%	67%	100%

POMONKEY TEST RANGE NAVAL RESEARCH LABORATORY

POMONKEY, MARYLAND



Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible]

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

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

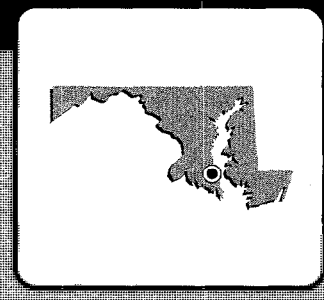
Sites Response Complete: 0

PROGRESS AND PLANS

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

SOLOMONS NAVAL RECREATION CENTER

SOLOMONS, MARYLAND



Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible]

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: Provides recreational services to military and civilian personnel.

Contaminants: Acid, base, heavy metals

Number of Sites:

CERCLA:	3
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	3

Relative Risk Ranking of Sites:

High:	2	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	3							
RI / FS								2
RD								2
RAC								2
RAO								
IRA								
RC	1							2
Cumulative % RC	33%	33%	33%	33%	33%	33%	33%	100%

ST. INIGOES NAVAL COMMAND CONTROL AND OCEAN SURVEILLANCE CENTER IN-SERVICE ENGINEERING EAST COAST DETACHMENT

ST. INGOES, MARYLAND

Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Site: [illegible]

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: None

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

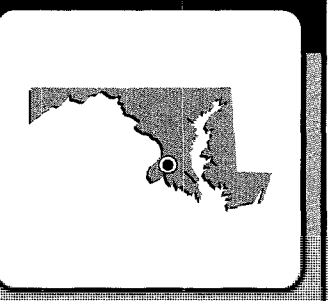
BRAC III

Sites Response Complete: 2

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	2							
RI / FS								
RD								
RAC								
RAO								
IRA								
RC	2							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

WALDORF NAVAL RESEARCH LABORATORY
WALDORF, MARYLAND



Engineering Field Division/Activity: [illegible]
Major Claimant: [illegible]
Size: [illegible] Acres
Funding to Date: [illegible]
Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

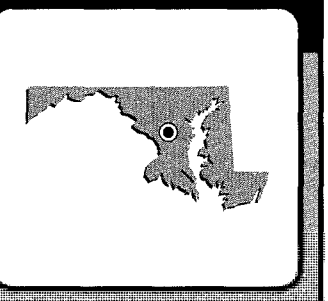
Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	1	High:	0	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	0	Not Required:	0
RCRA UST:	0	Low:	1		
Total Sites:	1				

Sites Response Complete: 0

PROGRESS AND PLANS

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

WHITE OAK NAVAL SURFACE WARFARE CENTER
WHITE OAK, MARYLAND



Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: 710 Acres

Funding to Date: $7,021,000

Estimated Funding to Complete: $62,962,000

Base Mission: Principal Research, Development, Test and Evaluation center (RDT&E) for ordnance technology concepts and development.

Contaminants: Inorganic chemicals, explosive components, solvents, waste oil, PCBs, heavy metals, volatile and semi-volatile organic compounds.

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	31	High:	7	Not Evaluated:	24
RCRA Corrective Action:	0	Medium:	7	Not Required:	0
RCRA UST:	0	Low:	0		
Total Sites:	31				

BRAC IV

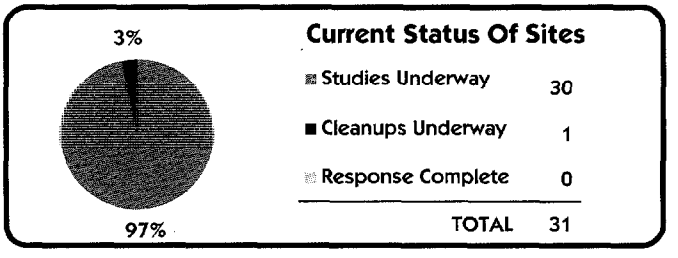
Sites Response Complete: 0

EXECUTIVE SUMMARY

White Oak Naval Surface Warfare Center (NSWC) is located on a 710 acre site approximately five miles north of Washington D.C. in Silver Spring, Maryland and is situated in both Montgomery and Prince George counties. NSWC was established on 1 September 1974 by merger of the White Oak Naval Ordnance Laboratory (NOL) and the Dahlgren Naval Weapons Laboratory in Virginia. The facility was recommended for closure by the BRAC IV commission in 1995. The functions performed at White Oak will be absorbed by Panama City Coastal Systems Station, Florida, Carderock and Indian Head Detachments in Maryland, and Dahlgren Detachment in Virginia. The facility is slated to cease operations on January 1997 and to permanently close on July 1997.

NSWC White Oak functioned as the principle Navy research, development, test and evaluation center for ordnance technology, concepts and systems. White Oak maintained the primary in-house research and development capabilities for Navy and Marine Corps strategic systems. Operations consisted of Naval mine and multimedia weapons systems, directed energy weapons, fuse development, small craft armament and ordnance technology. Tenants at NSWC White Oak are the Navy Tactical Support Activity, The Patent Counsel, the Navy Medical Command, NSWC Indian Head Detachment, NSWC Carderock Detachment and Dahlgren Detachment.

Environmental issues warranting investigation and remedial action were created primarily from past disposal procedures that led to chemical contamination. These practices included the landfilling of oils, the chemical additive PCBs, solvents, paint residue, miscellaneous chemicals (including mercury) and the disposal of chemical research wastewater in dry wells. Also contributing to the environmental degradation at the Base were the burning of explosive ordnances, sludge composting and a radium spill. The primary contaminants of concern are volatile organic compounds, the chemical additive PCBs, cadmium, chromium, lead, mercury, nickel and ordnance compounds (RDX, TNT). Potential contaminant migration at White Oak is most likely to be coupled with direct surface runoff or shallow groundwater discharge to surface waters.



A Technical Review Committee (TRC) was formed in 1989 and was converted to a Restoration Advisory Board (RAB) in October 1995. An Information Repository available to the public was established at the White Oak Library in White Oak, Maryland. A Community Relations Plan (CRP) was published in 1991.

CERCLA driven environmental studies have identified 31 sites on White Oak NSWC. Of these 31, 24 are not evaluated. The remaining seven sites proceeded into the Site Inspection (SI) phase that was completed in 1987. Contamination was found at all seven sites and they were recommended for an in-depth investigation in a Remedial Investigation/Feasibility Study (RI/FS) phase. The Apple Orchard Landfill, Site 2, was found to have the chemical additive PCBs in the stream sediment that presented an immediate risk to those accessing the site. A fence was promptly installed to restrict access. The remaining six sites were found to have the potential for exposure to contaminants.

During a RCRA Facility Assessment (RFA) conducted in FY89, 110 Solid Waste Management Units (SWMUs) were identified which included the 14 sites from the PA phase under CERCLA. Thirty-eight SWMUs were determined to require further investigation.

The RI/FS recommended source removal for five sites (Sites 4, 7-9 and 11) and a landfill cap for each of the two sites (Sites 2 and 3). A public comment period and meeting were held in September 1994 to review the proposed remediation technologies recommended. A Remedial Design (RD) began for six of the sites, Sites 2- 4, 8, 9 and 11 in FY95. The RD for source removal for Sites 1-3 will be completed in FY97. The Interim Removal Action (IRA) for three sites (Sites 8, 9 and11) will be completed in FY97. The RD for Sites 1-3 will be completed in FY97 and the RA for these sites is expected to begin in FY98 with completion by FY00. The RD for Sites 4, 9 and 11 will be completed in FY98. The recommended remedial technologies for these sites were presented in the Final Proposal Plan published in September 1994. However, a revised Proposed Plan for Sites 8, 9 and 11 was published in March 1996 which recommended only off-site disposal of the removed source material in lieu of on-site thermal treatment prior to off-site disposal. Response Complete is expected for Site 3 in FY97.

WHITE OAK NSWC RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - All of the NSWC White Oak property lies within the drainage basin of the Paint Branch Stream, a 12 mile long tributary to the Northeast Branch of the Anacostia River. The Paint Branch Stream is the largest perennial stream in the immediate vicinity of NSWC White Oak. The soils, except for stream-bed soils, tend to be moderately to excessively well-drained and moderately to severely eroded. NSWC lies on the soil profile boundary between crystalline bedrock of Piedmont and Coastal Plain sediments. Together they support an unconfined groundwater body several hundred feet thick. Coastal Plain sediments are only a few tens of feet thick and in many places have been entirely eroded. The Piedmont bedrock is the Wissahickon formation metamorphic gneiss; however, the upper 50 to 70 feet of the Wissahickon formation has been highly weathered to a clayey saprolite material. The Wissahickon gneiss and saprolite together account for at least 50 percent of the exposed formations. Most groundwater circulation at NSWC will generally occur within the upper 100 feet, moving from areas of rainfall infiltration on higher ground toward discharge areas supporting perennial stream flows at lower elevations. The flow gradients decrease near stream channels because groundwater migration pathways do not discharge directly to the nearest perennial stream, but circulate more deeply and slowly to discharge south or southeast of the property.

Potential contaminant migration at NSWC White Oak is most likely to be coupled with direct surface runoff or shallow groundwater discharge to surface waters. Contaminants moving along deeper groundwater flowpaths would become more attenuated by the processes of dispersion, adsorption on clays and chemical degradation. All soils in the area tend to be acidic (pH values range from 4.0 to 6.0) and are therefore corrosive to metals. The average annual precipitation is roughly 44 inches and snowfall accumulations of more than ten inches are rare.

NATURAL RESOURCES - Paint Branch and its tributaries are rated as Class III surface water by the State of Maryland (1980). Waters of this classification are natural trout waters having the potential for or being suitable for the growth and propagation of trout and capable of supporting natural trout populations and their associated food organisms. There is a small population of white-tailed deer that remain on NSWC property because there is little suitable habitat in the surrounding area. There are no known federally listed endangered or threatened species of animals or plants at NSWC White Oak.

RISK - A Human Health Risk Assessment and an Ecological Risk Assessment have been completed. Based on the human health risk assessment of the Remedial Investigation (RI), remediation was recommended for all seven of the investigated sites (Sites 2-4, 7-9 and 11). A public comment period and meeting were held in September 1994 to review the proposed remediation technologies recommended.

The DOD Relative Risk System has been completed for Sites 2-4, 7-9 and 11. High risk is documented for soil at Sites 2 and 7 due to presence of nearby workers. High risk is also reported for residential groundwater uses at Sites 8, 9 and 11 because of potential migration pathways to the Paint Branch stream. Medium risk is documented for Sites 3 and 4.

REGULATORY ISSUES

LEGAL AGREEMENTS - There are no reported Federal Facility Agreements (FFAs) or Federal Facility Site Remediation Agreements (FFSRAs) in place at NSWC. A RCRA Part B Permit was applied for in FY92. The permit has not been issued to date. An agreement was negotiated between NSWC and EPA that resulted in the closure of the NSWC sewage treatment plant in July 1982. A compliance agreement was negotiated between NSWC and the State of Maryland in 1982 to convert the boiler plant from fuel oil to natural gas that reduced particulate emissions.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in 1989. The committee included representatives from the Hillendale Citizens Organization, Prince George's County, Montgomery County, The State of Maryland, EPA Region III, the Base Commander, the Base Environmental Officer and the Naval Facilities Engineering Command Chesapeake Activity (EFACHES) Remedial Project Manager. The TRC was converted to a Restoration Advisory Board (RAB) in October 1995. The RAB is very active, meets almost monthly and is involved in all remedial decisions. The support and interaction gained through community involvement and regulatory interface has enhanced the cleanup process at NSWC.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was completed in October 1991. A public meeting to discuss sites was held 7 July 1994. Site tours are offered on request. In FY95 there were approximately four tours provided to the public at various sites.

INFORMATION REPOSITORY - An Information Repository available to the public was established at the White Oak Library in White Oak, Maryland. An Administrative Record was set up in 1994 and is maintained at the EFACHES and a copy is at the Public Affairs Office at NSWC White Oak.

BASE REALIGNMENT AND CLOSURE

BRAC - NSWC White Oak was recommended for closure by the Base Realignment and Closure (BRAC) IV commission in 1995. The functions performed at White Oak will be absorbed by Panama City Coastal Systems Station, Florida, Carderock and Indian Head Detachments in Maryland, and Dahlgren Detachment in Virginia. The facility is slated to cease operations in January 1997 and to permanently close in July 1997.

BRAC CLEANUP TEAM - To assist site closure and expedite land transfer, a BRAC Cleanup Team (BCT) was formed on 14 December 1995. Team members meet regularly and include The EPA Region III, the State of Maryland and the NSWC White Oak Base Environmental Coordinator (BEC).

DOCUMENTS - A BRAC Cleanup Plan (BCP) is being prepared and will be completed in November 1996. A BRAC Environmental Baseline Survey (EBS) was completed in July 1996.

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
0 acres	0 acres	0 acres	0 acres	0 acres	0 acres	710 acres

LEASE/TRANSFER - Preparation is underway to conduct a Finding Of Suitability to Transfer (FOST) to GSA and the Army.

REUSE - A BRAC Reuse Plan is being developed to lease 657 of the 710 acres at NSWC to the General Services Administration (GSA) and the remaining 53 to the Army.

FAST TRACK INITIATIVES - Sites 8, 9 and 11 have undergone Remedial Design for a soil removal which is happening currently and are on a fast track to be cleaned.

WHITE OAK NSWC
HISTORICAL PROGRESS

FY84

Sites 1-14 - An Initial Assessment Study (IAS) similar to a Preliminary Assessment (PA), was completed which identified 14 potentially contaminated sites. Seven sites (Sites 1, 5, 6, 10, and 12-14) were determined not to present a threat to human health or the environment and No Further Action (NFA) was recommended. Seven sites (Sites 2-4, 7-9 and 11) were recommended for further investigation.

FY85

Sites 1, 5-6, 10 and 12-14 - NFA was determined by the Navy for these sites. Site status has changed with BRAC evaluation for Sites 1, 5, 6, 12 and 13.

FY87

Sites 2-4, 7-9 and 11 - A Confirmation Study (CS), similar to a Site Inspection (SI), was completed in April 1987. The report recommends additional groundwater monitoring and collecting additional sediment and surface water samples.

FY89

SWMUs 1-110 - The RCRA Facility Assessment was completed. Thirty-eight SWMUs were determined to require further investigation.
Sites 2-4, 7-9 and 11 - Phase I of the RI was completed.

FY93

Sites 2-4, 7-9 and 11 - The Decision Documents for the remedial actions to be used were completed.
Sites 2-4, 7-9 and 11 - The Remedial Investigation/ Feasibility Study (RI/FS) was completed. The FS recommends source removal for five sites (Sites 4, 7-9 and 11) and encapsulation for the two remaining sites (Sites 2 and 3).
Site 2 - A Interim Remedial Action (IRA) was completed to install a fence around the site to restrict access.

FY94

Sites 2-4, 8, 9 and 11 - The Remedial Design (RD) phase began.

FY95

Sites 2-4, 8, 9 and 11 - The RD phase was underway for Sites 2 and 3, landfill caps and for Sites 8, 9 and 11, excavation and soil removals.

PROGRESS DURING FISCAL YEAR 1996

FY96

Sites 1-3 - RD continued.
Sites 8, 9 and 11 - RDs were completed and Remedial Actions initiated.
Sites 2-4, 7 and 9 - RI/FSs continued.
Sites 5, 10, 12, 13, 28 and 29 - PA/SIs continued.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 8, 9 and 11 - Interim Remedial Actions will be completed.
Sites 1-3 - The RD will be completed.
Sites 2-4, 7 and 9 - RI/FSs will be completed.
Sites 5, 10, 12, 13, 28, 29 and 31 - PA/SIs will be completed.
Site 3 - Response Complete is expected.

FY98

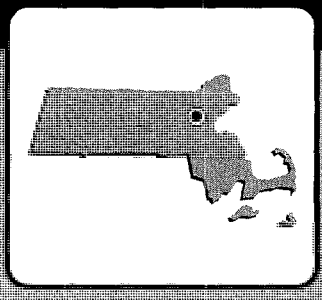
Sites 0, 1, 6 and 14 - PA/SI is expected for completion.
Sites 8 and 11 - RI/FS completion expected.
Sites 4, 9 and 11 - Remedial Design will be completed, with RA to complete in FY99.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	7		7	4		1		
RI / FS			5	2	7	4	11	
RD			3	3	4	5	9	
RAC					3	5	3	13
RAO							1	6
IRA	1(1)		3(3)					
RC			1			2	9	19
Cumulative % RC	0%	0%	3%	3%	3%	10%	39%	100%

BEDFORD NAVAL WEAPONS INDUSTRIAL RESERVE PLANT

BEDFORD, MASSACHUSETTS



Engineering Field Division/Activity: NORTHDIV

Major Claimant: COMNAVSEASYSCOM

Size: 46 Acres

Funding to Date: $9,992,000

Estimated Funding to Complete: $13,568,000

Base Mission: Government-Owned Contractor-Operated (GOCO) facility whose mission is to design, fabricate, and test prototype weapons equipment such as missile guidance and control systems.

Contaminants: Incinerator ash, PCBs, BTEX, volatile organic compounds, solvents, paint, acids, industrial wastes, photographic wastes

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	4	High:	2	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	1	Not Required:	0
RCRA UST:	0	Low:	1		
Total Sites:	4				

NPL

Sites Response Complete: 0

EXECUTIVE SUMMARY

The Bedford Naval Weapons Industrial Reserve Plant (NWIRP) is located in the town of Bedford in Middlesex County, Massachusetts. Bedford is about 25 miles west of Boston, Massachusetts. Bedford NWIRP is a Government-Owned Contractor-Operated (GOCO) facility whose mission is to design, fabricate, and test prototype weapons equipment such as missile guidance and control systems. Research is conducted in two main structures: the Components Laboratory and the Flight Test Facility. There are other auxiliary buildings and an incinerator pad that are either metal-sided or reinforced concrete. Also on site is an antenna range and a warehouse. Operations include fabrication, spray painting, welding, machining, photographic work, and flight testing. Four sites have been identified here, and all four are being handled under CERCLA. One is an incinerator ash disposal area, with soils contaminated with ash and heavy metals. A Components Laboratory fuel oil tank has soils contaminated with POLs. The Northwestern Groundwater Plume has groundwater contaminated with a plume of Volatile Organic Compounds (VOCs). A fuel pump area has groundwater contaminated with gasoline. Current operations include pollution prevention technologies to prevent further contamination.

Bedford NWIRP is surrounded by Elm Brook and a wetland area to the north, a residential area and additional wetlands to the east and northeast, Raytheon Missile Systems Division to the west, and Hanscom Field to the south. Hanscom Field was formerly Hanscom Air Force Base and is currently operated by the Massachusetts Port Authority and the Air Force. NWIRP lies in the drainage basin of the Shawsheen River. The surrounding terrain is swampy and marshy. While the Shawsheen River is not used as a source of agricultural water, the town of Burlington uses the Shawsheen indirectly as a source of potable water. The Shawsheen is used for recreational fishing and swimming. Contaminant migration pathways associated with Bedford NWIRP are groundwater and surface water. Migration of a VOC plume to the municipal water supply is of major concern to the community.

A Technical Review Committee (TRC) was established in FY89 and converted to a Restoration Advisory Board (RAB) in FY94. A Community Relations Plan (CRP) was completed in February 1989 and updated in May 1992. Another update will be done in FY97. An Information Repository was established at the Bedford Public Library in FY89. Copies of the Administrative Record documents are maintained at the Information Repository.

There are four IR sites at Bedford NWIRP under a study phase, Remedial Investigation (RI), on Sites 1, 2 and 3 is expected to be completed in early in FY97. The Feasibility Study (FS) on Sites 1, 2 and 3 is planned for completion at the end of FY97. Site 2 is likely to have No Further Action (NFA) Records of Decision (RODs) at the end of the Study Phase. Both EPA and the Massachusetts Department of Environmental Protection are considering NFAs. Construction of a Remedial Action (RA) for Site 3 is planned for FY98. Using an innovative contracting vehicle to expedite construction , a Short Term Remediation Measure (STM) construction contract was awarded August 1995. Construction began November 1995 and is expected to be completed by February 1997. This Short Term Measure (STM) will prevent migration of the Volatile Organic Compound (VOC) plume into the municipal water supply. Site 2 is Response Complete in FY97.

Current Status Of Sites

100%

Studies Underway	4
Cleanups Underway	0
Response Complete	0
TOTAL	4

BEDFORD NWIRP RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Bedford NWIRP rests on Hartwell's Hill, a diorite knob that rises about 70 feet above the surrounding flat swamplands. Hartwell's Hill is capped by glacial till that varies in thickness from 10 to 40 feet. Groundwater migration is influenced primarily by topography; precipitation that falls on the hill slowly penetrates the poorly drained soils, and then migrates radially off the hill toward the surrounding marshy areas. Bedford NWIRP lies in the drainage basin of the Shawsheen River. No surface runoff from NWIRP reaches the river because of the extensive surrounding swampy area. Groundwater under NWIRP Bedford is not used as a drinking water source and groundwater migration primarily discharges to the Shawsheen River via Elm Brook which is to the north of the facility. Groundwater is not used for agricultural, potable, or industrial purposes between Bedford NWIRP and the discharge at Shawsheen River; residences in the area are served by public water. There are no human receptors along this pathway. Private wells are not used for drinking water.

The NWIRP is a densely developed area, primarily paved, with few natural areas. Surface water runoff and storm sewer discharge are to swampy areas to the west, north and east. The water in Elm Brook is not used as a source of potable or agricultural water. The Shawsheen River is not used as a source of agricultural water, although the town of Burlington uses the Shawsheen as a source of potable water after it has been pumped into the Mill Pond Reservoir. Water from the reservoir is physically and chemically treated before being used. The Shawsheen River meets Massachusetts Department of Environmental Quality Engineering water quality standards for a Class B (fishable/swimmable) stream. Vertical contaminant migration is slow to nonexistent, as a result of the geology of Hartwell's Hill. Contaminant migration is further limited by the nature of the poorly drained soils.

NATURAL RESOURCES - Possible receptors of any contaminants that could migrate from Bedford NWIRP include waterfowl, aquatic insects, frogs, salamanders, crayfish, turtles, snakes, leeches, and bacteria that inhabit Elm Brook and the swampy areas north and east of Bedford NWIRP. Other possible receptors include the fish in the Shawsheen River. Although no rare, threatened or endangered species have been sighted on the facility, there are such species in nearby areas that could be affected by migration of contaminants.

RISK - Draft Baseline Human Health and Ecological Risk Assessment Work Plans have been submitted to EPA, with completion of the assessments under final review.

The DOD Relative Risk Ranking system ranked Sites 3, and 4 as high risk, Site 2 as medium risk, and Site 1 as low risk. Site 3 (Northwestern Groundwater Plume), has VOC contamination affecting drinking water supplies or environmentally sensitive areas. A Short Term Measure (STM) is under construction to prevent migration of the VOC plume into the municipal water supply using a pump and treat system. Site 4 (BTEX Fuel Pump Area), has contaminated groundwater due to a release of gasoline from an Underground Storage Tank (UST).

The Agency for Toxic Substances and Disease Registry (ATSDR) has completed a Public Health Assessment. All sites were given a low priority.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - Bedford NWIRP was proposed for the National Priorities List (NPL) in June 1993 with a Hazard Ranking System (HRS) score of 50.00. NWIRP was placed on the NPL in May 1994. At Site 3 (Northwestern Groundwater Plume), groundwater is contaminated with a plume of VOCs detected at concentrations above drinking water standards. This plume was the primary reason for placement on the NPL.

LEGAL AGREEMENTS - A Federal Facility Agreement for NWIRP Bedford is proposed to be negotiated with the EPA Region 1in FY97.

PARTNERING - Bedford NWIRP maintains an informal partnering relationship with the Massachusetts Department of Environmental Protection and EPA. Meetings are held bi-monthly, and conference calls take place bi-weekly. Partnering ensures that regulatory impediments to achieving cleanup are reduced.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was established in FY89 and converted to a Restoration Advisory Board (RAB) in FY94. Bedford NWIRP notified TRC members and met with EPA to develop a plan of action for increasing public involvement in the RAB. Two RAB formation meetings were held in FY95. The first RAB formation meeting occurred in April 1995. The second RAB formation meeting was in September 1995. The first RAB meeting with the new members was held January 1996. Meetings are now held bi-monthly.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was completed in February 1989 and updated in May 1992. Another update will be done in the second half of FY97.

INFORMATION REPOSITORY - An Information Repository was established at the Bedford Public Library in FY89 to provide public access to the Administrative Record. A copy of the Administrative Record documents are maintained in the Information Repository.

HISTORICAL PROGRESS

FY84

Site 3 - The city of Bedford filed a "John Doe" lawsuit due to contamination from the organic solvent TCE detected in three public drinking water wells in the Hartwell Road Well Field which were installed in March 1983, but closed in 1984, and not to be confused with the private wells mentioned earlier. Even though the Navy was not named in this lawsuit, the Initial Assessment Study (IAS) recommended that 10 monitoring wells be placed around the perimeter of NWIRP Bedford to determine if the facility had any contaminants migrating off-base.

FY86

Sites 1 and 2 - An IAS, equivalent to a Preliminary Assessment (PA), was completed. The study concluded that neither of the sites posed an immediate threat to human health or the environment and recommended no further investigation for the two sites. However, these sites were determined to require further investigation in 1988 and were brought back into the program.

FY88

Sites 1-3 - A Remedial Investigation (RI) began.
Site 3 - A lawsuit was filed against the Navy and others as Potentially Responsible Parties (PRPs) for contamination of the Hartwell Road Well Field groundwater, which is the potable water source for Bedford. The contaminants detected included benzene, the organic solvents trichloroethylene (TCE) and tetrachloroethylene (PCE), trans-1,2-dichloroethylene and dissolved iron. This lawsuit was settled out of court in April 1993, with the Navy accepting limited liability. As a result of this suit, a third

BEDFORD NWIRP HISTORICAL PROGRESS

site was identified at NWIRP Bedford, the Northwestern Groundwater Plume. Because of the lawsuit, Sites 1 and 2 were determined to require further investigation also.

FY90

Sites 1-3 - The findings of the Phase I Remedial Investigation/Feasibility Study (RI/FS) were summarized in a Technical Memorandum (TM). Soil samples revealed ash and heavy metals at Site 1 (Old Incinerator Ash Disposal Areas) and petroleum products at Site 2 (Components Lab Fuel Oil Tank). Groundwater samples revealed chlorinated solvent contamination. The Phase I TM recommended additional assessment of facilities on NWIRP Bedford that are potential contributors of chlorinated hydrocarbons, further soil and surface water sampling, additional shallow and deep monitoring wells, and a soil gas survey to delineate the extent of contamination, locate sources, characterize migration, and to assist in locating additional soil borings and monitoring wells. The soil gas survey findings were reported in a Supplemental Investigation Report. The soil gas data was used to refine the location of RI Phase II soil and surface water sampling and monitoring wells in order to fill outstanding data gaps and to determine regional groundwater characteristics.

FY93

Site 4 (BTEX Fuel Pump Area) - Phase III RI/FS field studies identified a new site. Groundwater is contaminated due to a release of gasoline from an Underground Storage Tank (UST). This site was immediately included in the on-going RI/FS.

FY95

All Sites - The draft final RI Phase II Report was submitted for regulatory review in the first quarter of FY95.
The draft Baseline Human Health and Ecological Risk Assessment Work Plan was submitted in the first quarter of FY95 after subsequent revisions from February through June 1995 based on regulatory comments.
A Fate and Transport Groundwater Model was initiated in the third quarter of FY95 to support the Risk Assessment and the Groundwater Pump and Treat Remedial Action Contract (RAC) that was awarded in August 1995.
Site 3 - Construction began on a Remedial Action (RA) for the Northwestern Groundwater Plume. Under Massachusetts state law, a Short Term Measure (STM) may be implemented to prevent or eliminate an imminent hazard. The Navy proposed to construct a groundwater containment STM to prevent migration of VOCs north of Elm Brook. Design of a pump and treat system was completed. Additional monitoring wells are included in the design.

PROGRESS DURING FISCAL YEAR 1996

FY96

All Sites - The Baseline Human Health and Ecological Risk Assessment Work Plan was completed in FY96.
Fate And Transport Report for NWIRP was completed in FY96.

Site 2 - Planned for No Further Action (NFA) RODs, but only after the submission of the RI Phase II and Risk Assessment for both sites. NFA planned given concurrence by the EPA and the Massachusetts Department of Environmental Protection.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Site 3 - IRA will be completed in FY97.
Site 3 - Complete the Remedial Design.
Sites 1-3 - Completion of RI/FS is planned in FY97; and the final Human Health and Ecological Risk Assessment will be submitted in FY97.
Site 2 - No Further Action RODs will be completed.
FFA negotiation is planned for FY97.
CRP update is scheduled for FY97.
Site 2 - -Response Complete.

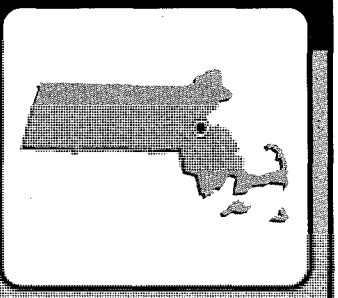
FY98

Site 3 - The pump and treat system is scheduled to begin operation in FY98 and operate until May 2004.
Site 3 - Complete the RA.
Site 4 - Complete the RI/FS and the Supplemental RI/FS fieldwork and report.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	3							
RI / FS			3	1				
RD			1		1			
RAC				1		1		
RAO								1
IRA			1(1)					
RC			1			1		2
Cumulative % RC	0%	0%	25%	25%	25%	50%	50%	100%

QUINCY NAVAL RESERVE CENTER
QUINCY, MASSACHUSETTS



Engineering Field Division/Activity: [illegible]
Major Claimant: COMNAVRESFOR
Site: 4 Acres
Funding to Date: $212,000
Estimated Funding to Complete: $0

Base Mission: Provides administrative and training facilities for Naval Reserve Units

Contaminants: POLs

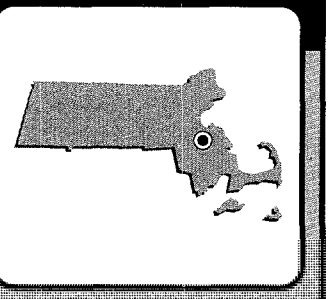
Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	0				
RCRA Corrective Action:	0	High:	0	Not Evaluated:	0
RCRA UST:	1	Medium:	0	Not Required:	1
Total Sites:	1	Low:	0		

Sites Response Complete: 1

PROGRESS AND PLANS

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP		1						
DES								
IMP								
IMO								
IRA								
RC		1						
Cumulative % RC	0%	100%	100%	100%	100%	100%	100%	100%

SOUTH WEYMOUTH NAVAL AIR STATION
WEYMOUTH, MASSACHUSETTS



Engineering Field Division/Activity: NORTHDIV

Major Claimant: COMNAVRESFOR

Size: 1,440 Acres

Funding to Date: $6,469,000

Estimated Funding to Complete: $10,000,000

Base Mission: Trains all assigned units for their mobilization assignment; provides administrative coordination and logistics support for Reserve Units; provides logistic support for the Marine Air Reserve Training Detachment South Weymouth.

Contaminants: POLs, solvents, acids, paint, metals, photographic chemicals, industrial wastes

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	7	High:	5	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	6	Not Required:	0
RCRA UST:	5	Low:	0		
Total Sites:	12				

NPL | BRAC IV

Sites Response Complete: 0

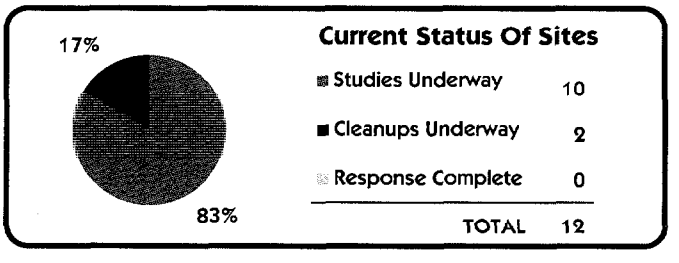
EXECUTIVE SUMMARY

South Weymouth Naval Air Station (NAS) is located in eastern Massachusetts, 15 miles south of downtown Boston and six miles from the Atlantic coast. South Weymouth NAS covers 2,100 acres and lies in both Plymouth and Norfolk counties. NAS trains units for mobilization and provides administrative coordination and logistics support for Reserve Units. Typical air station operations contributed petroleum hydrocarbons, solvents, acids, paints, metals, photographic chemicals, and industrial wastes to a landfill site, a tank storage area, a jet fuel tank farm, a disposal area, and a fire fighting training area. These contaminants affect groundwater, surface water, sediments, and soil. Current operations include pollution prevention technologies to prevent further contamination.

NAS is surrounded by the towns of Abington, Hingham, Rockland, and Weymouth. Large tracts of wetlands occur throughout these towns. The area is a mixture of urban development and forest. Just west of NAS, across Route 18, is the Weymouth Great Pond, a wetland that is the source of municipal water for NAS and much of the area around NAS. There are few wells in this area. There are three major aquifers in the vicinity of NAS: bedrock, glacial till, and stratified drift. Surface terrain is characterized by bedrock outcrops, swampy wetlands, and small stream channels.

Three Information Repositories were established in public libraries in Weymouth, Rockland, and Abington, Massachusetts in 1992. Copies of the documents in the Administrative Record can be found in the Information Repositories. A Technical Review Committee (TRC), established in FY92, was converted into a Restoration Advisory Board (RAB) in FY94. The first RAB meeting was held in FY95.

There are twelve IR sites, 7 CERCLA and 5 RCRA USTs. At the end of FY96, 10 sites were in the Study Phase and 2 sites have cleanup underway. CERCLA investigations and Record of Decisions (RODs) have been delayed due to minimal funding in FY93 and FY94.



Five Underground Storage Tanks (USTs) sites have been identified at NAS South Weymouth, UST 1 (Building 81 Tank), UST 2 (Squantum Gardens Tanks), UST 3 (NEX Service Station Tanks), and UST 4 (Bldg. 8 and 14). Site 6 (Fuel Tank Farm) has jet fuel is stored in five underground tanks. Site 6 is being addressed under Massachusetts Contingency Plan.

USTs 1 and 2 are being addressed under RCRA. In FY91, the waste oil tank from UST 1 was removed. Soil was removed from UST 1 (Building 81 Tank) in FY95. At UST 2 (Squantum Gardens Tanks), two removal actions are underway for completion in FY97. One is to remove tanks, and the other is to remove contaminated soil.

At IR Site 7 (Old Sewage Treatment Plant), two removal actions are complete. The first removed several compressed chlorine gas cylinders and pesticide containers, and the second removed contaminated soils and liquids.

Remedial Actions (RA) are planned for Site 1 (West Gate Landfill), Site 2 (Rubble Disposal Area), Site 3 (Small Landfill) awaiting results of the RI/FS. Possibly combining the RA's for the landfills will reduce time and costs for cleanup.

NAS South Weymouth was recommended for closure by the 1995 Base Realignment and Closure (BRAC) Commission. Operations are to be transferred to nearby Brunswick Naval Air Station, Maine. Aircraft, personnel, and equipment will be relocated to meet the goal of maintaining only the infrastructure necessary to support future force levels while not impeding operational flexibility for the deployment of that force. The closure of South Weymouth NAS will have a positive effect on local air quality because a source of Volatile Organic Compounds (VOCs) and Nitrous- oxide (NOX) emissions will be removed from an area that is in severe non-attainment for ozone.

The BRAC Cleanup Team was established in FY96 and the BRAC Cleanup Plan is planned for completion by November 1996. The Environmental Baseline Survey is also due in November 1996.

SOUTH WEYMOUTH NAS RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Large tracts of wetlands occur throughout the towns surrounding South Weymouth NAS. Just west of NAS across Route 18 is a large wetland containing the Weymouth Great Pond, a source of municipal water for much of the area, including NAS. The town of Weymouth provides water and sewer service for NAS. Bedrock under the station consists of fractured metamorphic and igneous rocks, which are overlain by a variety of unconsolidated glacial deposits of varying thickness. In the vicinity of NAS, water is obtained from three major aquifers: bedrock, glacial till, and stratified drift aquifers. The stratified drift aquifer, the principal aquifer in the area, also recharges many of the region's surface water sources. This aquifer is situated along the west side of South Weymouth NAS.

Surface water resources near NAS include Weymouth Great Pond, Whitman's Pond, Whortleberry Pond, Bouve Pond, and Bear Swamp. All of these water bodies can be a source of municipal water. The surface water and groundwater are interrelated. Lakes, pond, and stream flow are the main recharging elements of the aquifers. In some areas, an aquifer may recharge a stream or river.

NAS and its surrounding area is flat with a rolling surface. Elevation ranges from 12 to 180 feet above sea level. Most of the land slopes on NAS are grades of under five percent. The surface terrain is characterized by bedrock outcrops, swampy wetlands and small stream channels. The area surrounding NAS contains a mixture of both urban development and forest area. NAS topography was altered as a result of extensive filling in of low wetland areas and channeling of surface water during construction of the air fields, runways, and related facilities. Surface and storm drainage water from NAS enters a ditch system that flows into French Stream south of NAS in the town of Rockland. Depending on location, water will flow into one of two drainage basins: the South Coastal Drainage Basin to the south; and the Boston Harbor Drainage Basin to the north.

NATURAL RESOURCES - Large tracts of wetlands occur throughout the area around the NAS. There are no known federal or state endangered species in the area. An Environmental Baseline Survey is underway and will list endangered species, if any.

RISK - At the end of FY96, two sites had a high relative risk ranking, eight had a medium ranking, and two had a low ranking. Site 2, a disposal area ranked high due to potential contamination of surface water. For the purposes of extending Runway 26, culverts were placed in the middle of the Old Swamp River between 1959 and 1962, forming a land bridge. The runway approach lighting is located on top of the fill. Adjacent to the fill is the disposal area which received building debris and possibly transformers containing the chemical additive PCB from on-site sources. It is unknown what material was used for the fill. Underground Storage Tank (UST) 2, a fuel oil tank, ranked high due to soil contamination. The Agency for Toxic Substances and Disease Registry has done a Public Health Assessment as required for NPL installations. It has been determined that NAS is a low priority installation.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - NAS South Weymouth was proposed for the National Priorities List (NPL) in June 1993 and was placed on the NPL in May 1994 with a Hazard Ranking System (HRS) score of 50.00 due to groundwater contamination.

LEGAL AGREEMENTS - Negotiations for a Federal Facilities Agreement (FFA) were planned to begin the second half of FY96, at this time, the negotiations are awaiting scheduling.

PARTNERING - Informal partnering with regulatory agencies occurs at bi-monthly meetings.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was established in 1992 to increase communication between the installation and the regulatory agencies and facilitate decision-making regarding the cleanup process. In FY94, the TRC was converted into a Restoration Advisory Board (RAB). The first RAB meeting was held in FY95. The RAB has twenty members who meet monthly.

COMMUNITY RELATIONS PLAN - A Community Relations Plan was developed in 1993. An updated plan is scheduled for completion in FY97.

INFORMATION REPOSITORY - The Administrative Record, which is the official file of related documents, and three Information Repositories were established 1992. They are located at the following public libraries:

Tufts Library
46 Broad Street
Weymouth, MA 02188
617-337-1402

Rockland Memorial Library
366 Union Street
Rockland, MA 02370
617-878-1236

Wales Public Library
33 Randolph Street
Abington, MA 02351
617-878-1239

BASE REALIGNMENT AND CLOSURE

BRAC - NAS South Weymouth was recommended for closure by the 1995 Base Realignment and Closure (BRAC) Commission. Operations are to be transferred to nearby Brunswick Naval Air Station, Maine. Aircraft, personnel, and equipment will be relocated to meet the goal of maintaining only the infrastructure necessary to support future force levels while not impeding operational flexibility for the deployment of that force. The closure of South Weymouth NAS will have a positive effect on local air quality because a source of Volatile Organic Compound (VOC) and Nitrous-oxide (NOX) emissions will be removed from an area that is in severe non-attainment for ozone.

BRAC CLEANUP TEAM - The BRAC Cleanup Team (BCT) was established in FY96.

DOCUMENTS - The BRAC Cleanup Plan (BCP) is due November 1996. A Phase I Environmental Baseline Survey (EBS) is underway.

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
0 acres	0 acres	0 acres	0 acres	0 acres	0 acres	1,442 acres

LEASE/TRANSFER - There are 2,100 acres available for disposal. Currently, no acres are leased and no acres are environmentally available for transfer.

FAST TRACK INITIATIVES - There is a plan to combine Remedial Actions for three landfills to save time and costs for cleanup.

SOUTH WEYMOUTH NAS
HISTORICAL PROGRESS

FY88

Sites 1-5 - A Preliminary Assessment (PA) was completed in March 1988. All five sites were recommended for further study under a Site Inspection (SI).

FY89

Sites 6-8 - Three new sites were identified. Petroleum hydrocarbons and solvents leaked at Site 6 (Fuel Tank Farm); industrial wastes were discharged to Site 7 (Old Sewage Treatment Plant); and petroleum hydrocarbons and solvent leaked at Site 8 (Abandoned Bladder Tank Storage Area).
Sites 1-8 - An SI was begun.

FY91

Sites 1-8 - The SI Report found that none of the sites presented an imminent hazard to human health or the environment. The SI Report found that six of the eight sites (Sites 1-4, 6 and 8) investigated contained levels of contaminants sufficient to conduct an RI/FS at those sites. For Sites 5 and 7, the SI Report recommended limited media sampling as a Supplemental SI (SSI) with No Further Action (NFA) expected to be required. The SSI will be conducted concurrently with the RI for the rest of the sites. If required, after the results of the SSI, Sites 5 and 7 will enter the RI/FS phase.
UST 1 - The waste oil tank at building 81 was removed.

FY92

Site 7 - A removal action was conducted to remove several compressed chlorine gas cylinders and pesticide containers which were discovered during demolition of a secondary containment area at the Old Sewage Treatment Plant.

FY93

Site 7 - A second removal action was conducted to remove contaminated soils and liquids.
Sites 1-8 - The RI/FS Work Plan for Sites 1-4, 6 and 8 and SSI Work Plan for Sites 5 and 7 was completed in draft form in September 1993.
UST 1 - An initial investigation was completed.

FY94

Site 6 - Re-classifying of this site from a CERCLA site to a MCP site under the Navy's UST Program.
IR Environmental Consultants were changed and the RI Work Plan was partially re-written based on NAS S Weymouth becoming a Superfund Site.

FY95

All Sites - An Environmental Baseline Survey (EBS) Phase I contract was awarded.
UST 1 - Soil removal identified additional contamination.
Sites 1-5, 7 and 8 - RI Work Plan submitted to EPA and approved. A wetland delineation and survey were conducted as part of the RI field program.
UST 1 - Completed CAP.

PROGRESS DURING FISCAL YEAR 1996

FY96

All Sites - Phase I of the EBS is underway. A BRAC Cleanup Team will be formed and develop a BRAC Cleanup Plan (BCP).

UST 4 - Completed SA.
UST 2 - Completed Corrective Action Plan and two IRAs. RI Field Program was completed and the report writing is underway.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

All Sites - Phase I EBS will be completed in early FY97.
All Sites - Phase II of the EBS will begin.
Sites 2 and 5 - RI/FS completion is planned.
Site 5 - Response Complete is expected.
UST 1, 3 and 6 - Corrective Action Plan is to be completed.
UST 3, 4 - Design is scheduled for completion.
UST 2-4 - Corrective Action (IMP) will be initiated and completed.
UST 6 - An IRA is to be accomplished.
UST 2- 4 - Response Complete planned.
Sites 1-5, 7 and 8 - The draft RI/FS report is expected to be completed in December 1996.
Feasibility Study for Sites 5, 7, 8 will begin.
Record of Decision for Sites 5, 7, 8 are planned.
Sites 1-4 - Phase II Remedial Investigation Work Plan will begin.
Update Community Relations Plan.

FY98

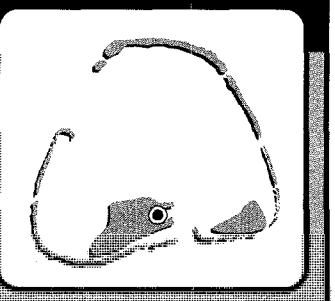
All Sites - Phase II EBS will continue.
Sites 1, 3, 4, 7 and 8 - RI/FS will be completed.
Site 7 - Response Complete is expected.
Site 1 and UST 6 - Corrective Action (IMP) are to be accomplished.
Site 1- Response Complete expected.

SOUTH WEYMOUTH NAS
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	7							
RI / FS			2	5				
RD					4		1	
RAC						4		1
RAO								1
IRA	1(2)							
RC			1	1		3		2
Cumulative % RC	0%	0%	14%	29%	29%	71%	71%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	2	1						
CAP		1	3					
DES			2					
IMP			3	2				
IMO						1		
IRA	1(1)	1(2)	1(1)					
RC			3	1		1		
Cumulative % RC	0%	0%	60%	80%	80%	100%	100%	100%

Midway Naval Air Facility
Midway Island



Engineering Field Division/Activity: PACDIV

Major Claimant: COMNAVFACENGCOM

Size: 1,535 Acres

Funding to Date: $14,148,000

Estimated Funding to Complete: $400,000

Base Mission: Provided aviation support services, currently inactive

Contaminants: Heavy metals, pesticides

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	39				
RCRA Corrective Action:	0	High:	3	Not Evaluated:	5
RCRA UST:	0	Medium:	7	Not Required:	16
Total Sites:	39	Low:	8		

BRAC III

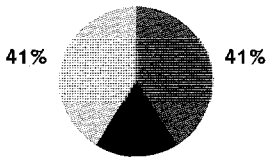
Sites Response Complete: 16

EXECUTIVE SUMMARY

The Naval Air Facility (NAF) Midway is located on an atoll 1,100 miles northwest of Oahu, Hawaii. The Midway Islands are at the northwestern end of the Hawaiian archipelago but are not part of the state of Hawaii. Midway consists of two main islands, Sand Island and Eastern Island, and several smaller islets, enclosed within a coral reef. The islands have been under the jurisdiction and control of the Navy since 1903. In 1940, the Navy established a Naval Station at Midway. The islands became famous during World War II through a decisive battle between the United States and Japan in 1942. The islands were virtually abandoned after World War II. In 1957, the airfield facilities on Sand Island were expanded to create a Pacific airborne early warning base. In 1978, the Naval Station was redesignated as the Naval Air Facility. In early 1996, the islands were transferred to the U.S. Fish and Wildlife Service for use as a National Wildlife Refuge. The Navy operated and maintained facilities and provided services and materials to support aviation activities. Operations Included aircraft and vehicle maintenance, communications, dry cleaning, pest control, and materials storage and disposal. Contaminated sites identified at Midway NAF consist of landfills, disposal areas, storage areas, a former power plant, transformers, a rifle range, the inner harbor, and pesticide spills areas.

Midway is surrounded by the Pacific Ocean and enjoys a tropical climate. There are no active streams on either Sand Island or Eastern Island. The Midway Atoll is designated as a National Wildlife Refuge. As such, there are no urban areas or urban populations in the island chain. While operating as a Naval Air Facility, only military personnel were resident on the islands. Now that the U.S. Fish and Wildlife Service owns the property, only their personnel and occasional tourist groups are present. Contaminant migration through surface water to the Pacific Ocean is a concern. Also, groundwater contamination of well water is possible but not likely.

The main source of contamination is DDT, DDE, and PCB in soils and marine debris potentially containing hazardous substances (i.e. drums, hydraulic equipment, gas cylinders, engines).



Current Status Of Sites

Studies Underway	16
Cleanups Underway	7
Response Complete	16
TOTAL	39

Migration pathway of the contamination is surface and subsurface soil, sediment exposure, and surface water exposure.

Receptor(s) most likely to be affected by contamination include migratory birds, the endangered Hawaiian Monk Seal and the threatened Green Sea Turtle.

An Information Repository was established at University of Hawaii at Manoa in April 1995. Due to the remote location and sparse population of Midway, there are no local community issues. NAF Midway Island does not have a RAB due to the unique situation of having no state regulatory agencies or affected community.

Of the 39 sites identified, 16 require No Further Action (NFA) and are considered Response Complete. Sixteen are in the study phase. Seven are in the cleanup phase. There are 39 IRP sites.

Removal actions complete:

There are no restoration sites identified to remove lead based paint or lead based in the soil. LBP was abated with the BRAC Construction building demolition project. LBP was considered part of the demolition debris and no special treatment was required. LBP in soil was only removed to prevent nesting migratory birds from ingesting paint chips. As part of the bldg. demolition project, 6 inches of soil was scraped around the immediate perimeter of the buildings. The area to be scraped was determined per building by the OIC and the US Fish and Wildlife Refuge Manager. To date, majority of the buildings were demolished and minimal surface soil required scraping. There are IR sites where contaminated soil was removed for pesticides/PCB.

The Draft Site Inspection Report was completed in 1995. Of the 100 areas of concern, 39 were selected for investigation under the Installation Restoration Program (IRP). The BCT identified 19 sites as requiring No Further Action (NFA). RI will be conducted at 7 sites. Cleanup will include removal and disposal of PCB equipment, drums, debris, surface soil, and placement of caps on landfills. All IRP actions will be completed by June 1997, except for long term monitoring of the landfills.

Close partnering between the Project Team members comprised of the USF&WS, NOAA, NMFS, EPA Region IX and the Navy produced significant cost savings through cooperative decision making regarding the Navy's

MIDWAY NAF
EXECUTIVE SUMMARY

cleanup effort. Collectively, the Project Team members decided to select solidification of PCB/DDT/DDE contaminated soil on-island vice off-island shipment and disposal which has saved the Navy approximately $2 million.

BRAC - Midway NAF was recommended for closure by the 1993 Base Realignment and Closure (BRAC) commission. It was closed as a Naval Air Facility in 1993 and transferred to the U.S. Fish and Wildlife Service (USF&WS) in 1996. The USF&WS will maintain the property as a National Wildlife Refuge.

RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY -The Midway coral atoll was formed from an active volcano. Soils are very fine carbonate sands. The main source of fresh water on Sand Island is collected in a rainwater catchment area, chemically treated and filtered then stored for distribution. A shallow, brackish aquifer exists but no longer contributes to the drinking water supply. Groundwater is expected to be in dynamic equilibrium with the surrounding sea water. If water is pumped from the aquifer at a rate greater than the recharge rate, saltwater intrusion will occur. Groundwater levels at Midway are not expected to be more than several feet above mean sea level near the center of the islands. Water levels are expected to be lower during periods of low rainfall and heavy well pumping. Seven of thirteen groundwater production wells on Sand Island are active. These wells produce brackish water which is blended with fresh water during periods of low rainfall. The wells obtain water from the shallow brackish groundwater lens. Surface water is limited to the Pacific Ocean and the lagoon area. There are no active streams on either Sand Island or Eastern Island. The sites identified at Midway NAF could contaminate the shallow aquifer. Runoff from the sites could migrate to the Pacific Ocean. There is a potential for direct contact by humans or wildlife to contaminated soil.

NATURAL RESOURCES - The Midway Islands are designated as a National Wildlife Refuge. Most animal species found here are protected. Marine waters of Midway Atoll provide habitat for a rich variety of fish, seals, turtles and birds. Two endangered species identified at Midway are the Hawaiian Monk Seal and the Short Tailed Albatross. The Green Sea Turtle has been identified at Midway and is a threatened species.

The nesting albatross found on Midway Island are protected under the Migratory Bird Treaty Act. The nesting albatross are found to be at risk due to dermal and inhalation exposure to PCB, DDT and DDE contaminated soils at various sites. Removal Actions been completed.

RISK - A baseline Ecological risk assessment is currently being performed at the Bulky Waste Landfill. Results are expected in the 4th quarter of this fiscal year. A screening human health risk assessment has been performed and shows no risk to present and future inhabitants of Midway Island. The Relative Risk Site Evaluation Model ranked 3 sites as high risk, 7 sites as medium risk, and 8 sites as low risk. 5 sites were not ranked and 16 are not required. The medium ranked sites were so ranked because of the impact to protected wildlife caused by the elevated levels of DDT, DDE and PCB in soil and it's migratory potential to the ocean and marine life and exposure pathways to terrestrial life. An ATSDR Public Health Assessment has not been performed.

REGULATORY ISSUES

LEGAL AGREEMENTS - Midway NAF is not listed on the NPL. Site cleanup is following the legal requirements of CERCLA, RCRA, the Endangered Species Act, the Migratory Bird Treaty Act, the National Environmental Policy Act, and the Toxic Substances Control Act.

Interagency agreements: 1) A Transfer Memorandum of Understanding (MOU) with the Department of Interior United States Fish and Wildlife Service (USF&WS) has been developed. 2) Phase Plan with the Department of Interior United States Fish and Wildlife Service (USF&WS) has been developed.

PARTNERING - A Project Team includes the USN, USF&WS, NMFS, NOAA and EPA Region IX. The BRAC Cleanup Team (BCT) includes the USN and EPA Region IX.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - Midway NAF does not have a Restoration Advisory Board (RAB) due to its unique situation of having no state regulatory agencies or affected community. However, all stakeholders are participating as members of the BRAC Cleanup Team (BCT).

COMMUNITY RELATIONS PLAN - There is no Community Relations Plan (CRP), since there is no public on Midway Island.

INFORMATION REPOSITORY - An information Repository was developed. In April 1995 an information repository was located at the University of Hawaii at Manoa, Hamilton Library, Pacific Collection , 2550 The Mall, Honolulu, Hawaii 96822.

BASE REALIGNMENT AND CLOSURE

BRAC - In 1993, Midway NAF was recommended for closure by the Base Realignment and Closure (BRAC) commission. Navy operations ceased in September 1993. Midway was transferred to the U.S. Fish and Wildlife Service (USF&WS) on 22 May 1996. About 8% of the property is currently undergoing remediation.

Midway Island was placed in caretaker status under BRAC III. A BRAC Cleanup Team (BCT) was formed in 1993. The BCT has representatives from the Navy and EPA Region IX. The BCT meets quarterly. The BCT has set economical as well as protective cleanup standards. Likewise has determined effective and economical cleanup and disposal methods.

DOCUMENTS - *In February 1995, the BRAC Cleanup Plan,* Update #1, was published.

The final Environmental Baseline Survey was completed in March 1994 and classified the property as follows:

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
2 acres	0 acres	1,350 acres	31 acres	123 acres	22 acres	7 acres

REUSE - The property was transferred on 22 May 1996 to the U.S. Fish and Wildlife Service for use as a National Wildlife Refuge.

FAST TRACK INITIATIVES - The Midway NAF cleanup includes fast track initiatives such as hot spot removals, overlapping phases, improved contract procedures, a team approach, and innovative technologies (i.e. stabilization of contaminated soil and disposal on-island which saved the Navy millions of dollars in transportation and disposal cost.)

MIDWAY NAF
HISTORICAL PROGRESS

FY84

Site 1 - The landfill was leveled to comply with Navy flight regulations. The piled-up waste was encroaching on the required 750-foot-from-center runway clearance.

FY88

Sites 1-3 - A Preliminary Assessment (PA) identified these sites and recommended further study for all three.

FY91

Sites 1-8 and 10-5 - Identified in a second PA.
Sites 9 and 16 - These sites were discovered during the Environmental Compliance Evaluation (ECE) subsequent to the 1991 PA.

FY93

Initiated all UST Tank removals

FY94

Sites 18, 20-25, 33, 34, 40, 42, 44, 47, 49-56, 59, 93 and 94 - These sites were identified during the Environmental Baseline Survey (EBS).

FY95

Sites 9, 10, 12, 13, 20, 24, 34, 42 and 53 - Studied.
Initiated Interim Removal Action to Remediate PCB/DDT/DDE and contaminated soils.
Sites 1, 2, 8 and 25 - Initiated Interim Removal Action to remove potentially leaking marine debris items from the ocean floor.
UST Tanks - Completed all tank removals and initiated soil/GW remediation

PROGRESS DURING FISCAL YEAR 1996

FY96

Site 3 - completed IRA.
Sites 1, 2, 8 and 99 - Initiated Marine Debris Removal Action.

Sites 1-3, 7, 11, 22, 23, 33, 44, 45, 47, 49, 50, 51, 52, 54, 64, 65, 97, 98 and 100 - Completed the PA/SI.
Sites 11, 22, 23, 45, 47, 49, 50, 51, 52, 54, 64, 65, 98, 100 and UST 1 - Response Completed (RC).

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 1, 2, 4, 8, 12, 13, 20, 24, 25, 34 and 42 - Will complete the PA/SI.
Sites 9, 10, 12, 13, 20, 24, 34 and 42 - Removal action completed.
Sites 2, 3 and 4 - The capping will be completed.
Sites 7, 8, 11 and 97 - Drum removal will be completed by the Midway Island BOS (PMC).
Sites 1, 2, 8, 9, 13, 53 and 99 - The RI/FS will be completed.
Sites 1, 2, 8 and 99 - Removal Actions will be completed. Marine debris removal and capping of out-falls will be completed. Soil Removal will be underway, expected completion FY97.
Sites 1-5, 7, 8, 12-16, 20, 24, 25, 33, 34, 42, 44, 53, 97 and 99 - Will have Response Complete (RC).
Site 2 - Initiate Long Term Monitoring of landfill.
UST - GW/Soil remedial actions will be completed

FY98

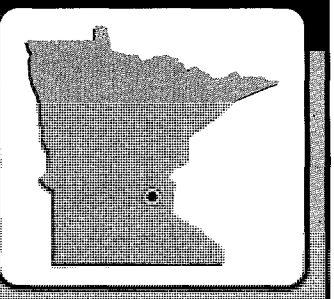
All cleanup actions are expected to be completed during FY97, so no action is planned for FY98.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	7	21	11					
RI / FS			7					
RD								
RAC								
RAO								
IRA		1(1)	15(16)					1(1)
RC	1	15	22					1
Cumulative % RC	3%	41%	97%	97%	97%	97%	97%	100%

FRIDLEY NAVAL INDUSTRIAL RESERVE ORNANCE PLANT

FRIDLEY, MINNESOTA



Engineering Field Division/Activity:

Major Claimant:

Size: 83 Acres

Funding to Date:

Estimated Funding to Complete:

Base Mission: Government-Owned Contractor-Operated (GOCO) facility that designs and manufactures advanced weapons systems

Contaminants: VOCs, volatile organic compounds

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	5	High:	3	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	0	Not Required:	2
RCRA UST:	0	Low:	0		
Total Sites:	5				

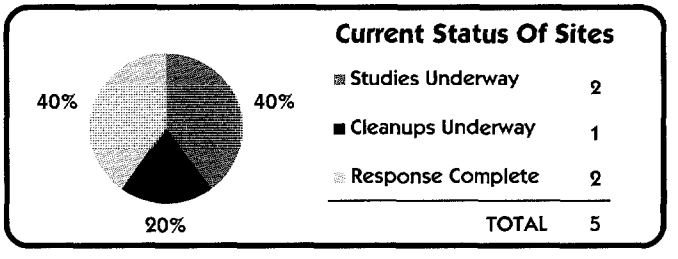
NPL

Sites Response Complete: 2

EXECUTIVE SUMMARY

The Fridley Naval Industrial Reserve Ordnance Plant (NIROP) covers 83 acres in an industrial, commercial and residential area in Fridley, Anoka County, Minnesota. The Mississippi River is one-quarter mile to the west. The northern portion of Fridley NIROP is a Government-Owned/ Contractor Operated (GOCO) facility. The operator is a private company, the United Defense LP. The remainder of the facility, a 50 acre site bordering on the south, is independently owned by United Defense. The Fridley NIROP plant has produced advanced weapons systems since it was constructed in 1940. Typical industrial operations contributed to the contaminated soil and groundwater at the facility. Site types at the installation include: waste disposal trenches, old sanitary sewer lines, a foundry core butt disposal area and the plant-wide groundwater drainage system. Primary wastes and contaminants associated with these site types include petroleum products, solvents, plating sludge, construction debris, foundry sands and solvents, including acetone, organic solvents, dichloroethylene (DCE), trichloroethylene (TCE), methylene chloride, and heavy metal wastes, Current operations include pollution prevention technologies to prevent further contamination. The driving factor for placing Fridley NIROP on the National Priorities List (NPL) was TCE contamination of the plant-wide groundwater drainage system. A Federal Facility Agreement (FFA) between the Department of the Navy, EPA and the State of Minnesota was signed on 23 March 1991.

Since the soils occurring at the NIROP are highly permeable practically all the precipitation which falls on the ground surface either soaks into the ground or evaporates. Underlying the soils, the potable water in aquifers is susceptible to contamination. There are four aquifers which lie under the NIROP facility. Although there is a small potential for migration of surface water off the facility, there is a concern about the public park adjacent to the property. The major concern for contamination migration from the NIROP facility is in the groundwater. The plant-wide groundwater drainage system migrates into the aquifers, which discharge into the Mississippi River, which supplies the potable water for Minneapolis. The water supply intake for Minneapolis is located approximately one mile downstream from NIROP Fridley. There is no potential threat to the ecosystems or endangered species in the area.



The Technical Review Committee (TRC) was converted to a Restoration Advisory Board (RAB) in April 1995. The original Community Relations Plan (CRP), finalized in 1991, is currently being updated and expected to be completed in FY97. In FY95, the Administrative Record was compiled and an Information Repository was established at the NIROP plant office.

An Initial Assessment Study (IAS), equivalent to Preliminary Assessment (PA), was completed for four sites (Sites 1-4) in FY83. Groundwater investigations conducted between FY83 and FY88, identified trichloroethene (TCE) contamination in the groundwater. The fifth and final site at Fridley, established with a Remedial Investigation and Feasibility Study (RI/FS) in FY91, is Site 5, the plant-wide groundwater.

The five sites have been divided into three Operable Units (OUs). OU 1, consists of Site 5, covers plant-wide groundwater. OU 2, made up of Sites 1, 2 and 4, covers all source areas outside the plant buildings. OU 3, which consists of Site 3, is the source areas beneath the factory building. Sites 1 and 2 are currently RC.

Currently, the overriding site of interest at Fridley NIROP is Site 5 (Plant Wide Groundwater). This site is not a single point site, but the groundwater drainage system for the entire installation. The interest in this site comes from the fact that the discharge from this site enters the Mississippi River 5,000 feet upstream of Minneapolis' drinking water plant. The contamination plume discovered on this site has been contained. Initial containment was from a pump-and-treat system. A Record of Decision (ROD) was signed in September 1990 for a selected RA which will provide hydraulic containment and recovery of all future migration of contaminated groundwater. The ROD for Site 5 is to be implemented in two phases. Phase one is in place, groundwater is being discharged into the public water treatment plant. Phase two will be the installation of an on-site groundwater treatment system which will allow the treated groundwater to be safely discharged directly into the Mississippi River. A National Pollutant Discharge Elimination System (NPDES) permit for the groundwater treatment plant was issued in January 1996. RI/FS activities are complete for the groundwater OU. The RD was completed in FY96. RA will be complete in FY97 and Long Term Operations (LTO) will begin.

FRIDLEY NIROP RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - The NIROP is located one-quarter mile east of the Mississippi River on a broad, flat out wash terrace. The installation occupies 82.61 acres, most of which are covered with buildings or pavement. The soils occurring at the installation consist of unconsolidated deposits of highly permeable, stratified sand and gravel sands, conducive to the downward migration of contaminants. Practically all the precipitation which falls on the ground surface either soaks into the ground or evaporates. There is essentially no runoff due to flat topography and highly permeable soils. Precipitation flows to the water table quickly then through the upper aquifer into the Mississippi River. Underlying these sands, the potable water in aquifers is susceptible to contamination. There are four aquifers which lie under the NIROP facility. Two of these are confined aquifers and neither is used as a water supply for the area. The other two, the Prarie du Chien/Jordan aquifer and the Quaternary aquifer, are of concern. The Quaternary is more shallow and more easily contaminated and is seldom used as a source of water supply. The deeper aquifer supplies the city of Fridley's well but is only used as a summer demand well.

NATURAL RESOURCES - Although there is a small potential for migration of surface water off the facility, where there is a public park adjacent to the property, between the plant and the river, the major concern for contamination migration from the NIROP facility is in the groundwater. The plant-wide drainage system enters the groundwater aquifers and discharge into the Mississippi River, which supplies the potable water for Minneapolis. The water supply intake for Minneapolis is located approximately one mile downstream from NIROP Fridley. There is no potential threat to ecosystems or endangered species in the area.

RISK - A Baseline Human Health Risk Assessment (HHRA), based on EPA guidance, was performed for OU 2 (Sites 1, 2 and 4) in September 1993. The HHRA found the human health risk was within the permissible range for current land usage. The land would not be appropriate for future residential use. An HHRA for Site 3 is planned for FY97.

The Navy completed a Relative Risk Ranking for the installation in FY95. All three of the active Fridley sites received a "high" risk ranking The two sites which are concerned with the base-wide soils (Sites 3 and 4) received a high risk for soil. The majority of the land at the Fridley area is covered by buildings. Site 4 is a disposal trench in the area between factory buildings, where drums and hazardous wastes have been buried. The other soil site (Site 3) is the area beneath the factory building, where cleaning solvents, metal and oils are suspected. The fifth site (Site 5) covers all the groundwater on the Navy property. The reason for the high groundwater ranking is a contaminated plume reaching from the property line to the Mississippi River, near the intake of the potable water for the city of Minneapolis.

The Agency for Toxic Substance and Disease Register (ATSDR) conducted a public health assessment and released its health consultation findings in May 1995. The findings are that the release of treated groundwater (after construction of the water treatment plant) is expected to have no impact on human health.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - Based on an HRS score of 30.83, the installation was proposed for the National Priorities List (NPL) in July 1989 and listed in November 1989. The driving factor for placing Fridley NIROP on the NPL was TCE contamination of the plant-wide groundwater drainage system which emptied into the Mississippi River upstream from Minneapolis' drinking water plant. The contamination plume has since been contained. Initial containment was through a pump-and-treat system, but the groundwater from Fridley is no longer being pre-treated, it is now discharged directly into a publicly owned sewage plant. As a long term solution, a water treatment plant will be constructed and the water will then be safe to discharge directly into the river.

LEGAL AGREEMENTS - A Federal Facility Agreement (FFA) between the Department of the Navy, EPA, and the State of Minnesota was signed on 23 March 1991. A Site Management Plan (SMP) is now under development. The FFA will not need to be re-negotiated once the SMP is complete and in use.

PARTNERING - The Navy personnel, Federal and State regulators maintain open communications through twice monthly scheduled conference calls. The EPA, the MPCA, and the Navy have recently started partnering.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - The Technical Review Committee (TRC) was converted to a Restoration Advisory Board (RAB) in April 1995. The members of the RAB include EPA Region V; Southern Division, Naval Facilities Engineering Command; Minnesota Pollution Control Agency; City of Fridley; United Defense, MWCC; NIROP Fridley, and community members. There has been very little community interest or involvement. A City of Fridley director was appointed the community co-chair of the RAB. The RAB meetings are held quarterly at the NIROP Fridley plant. There is a local government charter in place. To date, the RAB meeting agendas have consisted of introducing the team members and presenting them with Installation Restoration (IR) training so that they will soon be able to review work plans.

COMMUNITY RELATIONS PLAN - The original Community Relations Plan (CRP), finalized in 1991, is currently being updated and will be completed in FY97.

INFORMATION REPOSITORY - In FY95, the Administrative Record was compiled and an Information Repository established at the NIROP plant office to make the IR documents available for public viewing.

FRIDLEY NIROP HISTORICAL PROGRESS

FY83

Sites 1-4 - An Initial Assessment Study (IAS), equivalent to Preliminary Assessment (PA), was completed for four CERCLA sites.
Site 1 - Two Interim Remedial Actions (IRAs) were begun in FY83 and completed in FY84. One was for the removal of drums, the other for the removal of contaminated soils.

FY86

Sites 1, 2 and 4 - A Remedial Investigation/Feasibility Study (RI/FS) began.

FY88

Site 5 - RI/FS activities for groundwater cleanup were started.

FY90

Sites 1, 2 and 5 - An IRA, for a groundwater extraction and treatment system began operation. The treatment system will operate until FY99. (The system covers all groundwater as part of OU1 and is placed under Site 5)
Site 5 - A Record of Decision (ROD) was signed in September 1990 for a selected Remedial Action (RA) which will provide hydraulic containment and recovery of all future migration of contaminated groundwater.

FY91

Site 2 - Two IRAs started and were completed in FY92. One was for the removal of drums, the other for the removal of contaminated soils.

FY92

Sites 1, 2 and 4 - Remedial Investigation (RI) activities for plant-wide soil contamination were initiated. Two IRAs begun in FY91 were completed.

FY93

Sites 1, 2 and 4 - RI activities for soil contamination were complete and plant-wide FS activities for soils were started.
Site 5 - In order to minimize the risk to human health and the environment, a pump-and-treat system was installed to confine migration of the contaminated plume (Site 5) and all groundwater at NIROP Fridley. Currently, the effluent is discharged into the public sewer system. It was installed as part of an IRA in FY90 and will run through FY97, or until the new permanent groundwater treatment plant is operational, which will discharge the effluent into the Mississippi River.

FY94

Sites 1, 2 and 4 - Completed FS activities for soils.

FY95

The Administrative Record was compiled and an Information Repository established.
RAB was established.
Sites 1, 2, 4 and 5 - A Baseline for Risk Assessment for Human Health was performed.
Site 1 and 2 - RI/FS was completed. Sites are now RC.
Site 5 - Remedial Design (RD) for the plant-based water treatment plant was begun.

PROGRESS DURING FISCAL YEAR 1996

FY96

A NPDES permit to discharge remediated water was obtained. The EPA, MPCA and Navy have started formal partnering. Started seismic imaging to better define the confining layer and understand the hydrogeological conditions at this complex.
CRP was being updated. The completion date slipped to FY97, while issues concerning the NPDES permit and beginning formal partnering were decided.
Site 3 - Submitted RI draft plan. RI/FS continues.
Site 4 - RI/FS was completed. An IRA for drum removals was begun.
Site 5 - Completed the RD.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

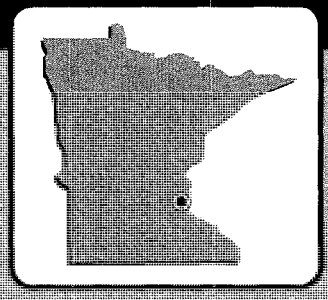
Site 3 - An HHRA will be accomplished in FY97.
Updated CRP will be completed.
Site 3 - RI/FS field work will begin.
Site 4 - IRA for drum removal will be complete.
Site 5 - RI/FS will be complete. The RA will be complete, which is to design and construct permanent treatment plant for water discharge into the Mississippi River. Begin LTO FY98.
Site 5 - LTO continues.
Site 3 - RI/FS continues.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	4							
RI / FS	2	1	1		1			
RD		1			1		1	
RAC			1				1	1
RAO								2
IRA	2(4)		1(1)		1(1)			
RC	2							3
Cumulative % RC	40%	40%	40%	40%	40%	40%	40%	100%

ST. PAUL NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT

ST. PAUL, MINNESOTA



Engineering Field Division/Activity: SOUTHDIV

Major Claimant: COMNAVSEASYSCOM

Size: 16 Acres

Funding to Date: $50,000

Estimated Funding to Complete: $0

Base Mission: Provides ammunition combat systems testing and support

Contaminants: Volatile organic compounds

Number of Sites:

CERCLA:	2
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	2

Relative Risk Ranking of Sites:

High:	0	Not Evaluated:	0
Medium:	0	Not Required:	2
Low:	0		

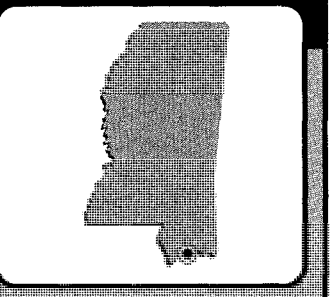
Sites Response Complete: 2

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	2							
RI / FS								
RD								
RAC								
RAO								
IRA								
RC	2							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

GULFPORT NAVAL CONSTRUCTION BATTALLION CENTER

GULFPORT, MISSISSIPPI



Engineering Field Division/Activity: SOUTHDIV

Major Claimant: COMNAVFACENGCOM

Size: 4,471 Acres

Funding to Date: $8,257,000

Estimated Funding to Complete: $19,240,000

Base Mission: Provides construction force support and training of construction battalion personnel.

Contaminants: Refuse, refuse with hazardous waste, heavy metals, pcb, pesticides, chemical agents, POLs, fuel, metal, paint, solvents, industrial liquid waste.

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

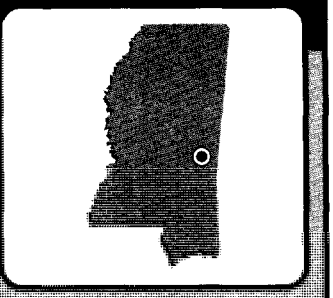
Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	0							
RI / FS								9
RD								8
RAC								8
RAO								
IRA	1(3)			1(1)		1(1)	1(1)	7(13)
RC								9
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

MERIDIAN NAVAL AIR STATION

MERIDIAN, MISSISSIPPI



Engineering Field Division/Activity: SOUTHDIV
Major Claimant: CNET
Size: 8,000 Acres
Funding to Date: $6,051,000
Estimated Funding to Complete: $13,475,000

Base Mission: Maintains and operates facilities and provides material to support operations of aviation activities

Contaminants: Solvents, metals, solvents, PCBs, chlorinated solvents, non-chlorinated solvents, POLs, pesticides, industrial sludge, inert materials, heavy metals

Number of Sites:

CERCLA:	5
RCRA Corrective Action:	0
RCRA UST:	1
Total Sites:	7

Relative Risk Ranking of Sites:

High:	5	Not Evaluated:	0
Medium:	0	Not Required:	0
Low:	0		

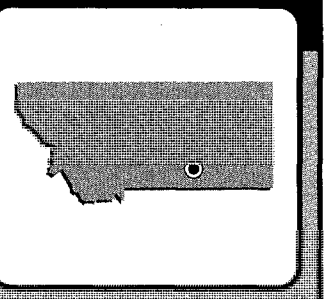
Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI		6						
RI / FS						1	3	2
RD								6
RAC								5
RAO								
IRA			3(3)					2(2)
RC								6
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP	1							
DES								
IMP			1					
IMO				1				
IRA								
RC				1				
Cumulative % RC	0%	0%	0%	100%	100%	100%	100%	100%

BILLINGS NAVAL AND MARINE CORPS RESERVE CENTER
BILLINGS, MONTANA



Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible]

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

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

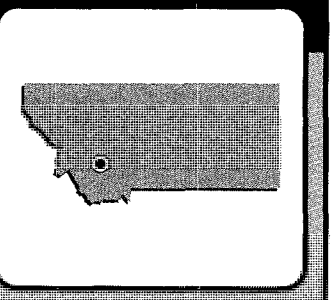
Sites Response Complete: 1

PROGRESS AND PLANS

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

BUTTE NAVAL RESERVE FACILITY

BUTTE, MONTANA



Engineering Field Division/Activity: [illegible]

Major Claimant: COMNAVRESFOR

Size: 30,000 square feet building, land leased

Funding to Date: $50,000

Estimated Funding to Complete: $0

Base Mission: Trains, administers and mobilizes Naval Reserve Units

Contaminants: Asbestos, lead paint

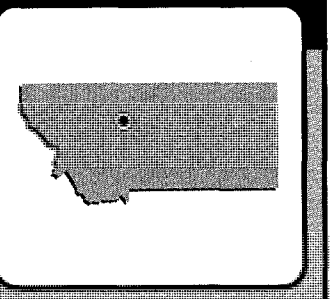
Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	1				
RCRA Corrective Action:	0	High:	0	Not Evaluated:	0
RCRA UST:	0	Medium:	0	Not Required:	1
Total Sites:	1	Low:	0		

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								
RD								
RAC								
RAO								
IRA								
RC	1							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

GREAT FALLS NAVAL RESERVE CENTER
GREAT FALLS, MONTANA



Engineering Field Division/Activity: [illegible]
Major Claimant: [illegible]
Size: [illegible] Acres
Funding to Date: $0
Estimated Funding to Complete: $0

Base Mission: Provides administration and training facilities for Naval Reserve Units

Contaminants: POLs

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

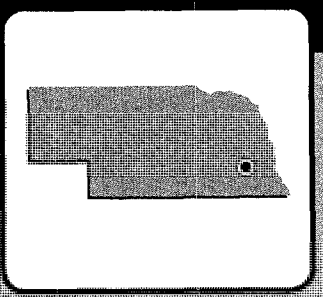
Relative Risk Ranking of Sites:
High: 0 Not Evaluated: 0
Medium: 0 Not Required: 1
Low: 0

Sites Response Complete: 1

PROGRESS AND PLANS

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

LINCOLN NAVAL RESERVE CENTER
LINCOLN, NEBRASKA



Engineering Field Division/Activity: SOUTHDIV

Major Claimant: COMNAVRESFOR

Size: 5 Acres

Funding to Date: $45,150

Estimated Funding to Complete: $0

Base Mission: Provided training, administration and mobilization for Naval Reserve Units; currently inactive.

Contaminants: POLs

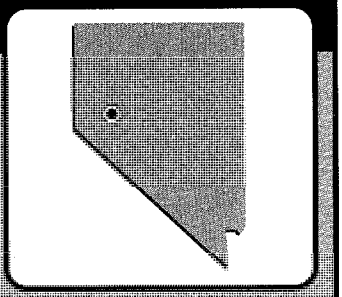
Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	2	High:	0	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	0	Not Required:	2
RCRA UST:	0	Low:	0		
Total Sites:	2				

Sites Response Complete: 2

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	2							
RI / FS								
RD								
RAC								
RAO								
IRA								
RC	2							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

FALLON NAVAL AIR STATION
FALLON, NEVADA



Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible]

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	27	High:	5	Not Evaluated:	1
RCRA Corrective Action:	0	Medium:	4	Not Required:	6
RCRA UST:	2	Low:	13		
Total Sites:	29				

Sites Response Complete: 6

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	27							
RI / FS				2	3	2	13	1
RD						3	2	5
RAC								9
RAO								9
IRA			1(1)	2(6)	3(7)	2(7)		2(2)
RC	6				1	1	10	9
Cumulative % RC	22%	22%	22%	22%	26%	30%	67%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP		1	1					
DES				1				1
IMP			1		1			
IMO								2
IRA								
RC								2
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

COLTS NECK NAVAL WEAPONS STATION EARLE

COLTS NECK, NEW JERSEY

Engineering Field Division/Activity: NORTHDIV

Major Claimant: COMNAVSEASYSCOM

Size: 706 Acres Riverside and 10,428 Acres Inland

Funding to Date: $7,863,000

Estimated Funding to Complete: $64,550,000

Base Mission: Provides handling, storage, renovations and transshipment of munitions

Contaminants: Base neutral and acid extractable organics, heavy metals, POLs, volatile organic compounds

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	43				
RCRA Corrective Action:	3	High:	19	Not Evaluated:	0
RCRA UST:	21	Medium:	10	Not Required:	35
Total Sites:	67	Low:	3		

NPL

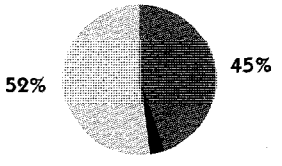
Sites Response Complete: 35

EXECUTIVE SUMMARY

Naval Weapons Station (NWS) Earle is in the town of Colts Neck, county of Monmouth, New Jersey and is 47 miles south of New York City. NWS consists of 10,428 acres in the Main Base area and 706 acres in the Waterfront and Chapel Hill areas.

Earle NWS was placed on the National Priorities List (NPL) because of numerous landfills and a history of ordnance maintenance and disposal operations. Sites 4, 5, 19 and 26 are considered most imperative. Contaminants of concern are ordnance materials, grit, paint, paint scrapings, solvents, paint sludges, ammonium picrate, lead bullets, zinc, lead and chromium. Areas of contamination include landfills, disposal areas, storage areas, abandoned pistol ranges, spill sites and underground storage tanks. Current operations utilize pollution prevention technologies to prevent further contamination. NWS is under a Federal Facility Agreement (FFA) with the EPA which was signed in 1990 and became effective in 1991.

NWS lies within the Outer Coastal Plain and is in an area of low relief, about six miles inland from the Atlantic Ocean. Three major rivers; the Shark River, the Manasquan River and the Swimming River, receive drainage from the Main Base. Land use in the area surrounding the Main Base is principally agricultural and vacant land, with strip development of commercial and residential land along the highways. Precipitation results in both surface water runoff to nearby streams and wetlands and in infiltration to recharge the aquifers. Much of the station is forested with streams and river flood plains and low-lying wetland areas, including fresh water swamps and salt water marshes. Major portions of the station have been identified as habitat for numerous rare species. Local surface water is used for recreation and irrigation purposes. Groundwater contamination is the primary community concern because residential wells are present on several nearby properties. Monitoring wells have been installed around the base to determine the presence of contamination and direction of groundwater flow.



Current Status Of Sites

Studies Underway	30
Cleanups Underway	2
Response Complete	35
TOTAL	67

A Technical Review Committee (TRC) was formed in FY90 and was converted to a Restoration Advisory Board (RAB) in FY95. A Community Relations Plan (CRP) was issued in FY90 and is currently being updated. The revised plan was due for completion in FY96, but is awaiting completion of the RI Addendum in FY97 so all RI findings can be incorporated. An Information Repository, containing copies of Administrative Record documents, was established in FY90.

Sixty-seven IR sites have been identified at NWS. Forty-three are being handled under CERCLA. Twenty-one are being cleaned up or closed out under RCRA Underground Storage Tank (UST). Three have been studied and remediated under RCRA Corrective Action. Site 21 is an active RCRA permitted storage area. A RCRA Subpart X Permit is currently under review for Site 2.

At the end of FY96, 30 sites were in the Study Phase, two sites were in the Cleanup Phase and 35 sites are Response Complete (RC). In FY91, the installation initiated Remedial Investigation/Feasibility Study (RI/FS) activities. An interim RI draft report submitted in FY92 recommended cleanup for all sites, including capping, removal, or Long Term Monitoring (LTM). First round RI/FS activities were completed in late FY93. Decisions on the sites were deferred until adequate background and watershed data were obtained as part of the second portion of the RI/FS in FY97 for the remaining sites.

A total of 21 USTs (USTs 1-7, 9-14 and 16-21) have been identified at this installation. Removal Actions for several UST sites were completed in FY93. One UST site was investigated in FY91 and subsequently closed in FY92.

Sixteen of the remaining twenty UST sites are proposed for No Further Action (NFA) based on the results of RIs which were completed in FY96. A pilot study being conducted to determine the optimum method for removal of a free-product layer at CERCLA Site 16 will be expanded into an integrated RA for this site and nearby UST 5. EPA and NJDEP have agreed to this remediation approach. Bioremediation is also planned at USTs 2, 7 and 9 in FY97.

COLTS NECK NWS EARLE
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - The Main Base is located at the head waters of three major river systems. These rivers are the Manasquan, the Shark and the Swimming. There are wetlands, floodplains and small ponds located on NWS. Drainage from the Waterfront and Chapel Hill areas enters three minor streams. These streams, Wagner Creek, Ware Creek and Comptons Creek, drain into Sandy Hook Bay. The fresh groundwater in the unconsolidated formations underlying NWS is derived solely from precipitation over the outcrop areas. Rainfall lost to evaporation and overland flow results in approximately 40% of the rainfall infiltrating as recharge to the groundwater reservoir. With an annual rainfall of about 45 inches per year, this recharge amounts to slightly less than 20 inches.

The Waterfront and Chapel Hill areas overlie the older unconsolidated New Jersey Coastal Plain deposits. There are two principal aquifers that could be affected by contaminant migration from the Main Base (the Vincentown Formation and the Kirkwood Formation). Neither of these aquifers are used for public water supply within five miles of the Main Base, but they are used for domestic water supplies in areas without public water systems. Communities surrounding the Waterfront and Chapel Hill areas obtain drinking water from the Monmouth Consolidated Water Company system that uses deep wells and surface reservoirs. Adjacent homes are part of this system and do not have domestic wells. Waste disposal activities at the Waterfront and Chapel Hill areas would not affect private or public wells. Monitoring wells have been installed throughout the base to determine the presence of contamination, contaminant levels and the direction of the localized groundwater flow.

NATURAL RESOURCES - With the exception of building areas, magazines, rail lines and roadways, much of the Main Base is forested. At Site 11, an ordnance disposal area, a potential receptor of contaminant migration is the Knieskern's Beaked Rush, an endangered species. A rare species survey conducted by the New Jersey Department of Environmental Protection confirmed the presence of twelve rare species at NWS Earle. Suitable habitat for several other unconfirmed species was also identified.

RISK - Baseline Human Health and Ecological Risk Assessments were completed during FY96 for Sites 1-7, 9-17, 19, 20, 22-27, 29, 35, 41 and 46 and incorporated into the RI Report.

For the DOD Relative Risk Ranking System, 19 sites at the NWS received a high risk ranking. The high ranking was primarily due to groundwater contamination, but contaminants were also found in surface water, sediments and soil. Organics, explosive compounds, metals and petroleum products could affect both human and ecological receptors. There were 10 sites ranked medium, and 3 low.

A pilot study was initiated in FY96 to determine the optimum method for removal of a free-product fuel layer at Site 16. Skimming and vacuum-enhanced extraction are two technologies being evaluated. UST 5 remediation will be included in the design when this study is expanded into a full-scale remediation.

Removal actions will be required at five sites where surface soil is impacted. Sites 22, 23 and 27 have visual source areas of paint wastes and Sites 24 and 25 are abandoned pistol ranges. The removal actions will be based on the preliminary results of the RI in FY97.

Most of the high risk sites are still under study to determine the appropriate RA. An FS has been completed at Site 7. Remedial Design (RD) is planned at Sites 4, 24 and 25 in FY97.

A preliminary Public Health Assessment in 1991 concluded that there was no immediate threat to human health. The Agency for Toxic Substance and Disease Registry (ATSDR) is reviewing the RI report which was completed in FY96.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - NWS Earle Colts Neck was placed on the National Priorities List (NPL) on 30 August 1990 with a Hazard Ranking System (HRS) score of 37.21. This score was based on numerous landfill sites and a history of ordnance maintenance and disposal operations.

LEGAL AGREEMENTS - A Federal Facility Agreement (FFA) between the Department of the Navy and the EPA Region II was signed December 1990 and became effective February 1991.

PARTNERING - No formal partnering sessions have been held, but coordination and cooperation between the Navy, EPA Region II, the New Jersey Department of Environmental Protection (NJDEP) and Monmouth County continued to improve during 1996. A partnering effort between the Navy and the Monmouth County Health Department in 1995 resulted in the development of Geographic Information System (GIS) maps of the installation to improve the decision-making process and to facilitate public involvement. A 1996 data sharing agreement with NJDEP enabled the Navy to overlay state wetland delineation's and aerial photos onto these maps.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in FY90 and meetings were held periodically. The TRC was converted to a Restoration Advisory Board (RAB) in FY95. A public meeting was held in February 1995 at the Monmouth County Health Department headquarters to discuss the cleanup program and the formation of the RAB. A site visit was conducted in June 1995 for the 20 RAB members. Five RAB meetings were held in FY96. Meetings are scheduled at appropriate intervals to allow public input in program decisions.

COMMUNITY RELATIONS PLAN - The Community Relations Plan (CRP) was issued in May 1990. It is currently being updated. The revised plan was due for completion in FY96, but is awaiting completion of the RI Addendum in FY97 so all RI findings can be incorporated.

INFORMATION REPOSITORY - An Information Repository was established in FY90 to provide public access to the Administrative Record, the official document file. Copies of the Administrative Record documents are maintained in the Information Repository. It is located at:

Monmouth County Library
Eastern Branch
Route 35
Shrewsbury, New Jersey 07701
(908) 842-5995/5996/5997

COLTS NECK NWS EARLE
HISTORICAL PROGRESS

FY83

Sites 1-29 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), was completed in February 1983 which identified a total of 29 potentially contaminated sites. The study concluded that none of the sites posed an immediate threat to human health and the environment, however, four sites (Sites 2-5) were recommended for further investigation.
The RCRA Facility Assessment (RFA) was completed in FY83. A total of 34 Solid Waste Management Units (SWMUs) were identified. Twenty-nine of these SWMUs were identified in the Initial Assessment Study (IAS) of 1983. Five SWMUs are RCRA regulated units.
Sites 2-5, 7, 10-11, 19-20, 22 and 26 - A Confirmation Study (CS), equivalent to an Site Inspection (SI), was completed in December 1986. The CS recommended additional sampling including monitoring wells, soil borings and stream sampling for nine sites. No further action was recommended for Sites 20 and 22, however, both were studied further in the RI/FS as required by EPA and state regulators.

FY88

Sites 1, 6, 8-9, 12-18, 21, 23-25 and 27-29 - The EPA recommended an SI for the remaining 18 sites identified in the IAS.

FY91

Sites A-Q - An aerial photographic interpretation analysis conducted by the Environmental Photographic Interpretation Center (EPIC) for the EPA identified 17 additional sites. Only one of the 17 sites, Site F Building C-50 Roundhouse Area, was recommended for further work.
Sites F, L, Q, 1-7, 9-17, 19-20, 22-27 and 29 - The RI/FS began. Although the CS of 1986 recommended no further action for Sites 20 and 22, the EPA and New Jersey Department of Environmental Protection (NJDEP) required the two sites to be included in the RI.

FY92

Sites A-Q - In August, no further action was recommended for 16 of the 17 additional sites. Site F, the C-50 Roundhouse Area, was recommended for further work. After consultation with EPA, Sites F, L and Q went directly to the RI/FS phase.
UST 1 - A tank site located at Quarters G was investigated following removal of the tank. The site was subsequently closed in July 1992.

FY93

Sites 1, 6, 8-9, 12-17, 23-25, 27 and 29 - A Phase II SI was completed. No further action is expected for Sites 8, 12, 15 and 29. LTM is expected for Site 6. Removal actions are anticipated for all remaining sites.
Sites 14 and 28 - These two sites were excluded from the SI since cleanup efforts were conducted at both sites and sampling had been done at Site 28.
Sites 18 and 21 - Removal actions were completed. These sites are being addressed further under RCRA.
UST 8 - Heating oil tanks were removed. A number of tanks in close proximity were found to have leaked. This UST was combined with IR Sites 16 and F into one site now known as Site 16. The soil and groundwater investigation was also incorporated into IR Site 16.
UST 9 - Spills and overfills caused contamination of soil surrounding two tanks. Contaminated soil was excavated and disposed.

FY94

Site 20 - A Work Plan, Action Memorandum and Engineering Evaluation/ Cost Analysis (EE/CA) were completed for soil removal.

FY95

Sites 1-7, 9-17, 19-20, 22-27 and 29 - The RI Work Plan was completed and field work performed.
Sites 8, 30-34, 37-40 and 42-45 - Concurrence was received from EPA for no further action required at these sites.
Sites 18, 21 and 28 - These sites are being addressed under RCRA Corrective Action. Monitoring wells have been installed. A Corrective Measures Study (CMS) and Design have been completed for Site 18 and the Corrective Measures Implementation (CMI) was completed in FY95. Site 28 is Response Complete (RC). Soil removal and groundwater monitoring have been conducted at Site 28. Site 21 is an active, RCRA-permitted storage area.
USTs 10, 13-14, 18 and 19 - A no further action determination was made.

PROGRESS DURING FISCAL YEAR 1996

FY96

FS was completed at Site 2 based on risks identified in Human Health and Ecological Risk Assessments.
RCRA Site 18 - CMI was completed.
Site 16 - A pilot study was started to determine the optimum method for removal of a free-product layer.
USTs 4, 6, 11, 12, 16, 17, 20 and 21 - No further action determination was made for these USTs based on RI results.
Site 8 - Response Complete.
USTs 4, 6, 11, 12, 16, 17, 20 and 21 - Response Complete.
RCRA Site 18 - Response Complete.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Removal Actions will be completed at Sites 16 and 27.
Site 2 - Long Term Monitoring (LTM) will continue under terms of the RCRA Subpart X Permit.
Feasibility Studies will be completed for Sites 1, 3-7, 9-17, 19, 20, 22-26, 35, 41 and 46.
Sites 4, 24 and 25 - RD is scheduled to begin at selected sites based on relative risk information and design is expected to be completed.
USTs 5 and 9 - An RD will begin.

FY98

Site 26 - RD will begin.
USTs 2, 5, 7, and 9 - Removal Actions will begin
Sites 4, 24 and 25 - Remedial Actions will begin.

COLTS NECK NWS EARLE
PROGRESS AND PLANS

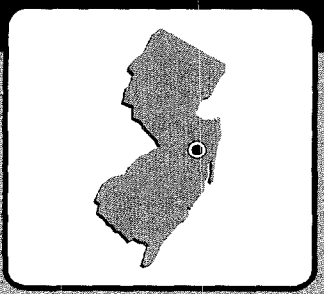
CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	43							
RI / FS		1	25	2				
RD			3	3	2		3	8
RAC				2	1	2	3	11
RAO								5
IRA	1(1)		2(2)	3(3)				
RC	15	1	7	3		2	1	14
Cumulative % RC	35%	37%	53%	60%	60%	65%	67%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	1							
RFI / CMS	1							
DES	1							
CMI	1	1						
CMO								
IRA	1(1)							
RC	2	1						
Cumulative % RC	67%	100%	100%	100%	100%	100%	100%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP	8	10	2	1				
DES			2					
IMP	1			2	2			
IMO						1		
IRA	2(3)							
RC	8	8	1	1	2	1		
Cumulative % RC	38%	76%	81%	86%	95%	100%	100%	100%

LAKEHURST NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION

LAKEHURST, NEW JERSEY



Engineering Field Division/Activity: NORTHDIV

Major Claimant: COMNAVAIRSYSCOM

Size: 7,382 Acres

Funding to Date: $31,049,000

Estimated Funding to Complete: $57,646,000

Base Mission: Develops and tests weapons systems and their components

Contaminants: Acids, fuels, PCBs, pesticides/herbicides, photographic chemicals, refrigerants, solvents, waste oils

Number of Sites:	
CERCLA:	45
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	45

Relative Risk Ranking of Sites:			
High:	5	Not Evaluated:	0
Medium:	1	Not Required:	37
Low:	2		

NPL

Sites Response Complete: 31

EXECUTIVE SUMMARY

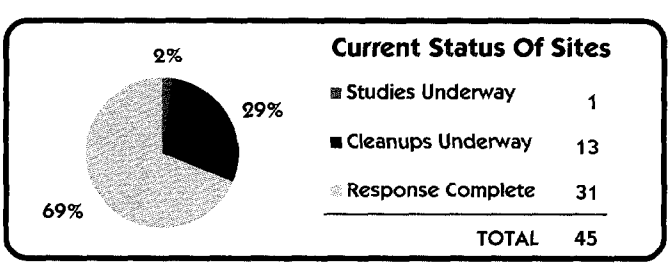
The Lakehurst Naval Air Engineering Station (NAES) is located in Jackson and Manchester Townships, Ocean County, New Jersey, 14 miles inland from the Atlantic Ocean. Lakehurst is 65 miles south of New York City and 50 miles east of Philadelphia, Pennsylvania. NAES is bordered by Route 547 to the east, a military reservation to the west, woodland to the north and south. NAES and the surrounding areas are within the Pinelands National Reserve, the most extensive undeveloped land tract of the Middle Atlantic Seaboard. There are rare, threatened, and endangered species within the Pinelands unique ecosystem.

NAES covers 7,400 acres on an outer coastal plain, an area of gently rolling terrain and low relief. Drainage from NAES discharges to several tributaries which flow into two major streams. The Ridgeway Branch runs along the northern border of NAES and the Manapaqua Brook along the southern border. Both streams flow into Pine Lake which discharges into the Toms River.

NAES was formerly named the Naval Air Engineering Center (NAEC), but was renamed Naval Air Warfare Center (NAWC) Aircraft Division in 1992. In January 1994, the facility was renamed Naval Air Engineering Station (NAES), due to continued reorganization within the Department of the Navy.

The current mission is technology development and engineering. Past operations include the handling, storage, and on-site disposal of hazardous substances. Historical records, aerial photographs, field inspections, and interviews, were used to identify 45 potentially contaminated sites. The primary contaminants are petroleum products in soil and volatile organic compounds (VOCs) in groundwater. The first Federal Facility Agreement (FFA) was signed between the Navy and the EPA in October 1989 for NAES.

There are 45 IR sites at NAWC in the Study Phase. At the end of FY96, 13 were in the cleanup phase and 31 sites were Response Complete (RC). For soil, sediment, and surface water, 39 of the 45 sites had been addressed and required No Further Action (NFA) for these media. Four areas are being treated for groundwater, one area is studying natural restoration for remediation, and three areas are undergoing monitoring. NFA Records of Decision (RODs) were signed for 27 sites prior to FY94.



Interim RODs were signed in FY91, to implement groundwater treatment at Areas C and H. The final RODs to continue groundwater treatment at Areas C and H and soil treatment systems at Sites 16 and 17 will be signed in FY96.

An interim ROD was signed in FY91, to implement groundwater treatment at Area E and in FY92 at Areas A and B. RODs for the final groundwater actions for Areas A, B and E will be completed by FY97.

A ROD for groundwater monitoring was signed in FY93 for Sites 1 and 31. An interim ROD to conduct a three year natural restoration study at Areas I and J was signed in FY95 with a final ROD at Areas I and J anticipated in FY99. A final ROD for Area K is scheduled for FY97. Anticipate final RODs for all sites by FY99.

A Technical Review Committee (TRC), established in 1987, includes the Navy, EPA, New Jersey Department of Environmental Protection (DEP), and the Pinelands Commission. The TRC meets monthly to discuss the status of the National Priorities List (NPL) sites. A Restoration Advisory Board (RAB) was established in November 1994. Meetings are held bi-monthly. A Community Relations Plan (CRP) was completed in 1988. An Information Repository is located at the Ocean County Library in Toms River, New Jersey.

Innovative technologies have been implemented at NAWC. Bioremediation was used successfully in 1983 and soil washing in 1988. Asphalt batching (combining contaminated soil with an emulsion to create a base for roadways) was used in 1994. The use of "passive soil gas survey" at Site 14, clarified the higher areas of contamination in a closed landfill. At Site 31, this technology was used in a wetlands area to indicate the extent of petroleum products contamination. NAES created a Geographic Information System (GIS) that makes site data a manageable asset. NAES is exploring the effectiveness of intrinsic bioremediation as a viable remedial option at a cost less than one-percent of pump and treat.

Several Navy environmental awards were received by NAES: State Coordinator, New Jersey, 1990; Environmental Engineer of the Year, 1991; Environmental Team, 1992; and Pollution Prevention and Recycling, 1993. Other awards were Department of Defense (DOD) Environmental Showcase Installation, 1992 and the Al Gore Adopt-A-School Program, 1993.

LAKEHURST NAWCAD
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Groundwater represents the primary source of potable water supply in Ocean County. Groundwater pollution occurs at NAES. Approximately 20" of rainfall is available per year to recharge the groundwater reservoir. This quantity of water moving down through the very permeable sands blanketing NAES is a sufficient vehicle to carry pollutants to the groundwater. Once there, the lateral migration is also essentially uninhibited by the permeable sands. Surface runoff amounts to 5-10 inches annually and could readily transport surface pollutants from the bounds of NAES.

NATURAL RESOURCES - NAES overlies the Cohansey Sand, an important fresh water aquifer. There are five freshwater areas at NAES; Bass Lake, Clubhouse Lake, Pickerel Pond, Island Pond, and Rainbow Pond. Many of the areas are used for recreational purposes. There are rare, threatened, and endangered species within the areas surrounding NAES.

RISK - All 45 IR sites were ranked using the Department of Defense (DOD) Relative Risk Ranking System. Five sites were ranked high primarily due to groundwater contamination and also some soil contamination, and one was ranked medium. There are both human and ecological receptors. Contaminants include solvents, gasoline and diesel fuels, fire fighting foam (FFF) and landfill debris. Two sites were ranked low risk.

The Agency for Toxic Substances and Disease Registry (ATSDR) prepared a Preliminary Public Health Assessment in 1989. At that time, NAES was considered to be of risk to human health due to the possibility of exposure to hazardous substances via contaminated groundwater, soil, sediment, and surface water.

In April 1992, an Endangerment Assessment (EA) for NAES was conducted. Again, based on available information, NAES was considered to be a potential public health concern because of the risk to human health due to the possibility of exposure to hazardous substances via contaminated groundwater, soil, sediment, and surface water.

RESTORATION PROJECTS - A Feasibility Study (FS) will be performed in July 1998 for Areas I and J, where a natural restoration study is currently underway.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - The installation was placed on the National Priorities List (NPL) on 22 July 1987 with a Hazard Ranking System (HRS) score of 50.53. Placement on the NPL was due to groundwater contamination, as groundwater in the area is a source of potable water.

LEGAL AGREEMENTS - A Federal Facility Agreement (FFA) was signed by the Department of the Navy (DON) on 25 May 1989 and by the EPA on 4 October 1989.

No Further Action (NFA) Records of Decision (RODs) were signed for Sites 2, 5, 7, 9, 11, 12, 15, 18, 19, 20, 21, 22, 23, 24, 26, 27, 30, 33, 34, 35, 36, 37, 38, 39, 40, 44 and 45 prior to FY94. Interim RODs were signed in February 1991, to implement groundwater treatment at Sites 10, 16, 17 (Area C) and Site 32 (Area H). Final RODs to continue groundwater treatment with modifications to improve system performance at Areas C and H and soil treatment systems at Sites 16 and 17 were signed in February 1996.

An interim ROD was signed in September 1991, for groundwater treatment at Site 28 (Area E) and in March 1992, for groundwater treatment at Sites 13, 14, 29 and 42 (Areas A and B). Final RODs for Areas A and B and Area E are scheduled to be completed in FY97. The final action for Area E includes a vapor extraction/sparging system to treat source areas and accelerate groundwater remediation. The final action for Areas A and B includes the addition of dual phase extraction and sparge well systems.

A ROD for groundwater monitoring was signed in FY93 for Sites 1 and 31. An interim ROD to conduct a three year natural restoration study at Sites 3, 6 and 25 (Areas I and J) was signed in January 1995 with a final ROD at Areas I and J anticipated in FY99. A final ROD for Sites 4 and 8 (Area K) is anticipated in FY97. NAWC anticipates final RODs for all sites by FY99.

PARTNERING - Partnerships were established with the United States Geological Survey (USGS), Rutgers University, the New Jersey Department of Environmental Protection (DEP), and the Pinelands Commission to study the use of composted biosolids to minimize disturbances that may occur during site recovery. These materials may be used for capping or fill material.

The NAES Environmental Branch and a Manchester Township High School developed a summer science program called Research Methods in Ecology and Environmental Sciences. The program is designed to encourage and nurture student careers in science and ecology, while providing valuable information for NAES. Students work side by side with environmental professionals on guided research projects.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was established in FY87 and includes members of the Navy, EPA, New Jersey DEP, and the Pinelands Commission. The TRC meets monthly to discuss the status of the NPL sites. A Restoration Advisory Board (RAB) was established in November 1994. Meetings are held bi-monthly and "walk-ins" are encouraged. RAB meetings are advertised in the local newspaper and through posters displayed throughout the community. All members of the public are invited to attend.

COMMUNITY RELATIONS PLAN - A comprehensive Community Relations Plan (CRP) was completed in February 1988.

INFORMATION REPOSITORY - An Information Repository has been established, containing copies of all Administrative Records (official records), including minutes from TRC and RAB meetings.

Ocean County Library
101 Washington Street
Toms River, New Jersey 08753

HISTORICAL PROGRESS

FY81

Sites 1, 2, 15, 19, 22, 23, 26 and 30 - Removed stained and contaminated soils and removed drums, tanks and debris.
Site 11 - A Removal action for soils began.

FY83

The Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), and a Confirmation Study (CS), equivalent to a Site Inspection (SI), identified 44 potentially contaminated sites at Lakehurst NAWC. Site 45, a former BOMARC missile site, was added to the list of potentially

LAKEHURST NAWCAD
HISTORICAL PROGRESS

contaminated sites for further study. BOMARC is the responsibility of the US Air Force and is located on Fort Dix property.

FY87

All Sites - The SI was completed and all sites were recommended for further study in the Remedial Investigation/Feasibility Study (RI/FS).
Sites 1-4, 6-14, 16, 17, 20, 22, 24, 25, 28, 29, 31-33, 35-39 and 42 - Phase II RIs were completed.
Sites 5, 15, 18, 19, 21, 27, 30, 34, 40 and 45 - An RI was completed.
Sites 15, 18, 27, 30, 34, 40 and 45 - The RI/FS phase was completed.

FY91

Sites 5, 19, 21 and 44 - Removal actions to remove contaminated soil were completed.
Sites 10, 16 and 17 (Area C Groundwater) - Groundwater treatment began.

FY92

Site 29 - Drums were removed.
Sites 1, 6, 20 and 35 - Removal actions to remove stained and contaminated soils took place.
Site 28 (Area E Groundwater) - An Interim Remedial Action (IRA) for groundwater treatment began.
Area H - An IRA for groundwater treatment began in May 1992.

FY93

Sites 1, 2, 11, 20, 35 and 38 - A Phase III RI/FS was completed.
Sites 11 and 35 - The RI/FS phase was completed.
Sites 3, 4, 6-9, 13, 14, 16, 22, 24 and 32 - A FS was completed.
Site 29 - More drums were excavated and removed.
Sites 1 and 38 - The FS phase was completed.
Sites 2, 20, 26, 36, 37, 39, 42 and 44 - The FS phase was completed.
Sites 3, 6, 14, 16 and 32 - The Remedial Design (RD) was completed.

FY94

Site 13 - The RD phase was completed.
Sites 6, 14, 16 and 32 - The final Remedial Actions (RAs) began.
Sites 3, 6, 14, 16, 29 and 32 - Soil removal was completed and soil was asphalt batched to construct new roads off base.
Sites 12, 23-25, 29, 31 and 33 - An FS was completed.
Sites 16 and 17 - The IRA for removal of contaminated soils was completed in October 1993 with confirmation sampling results March 1994. No Further Action (NFA) is expected after the IRAs are done.
Areas A and B and Areas I and J - IRAs for the groundwater involving pump and treat operations began.

FY95

Sites 13, 16 and 17 - An in-house design of bioremediation and vapor extraction systems was completed.
Sites 3 and 6 (Areas I and J) - A revised Record Of Decision (ROD) was completed in January 1995.
Sites 10, 16, 17 (Area C) and for Site 32 (Area H) - FSs were conducted in May 1995, to assess the performance of the interim groundwater and soil treatment actions at these sites.

PROGRESS DURING FISCAL YEAR 1996

FY96

Areas C and H - RODs for continued groundwater treatment with modifications to improve system performance completed in February 1996. In-house remedial design specifications for system modifications were completed in September 1996 for two sites: Site 6 (Area I) and Site 42 (Area A).
Feasibility Studies for seven sites were completed in July 1996 - Site 3 (Area J), Site 8 (Area K), Site 31 (Area D), Site 31 (Area H) and Sites 13, 14 (Areas A/B).
Area I/J - Started Natural Restoration
Site 13 - Started Vapor Extraction Treatment
Sites 16 and 17 - Started Bioventing/Vapor Extraction Systems
Sites 6 and 42 - Completed Remedial Design.
Sites 3, 6, 10, 16 and 42 - Completed Remedial Action.
Sites 1,4 and 41 - Completed IRAs.
Sites 3, 7, 8, 10 and 31 - Response Complete.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Area K, and Area A/B - RODs to be completed.
Dual Phase Extraction and sparge wall systems in Area A/B to be completed.

FY98

Area K (Site 4) - Groundwater Treatment system design and construction to be completed.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	44							
RI / FS	37	7					1	
RD	6	2		1				
RAC	5	5		1				
RAO			2					9
IRA	14(24)	3(3)						
RC	26	5	3				1	10
Cumulative % RC	58%	69%	76%	76%	76%	76%	78%	100%

TRENTON NAVAL AIR WARFARE CENTER

TRENTON, NEW JERSEY

Engineering Field Division/Activity: NAVFACENGCOM

Major Claimant: COMNAVAIRSYSCOM

Size: 54 Acres

Funding to Date: $8,544,000

Estimated Funding to Complete: $7,475,000

Base Mission: Develops and tests aircraft engines

Contaminants: Heavy metals (cadmium, chromium, lead), PCBs, solvents, volatile organic compounds

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	9	High:	2	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	1	Not Required:	3
RCRA UST:	2	Low:	6		
Total Sites:	11				

BRAC III

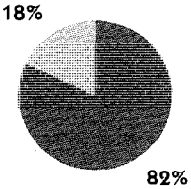
Sites Response Complete: 9

EXECUTIVE SUMMARY

Trenton Naval Air Warfare Center (NAWC) is located 30 miles northeast of Philadelphia, Pennsylvania. The Delaware River is two miles to the south. Operations that contributed to contamination at NAWC were research, development, and testing of engine systems and components, vehicle maintenance, painting, pipe fitting, welding, pest control, fire fighter training, and material storage and handling. The primary sites of concern are contaminated groundwater, spill sites, disposal areas, and Underground Storage Tanks (USTs). Primary contaminants are fuels and solvents. The organic solvent TCE was used extensively throughout the facility as a coolant for testing jet engines and other aircraft equipment.

Trenton NAWC is situated in the Piedmont Lowlands consisting of undulating ridges and nearly level to gentle slopes. There are very few natural lakes and no marshy areas in the Piedmont Lowlands. Three streams flow through the area and drain into the Delaware River. However, only one, Gold Run, receives runoff from NAWC. Surface water runoff has the potential to transport contaminants to the Delaware River which is used as a drinking water source. The groundwater aquifers underlying NAWC are also used for drinking water. The base is surrounded by industrial, commercial, agricultural and residential property.

The major area of concern to the local community is the groundwater which is contaminated with the organic solvent TCE. A pump and treat system is in operation to contain contaminated groundwater posing a potential risk to off-site residential wells. The United States Geological Survey (USGS) performed borehole geophysics and worked with the Navy performing aquifer tests to enable the Navy to accurately place future monitoring wells for delineation of the plume. In June 1996, the design of a modified treatment plant was completed. Construction of the new treatment plant is scheduled to begin in November 1996. New monitoring well installations are also planned for October 1996.



Current Status Of Sites

Studies Underway	9
Cleanups Underway	0
Response Complete	2
TOTAL	11

There are 11 IR sites, 9 are CERCLA sites and 2 are UST sites identified at NAWC. At the end of FY96, 9 sites were in the Study Phase. The 2 UST sites have Response Complete (RC). Site 3 - Remedial Design was completed. Sites 2-9 RI/FSs are scheduled for completion in FY97. Sites 2-9 are expected to have Response Complete in FY97. At the end of FY98, all sites will have completed Remedial Investigation/Feasibility Study (RI/FS) studies. A draft No Further Action (NFA) decision document has been submitted to regulators for 6 of 9 CERCLA sites. Site 1 is expected to complete a RI/FS, an IRA, and a RA in FY98. A Remedial Design for Sites 1 and 8 are planned in FY98.

Several removal actions have been conducted at NAWC. A tank at UST 2 and surrounding contaminated soil were removed in FY92. At UST 1, a tank and contaminated soil were removed in FY93. No further work is expected at Site 3 after the remediation decision document is completed in FY97.

The final design to remediate and contain groundwater contamination is scheduled for completion in FY98. The addition of an iron filing treatment system to address high levels of the organic solvent TCE in groundwater is being investigated. This method provides a low cost and low maintenance system to treat high levels of the organic solvent TCE in groundwater.

In FY93, the Base Realignment and Closure (BRAC) Commission recommended Trenton NAWC for closure. Operational closure is scheduled for September 1998. After closure, operations will be relocated to the Arnold Engineering Development Center in Tullahoma, Tennessee, and the NAS in Patuxent River, Maryland.

Community outreach efforts were expanded with the formation of the BRAC Cleanup Team (BCT) in FY94. The BCT prepared a BRAC Cleanup Plan (BCP) and developed a partnering agreement that established goals for meaningful community involvement in the cleanup process and to keep cleanup on the fast track. As part of the partnering effort, reuse committee members provided input on the Environmental Baseline Survey (EBS). To accelerate community reuse of installation property, one building has been leased to a local company on an interim basis. The installation has been divided into six property parcels. Phase II of the EBS begun in August 1996 on the six property parcels. One ten acre area has been identified as Community Environmental Response Facilitation Act (CERFA) clean. The reuse committee completed a Reuse Plan in June 1996.

TRENTON NAWC
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Trenton NAWC lies within the Gold Run Drainage Basin. Storm water runoff from the base empties into Gold Run Creek, a tributary of the Delaware River. No streams, creeks, or lakes are located on NAWC property. Four aquifers in Mercer County serve as sources of groundwater. The Stockton and Lockatong Formations are the two most important, and both of these aquifers underlie NAWC. The Stockton Formation is an excellent source of groundwater and contains two aquifer systems, water table and artesian. The Lockatong has less capacity to store and transmit water. NAWC pumps industrial and drinking water from the Delaware River. The three potential contaminant migration pathways at Trenton are groundwater transport in the water table aquifer, groundwater transport in the artesian aquifer, and surface water runoff to receiving streams.

NATURAL RESOURCES - NAWC is in a highly developed, urbanized area. No natural biological communities exist within the confines of the security fences. Nearby Mercer County Airport is the largest open area in the vicinity that may be a breeding ground for various animals. Areas on NAWC without buildings, roadways, or parking facilities are limited to maintained fields or lawn. Wooded or even old field habitat does not exist, and no natural aquatic habitat is found on NAWC. Wildlife occurring on the activity is limited to species that adapt well to urbanized environments. Mammals that may be found on the grounds include raccoon, opossum, Norway rat, cottontail rabbit, squirrel and mice. Birds that frequent the area include English sparrows, starlings, mourning doves, and swifts. Fish species in the Gold Run Creek include chub, dace, shiners, sunnies, bluegills, largemouth bass, smallmouth bass, walleye, carp, and pickerel. Sport fishing is popular in the Delaware River and the nearby Raritan Canal.

RISK - Under the Department of Defense (DOD) Relative Risk Ranking System, all of the 9 sites at NAWC were evaluated. Only two sites received a high risk ranking, while six received a low risk ranking. Sites 3 and 8 were ranked high due to groundwater contamination with potential human receptors. Site 3 has had sludge removed, and Site 8 is still under study.

REGULATORY ISSUES

PARTNERING - The BRAC Cleanup Team (BCT) developed a partnering agreement that established a series of goals for meaningful community involvement in the cleanup process. As part of this partnering effort, reuse committee members provided input on the Environmental Baseline Survey (EBS).

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in FY91 and was converted to a Restoration Advisory Board (RAB) in FY93. The RAB consists of 12 members from the Navy, EPA, state, and community. The first RAB meeting, held in FY94, was open to the public. Meetings are held quarterly.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was completed in September 1993. NAWC has excellent community relations and has distributed fact sheets to keep the public informed.

INFORMATION REPOSITORY - An Information Repository was established in August 1991. It is located at the Ewing Township Library for public access and contains copies of the documents in the Administrative Record.

BASE REALIGNMENT AND CLOSURE

BRAC - Trenton NAWC was recommended for closure. Operational closure is scheduled for September 1998. After closure, operations will be relocated to the Arnold Engineering Development Center in Tullahoma, Tennessee, and the NAS in Patuxent River, Maryland.

BRAC CLEANUP TEAM - Members are from the Navy, New Jersey Department of Environmental Protection, EPA Region II and the community. The BRAC Cleanup Team (BCT) developed a partnering agreement that established a series of goals for meaningful community involvement in the cleanup process. As part of this partnering effort, reuse committee members provided input on the EBS.

DOCUMENTS - A completed BRAC Cleanup Plan (BCP) was prepared by the BCT to identify opportunities for streamlining and accelerating the cleanup process and facilitating community involvement. A draft EBS has been done and Phase II of the EBS was underway in 1995 and will be completed in early 1997.

Environmental Conditions of Property Classification

1	2	3	4	5	6	7
10 acres	26 acres	0 acres	0 acres	10 acres	13 acres	7 acres

LEASE/TRANSFER - A portion of the Building 2 hangar has been leased.

REUSE - The reuse plan was completed in FY96 and the Environmental Impact Statement (EIS) is scheduled for completion in FY 97. Proposals have been made for potential reuse. Screening for Department of Defense (DOD) and Federal Agencies has been completed. Screening is underway for state and local government.

TRENTON NAWC
HISTORICAL PROGRESS

FY86

Sites 1-7 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), identified seven potentially contaminated sites. All seven sites were recommended for further study.

FY90

Sites 8 and 9 - These sites were identified during the Site Inspection (SI).
USTs 1 and 2 - These two UST sites were identified.

FY92

UST 2 (Public Works Gas Station) - Removal of tank and surrounding contaminated soil was completed.

FY93

UST 1 - Removal of tank and surrounding contaminated soil was completed.

FY94

Site 3 - Sludge removal began.

FY95

Site 1 - The start-up of a fast track interim treatment plant for the organic solvent TCE groundwater contamination began. The redesign of the interim treatment plant began in September.
Site 3 - Sludge was removed.
Sites 2, 4, 5, 6, 7 and 9 - A draft No Further Action Decision document was completed.

PROGRESS DURING FISCAL YEAR 1996

FY96

Site 1 - Completed the redesign of the interim treatment plant. Tasked contractor to install monitoring wells. Started the design of an Iron fillings treatment system .
Site 3 - Completed design for sludge removal.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Regulatory review delayed the primary Decision Documents and the well installation not being accomplished in FY 96. Well installation began in November 1996. EIS was not completed because the Reuse plan was completed in November 1996. EIS began in January 1997.
Site 1 - Construction of the modified treatment plant for groundwater treatment is scheduled to begin in December 1996 and be completed in January 1997. New monitoring wells are to be installed in October 1996.
Sites 2 and 3-9 - The Remedial Investigation/Feasibility Study (RI/FS) phase is expected to be completed.
Site 3 - IRA and RA are scheduled for completion.
Site 3 - A No Further Decision Document will be written to document the removal of sludge.

FY98

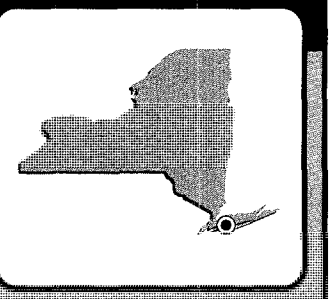
Site 1 - RI/FS will be completed.
Site 1 - The design of the final treatment system for groundwater contamination will be completed.
Site 8 - Possible leaking lines in the barometric well will be investigated. Remedial Design is expected.
Site 1 - An IRA and RA are scheduled for completion.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	9							
RI / FS			8	1				
RD		1		2				
RAC			1	1	1			
RAO								1
IRA			1(1)	1(1)				
RC			7		1			1
Cumulative % RC	0%	0%	78%	78%	89%	89%	89%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP	2							
DES	1							
IMP	2							
IMO								
IRA	2(4)							
RC	2							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

BETHPAGE NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
BETHPAGE, NEW YORK



Engineering Field Division/Activity: NORTHDIV

Major Claimant: COMNAVAIRSYSCOM

Size: 108 Acres

Funding to Date: $10,814,000

Estimated Funding to Complete: $22,040,000

Base Mission: Develops and produces military aircraft

Contaminants: Cyanide, heavy metals, PCBs, volatile organic compounds

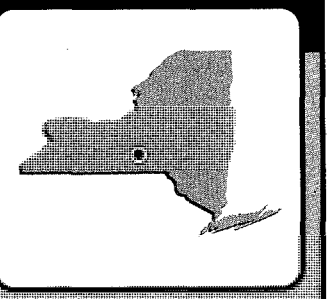
Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	3	High:	1	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	0	Not Required:	2
RCRA UST:	0	Low:	0		
Total Sites:	3				

Sites Response Complete: 2

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	3							
RI / FS	3							
RD	1		1					
RAC		1			1			
RAO								1
IRA	1(1)	3(3)	1(2)					
RC		2						1
Cumulative % RC	0%	67%	67%	67%	67%	67%	67%	100%

BINGHAMPTON NAVAL RESERVE CENTER
BINGHAMPTON, NEW YORK



Engineering Field Division/Activity: NORTHDIV
Major Claimant: COMNAVRESFOR
Size: 6 Acres
Funding to Date: $182,000
Estimated Funding to Complete: $549,000

Base Mission: Formerly provided administrative and training facilities for Naval Reserve Units; currently unoccupied.
Contaminants: POLs

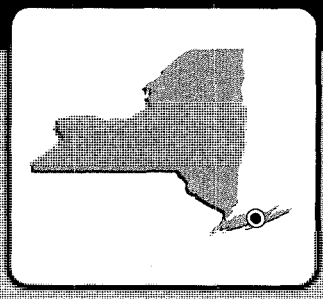
Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	0	High:	1	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	0	Not Required:	0
RCRA UST:	1	Low:	0		
Total Sites:	1				

Sites Response Complete: 0

PROGRESS AND PLANS

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP			1					
DES								
IMP			1					
IMO								
IRA								
RC			1					
Cumulative % RC	0%	0%	100%	100%	100%	100%	100%	100%

CALVERTON NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
CALVERTON, NEW YORK



Engineering Field Division/Activity: NORTHDIV

Major Claimant: COMNAVAIRSYSCOM

Size: 6,000 Acres

Funding to Date: $6,600,000

Estimated Funding to Complete: $50,200,000

Base Mission: Manufacture, assemble and test aircraft and aircraft components

Contaminants: fuels, heavy metals, PCBs, pesticides, solvents

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	5	High:	2	Not Evaluated:	0
RCRA Corrective Action:	8	Medium:	1	Not Required:	6
RCRA UST:	0	Low:	3		
Total Sites:	13				

Sites Response Complete: 6

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	5							
RI / FS								
RD								
RAC								
RAO								
IRA								
RC	5							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	5		3					
RFI / CMS			2	3		1		1
DES			1	1	3			2
CMI					1	2	1	3
CMO								5
IRA			1(1)			1(1)	1(1)	2(2)
RC	1					1		6
Cumulative % RC	13%	13%	13%	13%	13%	25%	25%	100%

FISHERS ISLAND NAVAL UNDERWATER SYSTEMS CENTER ANNEX

FISHERS ISLAND, NEW YORK

Engineering Field Division/Activity: NORTHDIV

Major Claimant: COMLANTFLT

Size: 71 Acres

Funding to Date: $[illegible]

Estimated Funding to Complete: $[illegible]

Base Mission: Provides Research, Development, Test and Evaluation center (RDT&E) for underwater surveillance, communication and navigation systems

Contaminants: Heavy metals, pesticides

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

Sites Response Complete: 1

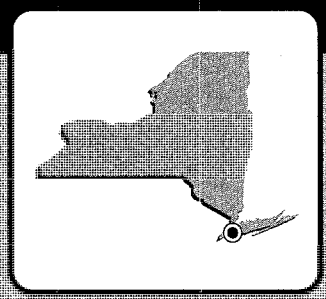
PROGRESS AND PLANS

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

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP								
DES								
IMP			1					
IMO								
IRA								
RC			1					
Cumulative % RC	0%	0%	100%	100%	100%	100%	100%	100%

FLOYD BENNETT FIELD NAVAL AND MARINE CORPS RESERVE CENTER

BROOKLYN, NEW YORK



Engineering Field Division/Activity: NORTHDIV

Major Claimant: COMNAVRESFOR

Size: 30 Acres

Funding to Date: $174,000

Estimated Funding to Complete: $0

Base Mission: Provides administrative support to Navy, Marine Corps and Army Reserve Units

Contaminants: Gas cylinders, POLs, paint

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

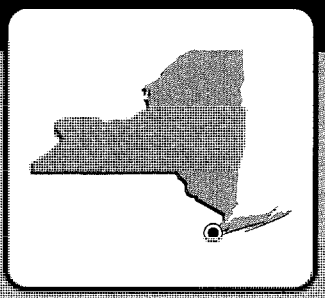
Sites Response Complete: 1

PROGRESS AND PLANS

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

NEW YORK NAVAL STATION FORT WADSWORTH (STATEN ISLAND)

STATEN ISLAND, NEW YORK



Engineering Field Division/Activity: NORTHDIV

Major Claimant: COMMANDER IN CHIEF

Size: 492 acres

Funding to Date: $3,711,000

Estimated Funding to Complete: $0

Base Mission: Homeport for the Northeast Battle Force Surface Action Group (SAG), supports the SAG vessels, non-Naval Reserve Fighter and the accompanying military and civilian personnel; provides SAG administrative headquarters, housing and recreational facilities.

Contaminants: Asbestos, lead paint, PCBs, waste oil and solvents, JP5 fuel, pesticides, heavy metals.

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	5	High:	0	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	0	Not Required:	5
RCRA UST:	0	Low:	0		
Total Sites:	5				

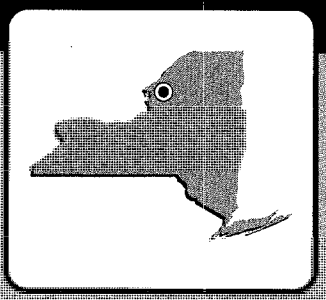
BRAC III

Sites Response Complete: 5

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	5							
RI / FS								
RD	3							
RAC	1	3						
RAO								
IRA	1(2)	3(3)						
RC	2	3						
Cumulative % RC	40%	100%	100%	100%	100%	100%	100%	100%

WATERTOWN NAVAL RESERVE CENTER
WATERTOWN, NEW YORK



Engineering Field Division/Activity: NORTHDIV
Major Claimant: COMNAVRESFOR
Size: 0 Acres
Funding to Date: $165,000
Estimated Funding to Complete: $0

Base Mission: Provides administrative and training facilities for Naval Reserve Units
Contaminants: POLs

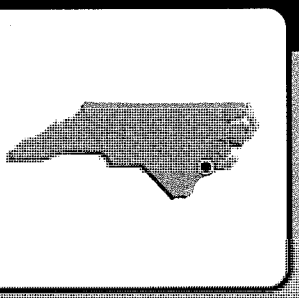
Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	0				
RCRA Corrective Action:	0	High:	0	Not Evaluated:	0
RCRA UST:	1	Medium:	0	Not Required:	1
Total Sites:	1	Low:	0		

Sites Response Complete: 1

PROGRESS AND PLANS

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP		1						
DES								
IMP								
IMO								
IRA								
RC		1						
Cumulative % RC	0%	100%	100%	100%	100%	100%	100%	100%

CAMP LEJEUNE MARINE CORPS BASE
JACKSONVILLE, NORTH CAROLINA



Engineering Field Division/Activity: LANTDIV

Major Claimant: CNRL

Site: 151,000 Acres

Funding to Date: $57,649,000

Estimated Funding to Complete: $[illegible]

Base Mission: Provides housing, training facilities, logistical support and certain administrative supplies for Fleet Marine Force units and other assigned units; conducts ground combat training.

Contaminants: Battery acid, fuels, lithium batteries, paints and thinners, PCBs, pesticides/herbicides, used oils

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	99	High:	68	Not Evaluated:	1
RCRA Corrective Action:	0	Medium:	15	Not Required:	95
RCRA UST:	98	Low:	19		
Total Sites:	175				

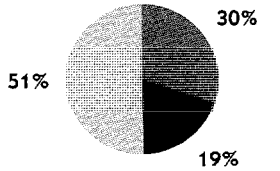
NPL

Sites Response Complete: 88

EXECUTIVE SUMMARY

Camp Lejeune Marine Corps Base (MCB) is located just south of the city of Jacksonville, North Carolina. The base is a major training center for the Marine Corps. Typical operations that took place on the base that led to the creation of contaminated sites in the past include vehicle, aircraft and amphibious vessel maintenance; fire fighting training, pest control, creosote lumber treatment, power and boiler plants, dry cleaning shops, painting and paint stripping shops, photographic shops and industrial trade shops. Other operations involved the storage of materials and supplies, including hazardous materials, chemicals and fuels. At one time, research involving radioactive materials took place on the base. Wastes were disposed of through landfilling operations and wastewater treatment facilities. The base was listed on the National Priorities List (NPL) in 1989 with a Hazard Ranking System score of 36.84. The score was based on one site, Site 21, which was contaminated from mixing pesticides and rinsing the equipment and from a pit into which waste oils containing PCBs. Migration pathways exist through surface water flow to the New River and to the groundwater to pose a threat to human health and the environment. The sites around Hadnot Point Industrial area are also of concern to the public. The primary contaminants of concern are volatile organic solvents, pesticides, and heavy metals. The base is under a Federal Facilities Agreement (FFA) signed in 1991 with EPA Region IV and the State of North Carolina.

The base is located on the eastern edge of the state at the center of the coast. The Atlantic coastline forms the eastern boundary of the base. The base is bisected by the New River which flows southeastward to the ocean. Rainfall moves through surface flow to the New River or enters the surficial groundwater aquifer through the highly permeable soils. The deeper Castle Hayne aquifer is the source of drinking water for the base and the surrounding communities. The Castle Hayne aquifer is separated from the surficial aquifer by a discontinuous and less permeable layer ranging in thickness from 0-26 feet and averaging 9 feet thick when present. The base is heavily forested and over half the property is under forestry management. The New River and other streams create wetland areas near the coast before entering the ocean. Both the forests and the rivers and wetlands are habitats for wildlife. Twenty-six endangered or threatened species inhabit the area. The rivers and coastal areas are also used for fishing and recreation.



Current Status Of Sites

Studies Underway	53
Cleanups Underway	34
Response Complete	88
TOTAL	175

Currently, the Installation Restoration (IR) program includes a total of 175 sites, with 88 sites considered Response Complete (RC). Sites 1, 28 and 30 became Response Complete after completion of the RI/FS. Sites 21, 41 and 82 became Response Complete after completion of the remedial action phase. UST 15 became Response Complete after completion of the IMP phase. USTs 81 and 83 are proposed for Response Complete as a result of completing the Site Assessment.

The remaining sites are in some stage of study, cleanup, or long-term operations. A number of early actions are being taken to mitigate the spread of contamination. Contaminated soils and drums containing contaminated wastes have been removed. Early actions to cleanup and prevent further migration of groundwater plumes have been implemented.

Records of Decision (RODs) are prepared by Operable Unit (OU) and signed by the base Commanding General. Ten Records of Decision (RODs) have been signed at Camp Lejeune covering a total of 15 sites. Concurrence from EPA and the State of North Carolina has been received on all ten RODs. Three of these are Interim RODs addressing various interim remedies at 2 sites. The remaining 7 RODs are for Final Remedial Actions (FRA) at 14 sites, including the 8 sites with NFA RODs mentioned above.

Camp Lejeune is participating in the Department of Defense's Pilot Expedited Environmental Cleanup Program (PEECP) which was instituted in 1992. To accelerate environmental remediation, several expedited procedures were developed: a single phase of field work rather than multiple phases; use of field screening techniques and on-site mobile laboratories; concurrent reviews of documents; sampling strategy meetings with those who would be using the data; and shortened review periods for documents.

CAMP LEJEUNE MCB
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - The eastern boundary of the base is 14 miles of Atlantic shoreline with a barrier island parallel to the coast. The base is bisected by the New River which flows southeast through the base and forms a large estuary before entering the Atlantic Ocean. Rainfall averages 50 inches per year and either discharges to surficial waters as baseflow or percolates through the soil into the freshwater aquifers. Surface drainage and groundwater flow toward the New River, its tributaries, and the Atlantic Ocean. The surface soils are highly permeable fine and medium sand. The water table ranges from 3 to 17 feet below ground surface. Three freshwater aquifers comprise the first 300-500 feet below the surface. Between each of these aquifers lies a confining unit composed of finer grained sediments ranging between 0-26 feet in thickness.

Because surface water suitable for potable uses is unavailable in large amounts, the base and surrounding communities rely upon the Castle Hayne aquifer as its source of drinking water. Groundwater withdrawal from the Castle Hayne aquifer averages about 7 million gallons per day. Migration pathways for contaminants are overland flow and movement through the surficial and Castle Hayne aquifers.

NATURAL RESOURCES - About half the acreage on the base is heavily covered with forests. There are three public forests surrounding the base: the Croatan Forest, Hoffman Forest and Camp Davis Forest. These forests are major habitats for a wide variety of wildlife. Near the coast and other water bodies are five kinds of wetlands including several different types of upland swamps, tidal marshes and coastal beaches. The coastal and near shore Atlantic are also major wildlife habitats. As many as 26 Federal and State listed endangered or threatened species live on the base or in nearby areas. This list includes sea turtles, alligators, birds such as falcons, bald eagles and woodpeckers, marine and terrestrial mammals such as whales, manatees, and cougars, and a number of plant species.

RISK - A baseline human health risk assessment following EPA guidance has been completed for 14 sites as part of the final Remedial Investigation (RI) report for those sites. Nine of those sites were found to pose a risk to human health. A human health risk assessment is underway for 13 other sites and it is expected that at least another 14 sites will have one done in the future. An ecological risk assessment following EPA guidelines is performed as part of the Remedial Investigation (RI) phase for all sites with significant aquatic or terrestrial habitats within or adjacent to the site boundaries. So far, an ecological risk assessment has been done for 14 sites showing a significant ecological impact at six of the sites.

In the Department of Defense (DOD) Relative Risk Ranking system, 48 sites were determined to present a high relative risk primarily because of the proximity of groundwater wells that provide drinking water to the local area.

The Agency for Toxic Substances and Disease Registry (ATSDR) is required to perform a Public Health Assessment (PHA) at all NPL sites. ATSDR issued a draft PHA for Camp Lejeune on 6 January 1995. The Navy and the state of North Carolina provided comments back to ATSDR on the draft PHA on 20 February 1995. ATSDR is currently conducting a study on the adverse pregnancy outcomes among women exposed to volatile organic compounds in drinking water. The results of this study will be included in the final PHA report.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - The base was listed on the National Priorities List (NPL) on 4 October 1989 with a Hazard Ranking System (HRS) score of 36.84. The HRS score was based on the ranking of one site, Site 21. Site 21 was used to mix pesticides and rinse equipment. The pesticides DDT, DDE and Aldrin were detected in the soil at the site. The site also contained a pit that was used to dispose of transformer oils containing the chemical additive PCB. Remedial action at this site was completed in 1996 in accordance with the Final ROD signed in 1994 for the removal of contaminated soils and subsequent off-site treatment/disposal.

LEGAL AGREEMENTS - A Federal Facilities Agreement (FFA) was signed in February 1991 between the Marine Corps, EPA Region IV, and the North Carolina Department of Environment, Health, and Natural Resources (DEHNR). The FFA covered 23 sites which are to be investigated in accordance with the National Contingency Plan (NCP). A Site Management Plan (SMP) was first prepared in 1991 and is updated annually. The SMP is a primary document required by the FFA and is used as an annual update to track the progress of all sites actively investigated or planned for investigation since the completion of the 1983 IAS.

A RCRA Part B Permit held by the base expired September 1994. The permit, issued in 1984, contained no Hazardous and Solid Waste Amendments Corrective Action requirements. A renewal application was prepared and filed in March 1994 which incorporated Corrective Action requirements. A Corrective Action Plan (CAP), including identification of SWMUs will be included in the final permit which is still under preparation.

PARTNERING - An informal partnering effort was initiated in 1992 bringing together key people from each organization to work as a team. Each member is committed to working toward the common goal of achieving cleanup of the contaminated sites and protecting human health and the environment. A more formal partnering initiative was started in 1994 to incorporate team-building training to improve efficiency. The first formal partnering session was held on 7 September 1994.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was first established in June 1988 and met every quarter. Members of the TRC included the Marine Corps, EPA Region IV, North Carolina DEHNR, ATSDR, U.S. Fish and Wildlife, National Oceanic and Atmospheric Administration (NOAA), Department of the Interior, Onslow County Health Department, Jacksonville City Manager, and several members from the community. In 1995, Camp Lejeune began converting the TRC to a Restoration Advisory Board (RAB). The base solicited public participation and has received over 40 applications for membership from the community. After reviewing the applications, six community members were added to the RAB along with the former TRC members. The first RAB meeting was held in April 1996 and is meeting quarterly.

COMMUNITY RELATIONS PLAN - A Community Relations Plan has been published. A publicly released Fact Sheet is prepared for each site or Operable Unit (OU) as the RI phase is completed and a public meeting is held prior to signing the Record of Decision (ROD) for the cleanup process. Additional Fact Sheets and public meetings are held as needed.

INFORMATION REPOSITORY - An Information Repository was set up at the Onslow County Public Library, Jacksonville, North Carolina. The Administrative Record (the official file) was established in 1991 and a copy is available to the public at the Information Repository. Both are updated regularly by the Marine Corps.

CAMP LEJEUNE MCB
HISTORICAL PROGRESS

FY83

Sites 1-72 - Completed an Initial Assessment Study (IAS). 22 sites were recommended for further study and 54 sites were recommended for no further study or action.
Site 64 - Completed the RA.

FY85

Site 16 - Completed the RA.

FY88

UST 9 - Completed the Initial Site Characterization (ISC).

FY91

UST 18 - Completed the ISC.

FY92

Sites 7 and 82 - Completed a Site Inspection (SI).
Site 78 - An Interim Record of Decision (ROD) was signed.
USTs 14-17, 19, 20 and 22 - The ISC was completed.
UST 2 - Completed the UST Investigation (INV).

FY93

Sites 6, 9 and 82 - The RI/FS was completed for these sites. The ROD was signed on 24 September 1993. Further action required at Site 6 will be tracked in the future as part of Site 82. Site 9 is considered RC.
Site 43 - Completed the SI.
Site 48 - Completed the RI/FS. A ROD was signed 10 September 1993 specifying No Further Action (NFA).
USTs 4-8, 12, 21, 23-50, 55 and 57 - The ISC was completed.
USTs 3, 4, 15, 17 and 19 - The INV phase was completed.
UST 4 - The Corrective Action Plan (CAP) was completed.

FY94

Sites 44, 54 and 91 - An SI was completed.
Site 2 - The RI/FS phase was completed. A ROD was signed 15 September 1994.
Sites 6 and 82 - Completed the RD.
Sites 21, 24 and 78 - The RI/FS was completed. A Final ROD was signed 15 September 1994.
Site 35 - An Interim ROD was signed 15 September 1994.
USTs 51-54, 58, 60, 61, 63-65, 67, 68, 70, 73, 74, 77 and 80 - The ISC was completed.
USTs 14, 16, 18, 21, 22, 39, 42, 43, 47 and 50 - The INV phase was completed.
USTs 1-3, 15, 17 and 19 - The CAP was completed. UST 1 was considered to be RC under UST program and transferred to IR program for further action.

FY95

Site 2 - Completed a removal action to remove contaminated soil.
Site 6 - A Final Remedial Action (FRA) was started.
Site 10 - This site was removed from RC status and scheduled for further investigation.
Site 21 - The RD and RA were completed.
Site 35 - An interim action was started to remove petroleum contaminated soil as specified in the Interim ROD. A second Interim ROD addressing shallow groundwater was signed 21 Sep 1995.
Sites 63, 65, 89, 90, 92 and 93 - An SI was completed.
Site 78 - A removal action was started to construct a pump and treat system that constitutes the final remedy. Site is now considered Remedy-in-Place (RIP).
Site 82 - An FRA was started.
USTs 56, 59, 66, 69, 71, 72, 75, 76 and 85 - The ISC was completed.
USTs 81-84 - The ISC was started.
USTs 24 and 53 - The INV phase was completed.
USTs 9, 25, 49, 57, 72 and 78 - The INV phase was started.
USTs 14, 18, 21 and 27 - The CAP was completed.
USTs 2-4, 15, 17 and 19 - The Corrective Action Design (DES) phase was completed.
USTs 9-11 - Removal actions were started to remove free product (petroleum products) floating on the groundwater.
UST 17 - A Final Corrective Action Implementation (IMP) was started.

PROGRESS DURING FISCAL YEAR 1996

FY96

Sites 1, 28 and 30 - The RI/FS was completed and the Final ROD signed 13 Jan 1996. The ROD specified NFA, therefore the RD planned for Sites 1 and 28 was not completed. The sites are considered Response Complete.
Sites 80 - A Removal Action was completed at Site 80 for remediation of surface soils.
Site 10 - A SI was initiated.
Site 35 - The interim action to remove petroleum contaminated soils from the site was completed.
Sites 36, 43, 44, 54, 65, 69, 73 and 86 - Field Work to prepare the RI was completed. A removal action was completed at Site 43 to remove surficial metallic debris from the site.
Sites 41 and 74 - The RI/FS phase was completed and Final ROD signed 05 Dec 1996.
Site 68 - The RD was completed.
Sites 21, 41 and 82 - The RA was completed. Sites are considered Response Complete.
Site 88 - The PA/SI was completed.
Site 88 - A removal action was completed to remove five leaking underground storage tanks, and contaminated soil, that were used to store PCE.
Sites 89 and 93 - (Designated as OU16) A Phase I investigation was started.
USTs 81 and 83 - The SA phase was completed.
USTs 9, 25 and 78 - The SA phase was completed.
USTs 13, 16, 21, 22, 24, 31-33, 36, 38, 39, 42, 43 and 47 - The CAP was completed.
USTs 2, 14, 15, 17, 18, 21, 22, 27, 31, 33, 42 and 43 - The DES phase was completed.
USTs 4, 15 and 17 - The IMP was completed. UST 15 is considered Response Complete.

CAMP LEJEUNE MCB
PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Site 3 - The FS and RD will be completed. The Final ROD will be signed.
Sites 7, 16, 36, 43, 44, 54, 65, 69, 73 and 86 - The RI/FS will be completed. The Final ROD will be started for Sites 36, 43, 44, 54, and 86. The RD will be started. Sites 7, 16, 43, 44, and 65 are expected to be Response Complete.
Site 35 - The FS will be completed and the comprehensive site RD will be initiated. The Interim RA for shallow groundwater will be completed.
Sites 6, 36, 41 and 74 - The RD will be completed.
Sites 6 - RA will be completed. Site is considered Response Complete.
Sites 7 and 80 - The Final ROD will be signed.
Site 63 - The Final ROD will be signed.
Site 88 - A removal action to address shallow groundwater contamination will be started.
UST 17 - IMO will be completed. Site is expected to be Response Complete.
USTs 49, 60, 62, 82, 84 and 86 - The SA phase will be completed.
USTs 25, 49, 50, 57, 62 and 82 - The CAP will be completed.
USTs 13, 25, 38, 49, 50 and 62- The DES phase will be completed.
USTs 2, 3 and 19 - The IMP phase will be completed.
USTs 4, 14-18, 21, 22, 27, 36, 38 and 43 - The Corrective Action will be started at these sites.

FY98

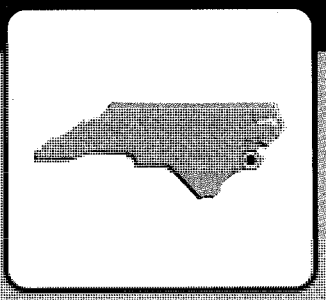
Site 3 - RA will be started.
Site 10 - SI field work will be started.
Site 35 - The Final ROD will be signed. The RD will be completed. The interim RA for shallow groundwater will be completed.
Sites 36, 54, 69 and 73 - The RD will be completed.
Sites 63 and 80 - The RI/FS will be completed. Sites expected to become Response Complete.
Sites 65 and 73 - The Final ROD will be signed.
Sites 84 and 85 - Removal actions (IRAs) for removal of contaminated soil and debris will be completed.
Site 88 - Implementation of the removal action for shallow groundwater will continue.
USTs 64, 65, 71 and 79 - The SA will be completed.
USTs 9, 60, 63, 64 and 82 - The CAP will be completed.
USTs 57, 60, 62, 63, 67 and 78 - The DES will be completed.
USTs 10, 11, 14, 18, 22, 27, 33, 43, 46 and 48 - The IMP will be completed. UST 33 and 48 expect to be Response Complete.
USTs 10 and 33 - The Interim RA for groundwater will be completed.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	80	1						2
RI / FS	8	5	12	2	4			10
RD	5	3	4	5	1	3	1	5
RAC	1	3	1		3	1	3	10
RAO								10
IRA	4(4)	4(4)	1(1)	2(2)	1(1)			1(1)
RC	51	6	6	2	1		1	22
Cumulative % RC	57%	64%	71%	73%	74%	74%	75%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	59	5	6	4	7			
CAP	13	14	6	5	1	10	1	1
DES	3	12	6	6	2	5	5	12
IMP		3	3	10	8	1	4	26
IMO			1					51
IRA				2(2)	1(1)			13(19)
RC	28	3	1	2				52
Cumulative % RC	33%	36%	37%	40%	40%	40%	40%	100%

CHERRY POINT MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA



Engineering Field Division/Activity:
Major Claimant:
Size:
Funding to Date:
Estimated Funding to Complete:

Base Mission: Maintains and operates support facility and provides services and materials for Marine aircraft wing.

Contaminants: PCBs, POLs, solvents

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	0	High:	45	Not Evaluated:	1
RCRA Corrective Action:	40	Medium:	2	Not Required:	39
RCRA UST:	30	Low:	7		
Total Sites:	87				

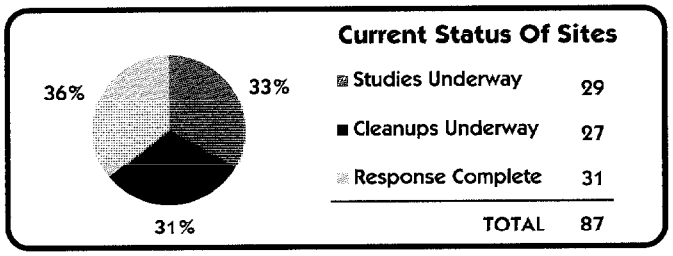
NPL

Sites Response Complete: 31

EXECUTIVE SUMMARY

The Cherry Point Marine Corps Air Station (MCAS), commissioned in 1942, is located on the Neuse River in eastern North Carolina. It sits on a peninsula of land formed by Craven and Carteret Counties between the Neuse River to the north and Core and Bogue Sounds to the south. MCAS maintains and operates support facilities, services and material for a Marine Aircraft Wing; receives, stores, and issues ammunition and explosives for fleet contingency use; provides facilities for training and support of Fleet Marine Force Atlantic aviation units; is a primary aviation supply point; repairs and reworks various systems relating to Marine Corps Aviation; and operates an air-to-ground bombing target complex. Typical air station operations that contributed to contaminated sites on the facility include machine shops, foundry, coating and paint shops, paint stripping, plating shops, mechanical maintenance shops, public works shops, automotive shops, printing and photographic shops, power plants, wastewater treatment plants, fire fighting, landfill disposal, and storage of supplies, materials, fuels and limited ordnance. Current operations include pollution prevention technologies to prevent further contamination. The primary contaminants of concern at MCAS are organic solvents (such as PCE, TCE and vinyl chloride), petroleum hydrocarbons and PCBs. EPA Region IV completed a RCRA Facility Assessment (RFA). As a result of the RFA, the Commandant of the Marine Corps (CMC) and the EPA negotiated a Consent Order in December 1989. MCAS was placed on the National Priorities List (NPL) in December 1994 due to the potential for contamination of the Castle Hayne Aquifer which is the primary drinking water source for the region. The MCAS will develop a Federal Facilities Agreement (FFA) with EPA Region IV and the State of North Carolina.

MCAS is within the drainage basin of the Neuse River and its tributaries, Slocum Creek and Hancock Creek. Potable water is supplied from deep artesian aquifer wells. Water flow in the shallow unconfined aquifer generally follows land contours and discharges to surface streams. Areas of MCAS are located within designated wetlands, which support many species of migratory birds.



A Technical Review Committee (TRC) was formed in FY91 and meets once a year or as needed. The installation has established community Information Repositories at two locations. In FY95, the installation expanded the TRC into a Restoration Advisory Board (RAB) and solicited community members to participate. The RAB includes a broad cross-section of community representatives, and meets on a quarterly basis at a minimum. The installation expanded its public involvement program, completed a Community Relations Plan (CRP) and implemented a plan to proactively inform and involve the community in the cleanup process.

Currently, 29 sites are in a study phase. Of the RCRA Underground Storage Tank (UST) sites in the study phase, one Initial Site Characterization (ISC) is underway and one Investigation (INV) is ongoing. Seven RCRA UST sites have Corrective Action Plans (CAPs) underway and eight RCRA UST sites are in the design phase. The remaining sites under study are awaiting funding to complete the study phase. Sites 5 and 17 were remediated under RCRA CA by removal and disposal of PCB contaminated soils. Thirtyone sites are Response Complete (RC).

A major success in the cleanup program at MCAS Cherry Point has been their ability to implement a formal partnering process between the installation, EPA Region IV, and the state of North Carolina. This partnering has resulted in reduced review times, and a streamlined Site Management Plan, eliminating the need for Remedial Investigation/ Feasibility Study (RI/FS) work plans at some sites. The installation has been able to accelerate cleanup by the elimination of pre-Draft and Draft Final documents, elimination of formal work plans and the use of time-critical removal actions and interim Records of Decision (RODs).

CHERRY POINT MCAS
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - MCAS lies on level to slightly sloping land. The installation is within the drainage basin of the Neuse River and its tributaries, Slocum Creek and Hancock Creek. Drainage on MCAS is directed toward these three bodies of water via a system of ditches, storm sewers, and pre-existing local tributaries. The Neuse River flows east past MCAS into Pamlico Sound, which empties into the Atlantic Ocean through a number of inlets in the barrier island chain. As many as eight aquifer zones have been identified in Craven County. Flow in the water table aquifer is directed toward the Neuse River and Hancock and Slocum Creeks. Contaminant migration at MCAS would tend to be toward surface waters to the east, north and west of the installation. Main pathways are overland flow and movement within the surficial aquifer. Twenty-three operating wells provide drinking water to the Air Station. The active wells take water from the lower artesian aquifer, the Castle Hayne.

NATURAL RESOURCES - MCAS is in the coastal plain area of North Carolina. The uplands consist generally of pine flatwoods along with various habitats which support species of hardwoods. Extensive wildlife habitat is provided by the forest resource. A forestry management plan has been adopted at the station. Wetland areas at MCAS consist of the regions associated with three ponds on the station and stream habitats. Both Slocum and Hancock Creeks support wetland communities. Slocum Creek, Hancock Creek, and the Neuse River serve as recreational resources for military personnel and local residents. Many species of migrating birds pass through the region. Local species of shore birds also employ marsh areas as nurseries. The only federally listed endangered or threatened species in the area is the American alligator and occasional transitory migrants. In addition, there are three State listed threatened or endangered species on MCAS property.

RISK - A Baseline Risk Assessment, both ecological and human health is currently ongoing following the EPA guidance. For the Department of Defense (DOD) Relative Risk Ranking System, 83 sites have been ranked. Of the 83 sites, 45 sites were ranked as "high" primarily due to known groundwater contamination. The Agency for Toxic Substance and Disease Register (ATSDR) performed a public health assessment for the installation in 1995. The ATSDR Public Health Assessment was issued in June 1996. No public health concerns were identified.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - MCAS was placed on the National Priorities List (NPL) on 16 December 1994 with a Hazard Ranking System (HRS) score of 70.71. The main problem is gross groundwater contamination with the organic solvent TCE in the surficial aquifer passing through to Castle Hayne drinking water aquifer. One contributor to groundwater contamination is leakage from the Industrial Wastewater collection system. The MCAS has repaired the leakage.

LEGAL AGREEMENTS - The MCAS will develop a Federal Facilities Agreement (FFA) with EPA Region IV and the State of North Carolina. The station currently has a 3008h RCRA consent order and a Part B Permit.

PARTNERING - In July 1994, MCAS, Naval Facilities Engineering Command (NAVFAC), Atlantic Division (LANTDIV), EPA Region IV and the State of North Carolina began facilitated partnering. The partnering stake holders are organized into tiers with managers and executives on Tier 2 and Remedial Project Managers on Tier 1. By December 1994, the Site Management Plan was streamlined and a year's preparation time and the cost of Remedial Investigation/Feasibility Study (RI/FS) Work Plans for four different Operable Units (OUs) were eliminated in a process change developed by the team.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in FY91 and expanded into a RAB in FY95. The RAB meets on a quarterly basis.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was published in November 1994, and is periodically updated.

INFORMATION REPOSITORY - Two Information Repositories were established in FY93. One is located at the Havelock Public Library and the other at the Station Library. These repositories contain a copy of the Administration Record (the official file) and are updated regularly by the Marine Corps.

HISTORICAL PROGRESS

FY83

Sites 1-32 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), completed in March 1983, identified 32 potentially contaminated sites at MCAS. No Further Action (NFA) was planned for 14 sites (Sites 11, 13, 14, 18, 22-28 and 30-32) since the sites were found not to pose a threat to human health or environment.

FY88

Sites 8 and 9 - As a result of a RCRA Facility Assessment (RFA), these sites were transferred to the UST program.
Sites 1-7, 10-21, 29 and 32 - As a result of an RFA, these sites will be addressed under RCRA CA. NFA is required at Sites 22-28, 30 and 31.
Sites 33-52 - Twenty new SWMUs were identified in the RFA.

FY89

Site 29 - An Interim Remedial Action (IRA) was initiated to remove free floating petroleum product from the groundwater. The IRA is expected to be completed in FY97.

FY90

Site 29 - Corrective Measures Study (CMS) began.
Site 55 - An additional SWMU was added when leakage was found during the replacement of an underground tank. During the tank replacement, the contaminated soil was removed.

FY91

USTs 2-5, 19 and 23 - Initial Site Characterizations (ISCs) completed. Groundwater contamination was confirmed at all USTs.

FY92

Site 55 - Completed a RCRA Facility Investigation (RFI), which indicated contamination with the organic compounds chloromethane and chloroform. Assessment showed a low risk.
USTs 3-5 - Twenty tanks were removed.
USTs 6-10 and 22 - ISCs were completed. Groundwater contamination was confirmed at all USTs.

CHERRY POINT MCAS
HISTORICAL PROGRESS

FY93

Sites 5 and 17 - An RFI was completed in December 1992. The RFI confirmed PCB contamination in the soil and both sites were recommended for a CMS. The CMS was also completed in FY93 for Site 5. As a result, a Remedial Action Contract (RAC) is being used for the DES and CMI.
Sites 1-4, 6, 7, 12, 15, 19, 21, 33-42, 45, 47 and 49-52 - RFIs were completed in June 1993. Four SWMUs (33-35 and 50) were found not to require further action and 22 Sites required a CMS.
USTs 1, 16, 19, 20, 23 and 28 - Thirty-nine tanks were removed.
USTs 11, 12, 14, 15 and 21 - ISCs were completed. Groundwater contamination was confirmed at all USTs except UST 21.
USTs 2 and 22 - CAPs were completed.

FY94

Site 41 - Site was transferred to the UST program for remediation.
Sites 36, 37 and 49 - CMIs to remove contaminated soil were completed.
USTs 1, 5, 7, 8, 10-12, 20, 21, 24 and 26-29 - Fifty-eight tanks were removed.
UST 3 - Contaminated soil was removed.
USTs 1, 16, 18, 20 and 28 - ISCs were completed. Groundwater contamination was confirmed at all USTs except UST 20.
USTs 3, 15 and 19 - Long Term Monitoring (LTM) was initiated and is expected to continue for two years.
UST 3 - CAP was completed.
UST 24 - INV was completed.

FY95

All Sites - A Baseline Risk Assessment is ongoing at all sites. A hydrogeological framework study was completed to establish areas of vulnerability of the Castle Hayne drinking water aquifer from contaminants at the Air Station. Continued partnering activities and concurrent document reviews.
Sites 6, 7, 10, 44 and 46 - Began CMS for these sites.
Site 16 - Time critical removal action was conducted to protect the public form physical and chemical hazards.
Sites 5 and 17 - The Design (DES) was finalized. The CMI, which is also completed, consisted of the removal and landfilling of the contaminated soil at a Toxic Substances Control Act (TSCA) approved landfill.
Site 17 - CMS are completed.
USTs 25-27 - ISCs were completed.
UST 27 - CAP was completed.

PROGRESS DURING FISCAL YEAR 1996

FY96

Sites 6, 7, 10, and 46 - An RFI/CMS and PRAP were completed. Site 46 required no further action is Response Complete.
Sites 6, 7 and 17 - The DES was completed
USTs 4, 5, 12, 17, 21, 23 and 35 - CAPs were completed.
USTs 1, 2, 4 and 14 - DESs were completed.
USTs 1, 2 and 14 - RA was awarded.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Site 29 - RI/FS is expected to be completed. The two IRAs, initiated in FY89 and FY96 to remove free floating product from the groundwater and provide for vapor extraction and air sparging, are expected to be completed. Estimate Response Complete based on IRAs.
Sites 4, 15 and 30 - Complete RFI./CMS phase. Initiate ROD for Site 4.
Sites 4, 10, 44 and 47 - Complete DES phase.
Sites 7, 10 and 44 - Complete CMI phase.
Sites 15-17, 30, 40, 42, 47, 51 and 52 - NADEP Central Hot Spot IRA is expected to be completed. Estimate Response Complete at sites 17 and 30.
Site 16 - Groundwater Hot Spot ROD is expected to be completed.
Site 47 - ECA for Stripper Barn Groundwater Hot Spot to be completed
Site 21 - PRAP and ROD to be initiated.
USTs 12, 15, 21, 30, 32, 35 and 38 - CAPs are expected to be completed. Estimate response Complete at USTs 12, 15, and 21.
USTs 5, 7 and 10 - Free product removal is expected to be completed.
USTs 4-11, 13, 16, 17, 28-31, 34, 35 and 38 - DESs are expected to be completed.
USTs 1, 2 and 14 - RAs are expected to be completed.

FY98

Sites 36, 37 and 41 - CMDs are expected to be completed.
Sites 4 and 21 - Complete RI/FS, PRAP, and ROD.
Site 4 - Begin RA.
Site 42 - Begin IRA and RD.
USTs 4, 6-9, 26 and 29 - Award contract for RA.

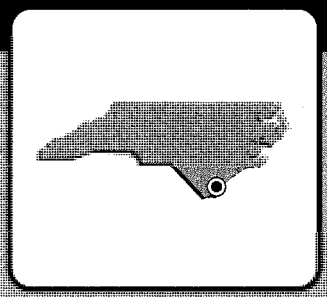
CHERRY POINT MCAS
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	9							
RI / FS			1					
RD								
RAC								
RAO								
IRA			1(2)					
RC	8		1					
Cumulative % RC	89%	89%	100%	100%	100%	100%	100%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	41							1
RFI / CMS	3	4	3	2	2	2	2	9
DES	2	3	4	2		1	1	7
CMI	5		3	3	1	2		9
CMO								21
IRA	8(9)		9(11)					
RC	15	1	2		2			22
Cumulative % RC	36%	38%	43%	43%	48%	48%	48%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	30							
CAP	17	7	7					
DES	1	4	18	1				
IMP			3	10	4	3	3	3
IMO								20
IRA	3(3)		3(3)	1(1)				
RC	7		3	4	1		1	20
Cumulative % RC	19%	19%	28%	39%	42%	42%	44%	100%

WILMINGTON NAVAL RESERVE CENTER
WILMINGTON, NORTH CAROLINA



Engineering Field Division/Activity: SOUTHDIV

Major Claimant: COMNAVRESFOR

Size: 3 Acres

Funding to Date: $61,600

Estimated Funding to Complete: $0

Base Mission: Provides training support for administrative logistics and mobilization of Marine Corps Reserve Units.

Contaminants: POLs

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

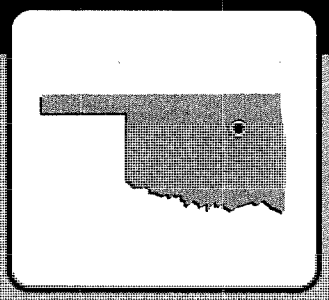
Sites Response Complete: 1

PROGRESS AND PLANS

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	1							
CAP	1							
DES								
IMP	1							
IMO								
IRA	1(1)							
RC	1							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

BROKEN ARROW NAVAL AND MARINE CORPS RESERVE CENTER

BROKEN ARROW, OKLAHOMA



Engineering Field Division/Activity: SOUTHDIV

Major Claimant: COMNAVRESFOR

Size: 4 Acres

Funding to Date: $[illegible]

Estimated Funding to Complete: $0

Base Mission: Provides shore-based support to the Navy, Marine Corps and Army

Contaminants: PCBs, sludge

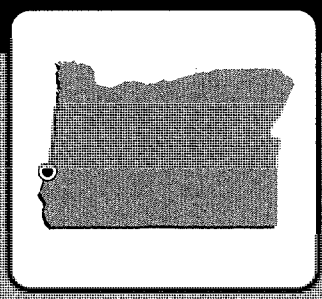
Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	0				
RCRA Corrective Action:	0	High:	0	Not Evaluated:	0
RCRA UST:	1	Medium:	0	Not Required:	1
Total Sites:	1	Low:	0		

Sites Response Complete: 1

PROGRESS AND PLANS

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	1							
CAP	1							
DES								
IMP	1							
IMO								
IRA	1(1)							
RC	1							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

COOS BAY NAVAL OCEAN PROCESSING FACILITY
COOS BAY, OREGON



Engineering Field Division/Activity: [illegible]
Major Claimant: [illegible]
Size: 1 Acre
Funding to Date: [illegible]
Estimated Funding to Complete: [illegible]

Base Mission: Processing Facility
Contaminants: [illegible]

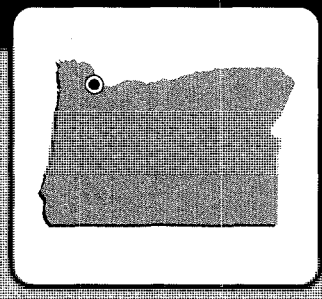
Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	1	High:	0	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	0	Not Required:	0
RCRA UST:	0	Low:	1		
Total Sites:	1				

Sites Response Complete: 0

PROGRESS AND PLANS

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

PORTLAND NAVAL AND MARINE CORPS RESERVE READINESS CENTER
PORTLAND, OREGON



Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: 9 Acres

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

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

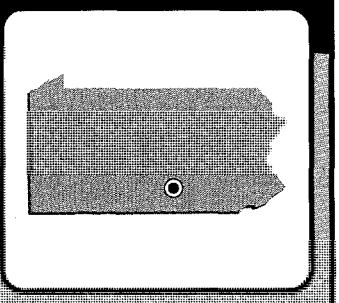
Sites Response Complete: 0

PROGRESS AND PLANS

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP								
DES								
IMP							1	
IMO							1	
IRA	1(1)							
RC							1	
Cumulative % RC	0%	0%	0%	0%	0%	0%	100%	100%

MECHANICSBURG NAVAL INVENTORY CONTROL POINT

MECHANICSBURG, PENNSYLVANIA



Engineering Field Division/Activity: NORTHDIV

Major Claimant: COMNAVSUPSYSCOM

Size: 264 Acres

Funding to Date: $15,195,000

Estimated Funding to Complete: $19,317,000

Base Mission: Provide inventory management of secret materials

Contaminants: Heavy metals, PCBs, pesticides, volatile and semi-volatile organic compounds

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	15	High:	3	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	3	Not Required:	7
RCRA UST:	0	Low:	0		
Total Sites:	15				

NPL

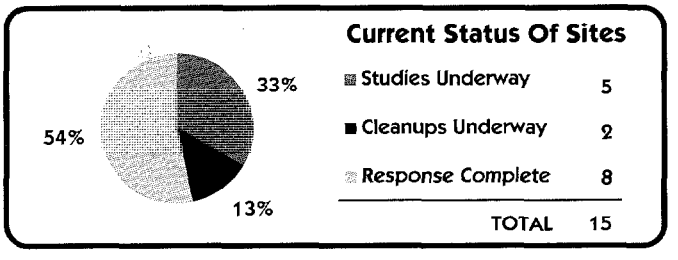
Sites Response Complete: 8

EXECUTIVE SUMMARY

Mechanicsburg Naval Inventory Control Point (NAVICP), formerly known as the Ships Parts Control Center (SPCC), is located in Hampden Township, at the eastern boundary of Mechanicsburg, Pennsylvania, approximately seven miles west of Harrisburg. Development of the NAVICP installation began in 1942. The NAVICP primary mission is to provide inventory management and supply support for parts of weapon systems for Naval ships and submarines. Past defense industrial and inventory disposal contributed to the contamination of the sites on the installation. The prominent site types are disposal sites, landfills, and spill sites. Environmental investigations determined that groundwater, soil, and surface water/sediments have been contaminated with petroleum products, the chemical additive PCB, heavy metals, pesticides, volatile and semi-volatile organic compounds and dioxin. Mechanicsburg NAVICP was listed on the National Priorities List (NPL) in May 1994 based on potential migration of contaminants to the groundwater.

Contaminant migration pathways at Mechanicsburg NAVICP include surface runoff and groundwater movement. Contaminants may enter streams, groundwater discharge or the storm water collection system. Potential receptors include humans with private wells to the north and northwest of the installation and aquatic organisms that inhabit nearby streams. An Basewide Ecological Risk Assessment will be completed in FY97 to address potential receptors located in the NAVICP Mechanicsburg area.

All 15 IR sites at Mechanicsburg are CERCLA sites. Seven sites were identified during the Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), which was completed in FY84. The Navy conducted a Site Inspection (SI) in FY89-FY91, which included the seven sites identified in the IAS and four additional sites. The EPA had conducted a RCRA Facilities Assessment (RFA) in FY89, in which a total of 68 Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) were identified. Of these 68 SWMUs, 11 were previously identified Installation Restoration (IR) sites. Although the RFA was completed in March 1989, the Navy did not receive a copy until late 1994. Four of the SWMUs were added to the IR program, as Sites 12-15, in FY95. A Remedial Investigation (RI) was conducted for four sites, which included Site 9 (the Storm Water Drainage Ditch) in FY89 and Sites 1, 3 and 7 in FY93. An RI is planned for Sites 3, 12-15 in FY97. Feasibility Studies (FSs) and Remedial Designs (RDs) were prepared for four sites (Sites 1, 3, 9 and 12). Extended Site Inspections (ESIs) were conducted and the Navy prepared No Further Action (NFA) Decision Documents (NFADDs) for Sites 4 (FY96) and 5 (FY95). Three additional NFADDs were completed for Sites 2, 6 and 8, in FY93. Response is complete on 8 sites (Sites 2,5, 6,8,10 before FY95 and Sites 1,4,7 in FY96).



A major undertaking in the cleanup program at Mechanicsburg NAVICP is an Interim Remedial Action (IRA) for soil removal and treatment at Site 3 (Ball Road Landfill and Burn Pits). It was started in FY93 and completed in FY96. Contaminated soil was removed at the burn pits. A bioremediation process was used primarily for petroleum products and organic compounds. Additional treatment processes are being discussed with regulators to address all contaminants of concern. If the ongoing negotiations for cleanup levels can be achieved, the Navy plans to return the treated soil to the site. Returning the soil would thereby save the costs for disposal and fill material, and ultimately save landfill space.

The cleanup of Site 9 has been very aggressive. Site 9, the storm water drainage ditch has contamination present in soil and sediment. The Record of Decision (ROD) for the site outlined several remedial actions to be taken. The first action, completed in April 1991, was excavation of contaminated soil from segment 1. The second action, for fencing off the site, was completed in June 1991. The third action was for the installation of a gabion dam, completed in November 1991. The fourth action, for removal of "hot spots" of contaminated sediment from segment 3, was completed in February 1993. The fifth action, completed in December 1993, was to remove contaminated sediment from Sub-basin E of the storm water system, a source of contamination in the ditch. Site 9 is scheduled for final cleanup and Response Complete in FY98.

MECHANICSBURG NAVICP RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - The NAVICP is located in the Cumberland Valley within the Susquehanna River basin, south of the Conodoguinet Creek and north of Yellow Breeches Creek. The region is typified by the presence of sink holes, poorly drained depressions and disappearing surface streams. Contaminant migration pathways at Mechanicsburg NAVICP include surface runoff and groundwater movement. Contaminants may enter streams through groundwater discharge or the storm water collection system. Most surface runoff on the activity is collected by the storm drainage system and discharged to an open drainage ditch, which discharges to Trindle Spring Run and finally into the Conodoguinet Creek. Surface water flow is seasonal, high during peak rainfall and dry in summer and fall. The uppermost groundwater aquifer under the installation is unconfined and largely restricted to the area's carbonate rocks. Groundwater flow rates and directions at the facility are largely controlled by fractures, faults, and joints. It is possible that contaminants may enter and migrate along these fractures to private wells north and northwest of the facility, Trindle Spring Run, Conodoguinet Creek and other wells.

NATURAL RESOURCES - Potential receptors include humans with private wells to the north and northwest of the installation and aquatic organisms that inhabit Trindle Spring Run and underground streams and ponds. Although the surrounding area supports a diverse community of birds, amphibians, reptiles and mammals, due to the high amount of land development, there are few animals actually living on the installation. There are no aquatic ecosystems on the installation property. There are no known species that have been designated as endangered or threatened by the federal and state authorities located in the area of NAVICP Mechanicsburg.

RISK - A Human and Health Risk Assessment was accomplished for Sites 1 and 9 in FY90. A base-wide Ecological Risk Assessment (ERA) is planned for FY97. For the Department of Defense (DOD) Relative Risk Ranking System, four of the CERCLA sites were determined to have a high ranking, and three have a medium ranking.

The Department of Defense (DOD's) Relative Risk Ranking system was used to rank the risk factors for all the sites on the installation in FY95. Three of the 15 sites at the installation received a high risk ranking. Two of the high risk scores were due to contaminated groundwater, the third was for contaminated soil, which has the potential for contaminating the groundwater. The reason for the high rankings of the groundwater is that it has the potential for reaching off site wells. Few of the nearby wells are used for drinking water. Site 9, the Storm Water Drainage Ditch, has the potential for contaminating a nearby stream, Trindle Spring Run, where there could be both human and ecological receptors.

The Agency for Toxic Substance and Disease Registry (ATSDR) completed an initial site visit on April 16-18 1996 to perform a Public Health Assessment for the installation. ATSDR issued NAVICP a "D" ranking. This means that NAVICP has a low priority to receive a ATSDR health assessment in FY97.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - NAVICP Mechanicsburg was proposed for inclusion on the National Priorities List (NPL) January 18, 1994 and was listed in May 1994, with an HRS score of 50.00. A potential for migration of hazardous materials into the groundwater at five sites; (Sites 1-3, 5 and 7) was the factor which drove the placement of the installation on the NPL.

LEGAL AGREEMENTS - The Navy, EPA and Pennsylvania Department of Environmental Protection (PADEP) are currently working on a rough draft of a Federal Facility Agreement (FFA) for Mechanicsburg NAVICP. It is scheduled to be completed and in place in FY97. The Site Management Plan (SMP) is also being drafted and should be complete in FY97.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - The Technical Review Committee (TRC), formed in FY88, has helped foster good working relationships between the regulatory agencies, local municipalities, and the Navy. To update the public on cleanup progress, the TRC sponsored a media day highlighting a cleanup project. For greater community involvement a Restoration Advisory Board (RAB) was formed. About 20 RAB members from the community attend the monthly meetings. A publicly available Information Repository is located at the Mechanicsburg Public Library.

COMMUNITY RELATIONS PLAN - The Community Relations Plan (CRP) was completed in December 1992.

INFORMATION REPOSITORY - An Administrative Record and an Information Repository for the installation were established in September 1988. A copy of the Administrative Record is in the Information Repository, which is available for public viewing at the NAVICP, Safety, Health and Environment Division and also at a public library in Mechanicsburg.

HISTORICAL PROGRESS

FY84

Sites 1-7 - Were identified in September 1984, during the Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA) conducted under CERCLA guidelines. At the time of the IAS, three sites (Sites 1, 2 and 6) were determined not to pose a threat to human health or the environment and were not recommended for further investigation. Later, Sites 1 and 2 were re-added and have continued with the Installation Restoration (IR) phases. Four sites (Sites 3-5 and 7) were recommended for further investigation.

FY85

Sites 8-11 - Four sites were identified after the IAS.

FY88

Sites 1-5, 7, 8, 10 and 11 - Site Inspection (SI) was started at nine sites.
Site 9 - Polychlorinated Biphenylís (PCBs) a chemical added to oils, were discovered in sediment deposits in Site 9, the Storm Water Drainage Ditch. The site was not included in the SI but a Remedial Investigation/ Feasibility Study (RI/FS) was started.

FY89

Site 9 - The RI/FS was completed. The RI/FS determined that PCBs in the storm water drainage ditch were a result of past disposal practices at the installation.

FY90

Site 9 - Remedial Design (RD) phase was started.

FY91

Sites 1-3, 5, 7, 8 and 11 - An SI was completed for seven sites in October 1990. The SI detected; chlorinated hydrocarbons at Site 1; petroleum products, volatile organic compounds, pesticides, PCBs, and metals at Site 3; subsurface anomalies confirming the potential for buried materials at Site 4 and chlorinated hydrocarbons at Site 7.

MECHANICSBURG NAVICP HISTORICAL PROGRESS

Site 9 - Removal actions completed at Site 9 included; removal of contaminated soil from segment 1, providing fencing, and installing gabion dams.
Site 10 - Completed RD phase and started Remedial Action (RA) phase for a Final Remedial Action (FRA), which consisted of removal of leaking Underground Storage Tanks (USTs) and associated contaminated soil.

FY92

Sites 1, 3 and 7 - An RI/FS was started for Sites 1, 3 and 7.
Site 4 - Two separate soil excavations were conducted at Site 4 (Radioactive Waste Disposal Area). No evidence of radioactive contamination was found, and therefore, a No Further Action (NFA) decision was recommended for this site.
Site 5 - An Extended Site Inspection (ESI) was completed in September 1992 and concluded that further investigation under an RI/FS was not warranted.
Site 9 - The RD for a PCB "hot spot" removal was competed and awarded.
Site 10 - The RA phase and an FRA for tank removal were completed.

FY93

Site 3 - An IRA began in September 1993 and is scheduled to be complete in FY96. The IRA consists of removal of contaminated soil at the Burn Pits followed by bioremediation of contaminated soil. State and federal regulatory agencies are in ongoing discussions to determine additional treatment processes to be used for the soil.
Site 7 - The RI/FS was completed in March 1993 and recommended for NFA.
Site 9 - A Remedial Design (RD) phase at Site 9 was completed. Long Term Monitoring (LTM) started in June 93 and will continue through FY98. The second annual groundwater sampling and analysis was performed. The soil and sediment monitoring plan and initial sampling was completed. Contaminated soil and sediment were removed from a "hot spot" in segment 3. Contaminated soil was removed from sub-basin E of the Storm Water Drainage Ditch, a source of contamination for the ditch.
Site 10 - An ESI for Site 10 was completed and recommended for NFA.

FY94

Site 9 -The third annual groundwater sampling and analysis work was performed. The first annual soil and sediment monitoring work was performed. The water budget study, completed in April 1994, concluded that the Pennsylvania Department of Environmental Protection (PADEP) request for the Navy to fill sinkholes in the storm water drainage system ditch would cause flooding and sediment deposition downstream. This report helped settle the lawsuit between the Navy and the state.
Site 10 - The Navy continued to monitor hydrocarbon levels in groundwater, at the request of the state. Quarterly monitoring was performed for one year.

FY95

Basewide - A Time Critical Removal Action (TCRA) was initiated at the Tredegar Industries, Inc. property adjacent to NAVICP. The removal action removed approximately 600 tons of PCB contaminated soil.
Site 3 - The Interim Remedial Action (IRA) for bioremediation of contaminated soil continued. Sampling for additional contaminants of concern and monitoring of bioremediation was done.
Site 4 - The EPA concurred with the Navy's NFADD.
Sites 12-15 - These sites were added due the findings of the RCRA Facility Assessment (RFA).

PROGRESS DURING FISCAL YEAR 1996

FY96

Basewide - Began a basewide Ecological Risk Assessment. Started work on the Site Management Plan.
Site 4 - Completed PA/SI.
Sites 1 and 9 - Completed RI/FS.
Site 3 - Completed RI/FS FIELD work . This work included sampling the Biocell, 5000 cubic yard pile and the unexcavated area. Performed groundwater modeling for the design of a landfill. Tasked contractor to perform a focus feasibility study. RAC contractor performed site maintenance for ongoing bioremediation.
Sites 3 and 9 - IRAs completed, two at Site 9.
Site 11 - The RA was delayed for FY96 due to extensive EPA comments on the Remedial Action Plan and now planned for FY98.
Sites 3 and 12-15 - Completed the draft RI work plan for higher regulatory priority.
Sites 1, 4 and 7 - Response Complete.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Basewide - Complete the Ecological Risk Assessment and Site Management Plan.
Sites 3 and 12-15 - Complete RI/FS.
Sites 3 and 12 - Complete Remedial Design.
Site 1 - Complete the Human Health Assessment.
Site 11- An IRA will be conducted and planned completion in FY98.
Continue negotiations for Federal Facilities Agreement.

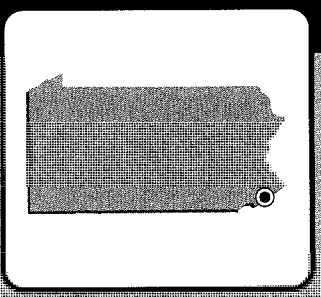
FY98

Site 3 - The RA for soil will continue.
Site 9 - RA is scheduled for completion.
Site 9 - Groundwater LTM will continue. Soil and sediment LTM will continue.
Site 11 - Complete IRA.
Sites 12-15 - A RI/FS will be completed at these sites.
Continue negotiations for Federal Facilities Agreement.
Site 9 - Response Complete is planned.

MECHANICSBURG NAVICP
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	9	1						
RI / FS	1	2	5					
RD	1		2					5
RAC	1			1				6
RAO								
IRA	2(5)	2(3)		1(1)	1(1)			1(1)
RC	5	3		1				6
Cumulative % RC	33%	53%	53%	60%	60%	60%	60%	100%

PHILADELPHIA NAVAL COMPLEX
PHILADELPHIA, PENNSYLVANIA



Engineering Field Division/Activity: NORTHDIV
Major Claimant: COMNAVFACENGCOM
Size: 1,193 Acres
Funding to Date: $25,406,000
Estimated Funding to Complete: $10,691,000

Base Mission: Provided general and specialized medical hospitalization services to active duty members of the armed forces and their dependents; provided logistical support for ships and service craft, overhauled, repaired and outfitted ships and craft; research.

Contaminants: Heavy metals; PCBs; POLs; solvents; volatile organic compounds

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	10	High:	3	Not Evaluated:	0
RCRA Corrective Action:	12	Medium:	8	Not Required:	13
RCRA UST:	8	Low:	6		
Total Sites:	30				

BRAC I, II

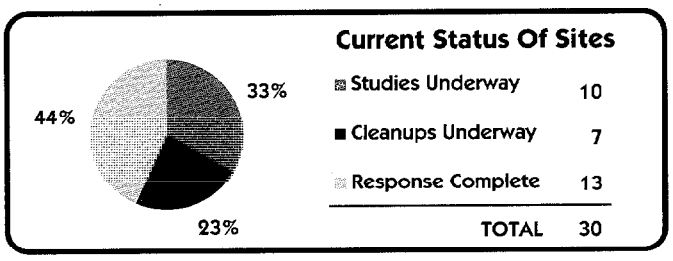
Sites Response Complete: 13

EXECUTIVE SUMMARY

The Philadelphia Naval Complex includes the Philadelphia Naval Hospital (NAVHOSP), the Philadelphia Naval Station (NAVSTA) and the Philadelphia Naval Shipyard (PNSY). Closure (BRAC) of 1988 and 1990 mandated the closure of NAVHOSP and NAVSTA respectively, and placed the PNSY in a closed and preserved status. In 1995, BRAC IV excessed the PNSY property previously identified for preserved status and not required to support the remaining activities.

The Philadelphia Naval Complex is located at the confluence of the Delaware and Schuylkill Rivers. The property identified for disposal encompasses 1,091 acres, with PNSY accounting for 266 acres and Naval Base (NAVBASE) 825 acres (NAVBASE owned the land while NAVSTA owned most of the buildings; henceforth, all lands and buildings will be referred to as NAVBASE). The former NAVBASE includes the Capehart Housing area. Another off-base parcel is the former Hospital (49 acres) and its supporting buildings. The BRAC 95 "footprint" has been developed to segregate retained property from excess property. The retained land is identified as Naval Surface Warfare Center, Carderock Division - Ships Systems Engineering Station (NSWCCD-SSES), includes the Norfolk Naval Shipyard Detachment (NNSY-DET) Naval Foundry and Propeller Center; certain waterfront facilities under the cognizance of the Naval Inactive Ship Maintenance Facility (NISMF); Public Works Center San Francisco Detachment Philadelphia (PWC DET); the Naval Bureau of Medicine (BUMED); and the Naval Fleet and Industrial Supply Center (FISC).

The Philadelphia Naval Complex is not listed on the NPL, and does not require a Federal Facilities Agreement (FFA). However, all Remedial Investigations (RIs), studies, designs, and Remedial Actions (RAs) are being conducted in cooperation with EPA Region III and the Pennsylvania Department of Environmental Protection. Currently there are 30 sites; 10 sites are classified as CERCLA, 12 are RCRA CA, and 8 are USTs with 10 sites in the study phase. An Initial Assessment Study (IAS) was completed in July 1983. Subsequent confirmation studies in 1986, 1987 and 1988 identified an additional 4 sites, Sites 3, 6, 7 and 15, referred to as PCB Sites, underwent an Remedial Investigation/Feasibility Study (RI/FS) and were under a Record of Decision (ROD). Two phases of remedial action were required. An amended ROD was signed in 1995 to revise the second phase. This amended ROD saved approximately $1.4 million in remedial costs. The remediation at Sites 3, 6, 7, and 15 is completed, and response is complete on 13 sites.



IR Sites 1 & 2 are dredge spoils and construction debris disposal areas and are contaminated with heavy metals and sandblasting grit. While the RI for these sites are in their final stage, a removal action is being conducted to remove the sandblasting grit and construction debris. This removal action is expected to result in no further action for the sites.

IR Sites 4 & 5 are landfill areas contaminated with asbestos, sandblasting grit, heavy metals, and construction debris. In 1994 a removal action stabilized the river bank along site 4, and a similar removal action has begun along Site 5. The sites are in the RI Phase, and final remediation of these Sites is expected early FY 1998.

Sites 9, 12, and 14 were transferred to the State's Petroleum Cleanup Program, and Sites 10 & 11 were closed out.

In 1991, EPA conducted a RCRA Facility Assessment (RFA) and produced a draft report which identified 167 Solid Waste Management Units (SWMUs) and 15 Areas of Concern (AOCs). Fifteen of these SWMUs are known to have had releases into the environment, and have proceeded into an expanded investigation. One of these 15 SWMUs have been transferred to the State's Petroleum Cleanup Program, one has been completely remediated, and five have been proposed for no further action. Risk Assessments will be accomplished on the remaining SWMUs.

PHILADELPHIA NAVAL COMPLEX
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Philadelphia Naval Complex is located on what originally was known as League Island. This island and the Philadelphia area lie within the Atlantic Coastal Plain Physiographic Province. Much of the original topography has been extensively altered through filling operations. These filling operations have connected the island to the mainland and expanded the island into the river in several places. The soil types at Philadelphia Naval Complex have been classified by the Soil Conservation Service as urban land. The fill material consists of sand, gravel, rubbish, garbage, cinders and similar material in excess of five feet thick throughout much of the complex. The hospital property is also located on altered wetland. The Delaware River forms the southern and eastern boundaries of the NAVBASE and PNSY, while the Schuylkill River forms the western boundary. Surface drainage flows directly into the Delaware River, the Schuylkill River or into the Naval Reserve Basin, which drains into the Schuylkill River. Tidal fluctuations from both rivers and the Atlantic salt wedges have extended upstream past the facility. Underlying the area is the Potomac-Raritan-Magothy aquifer system. This system consists of a sequence of fluvial and estuarine sedimentary strata which accumulated on the metamorphic basement rock. This aquifer system yields three separate aquifers at different depths.

NATURAL RESOURCES - A draft Environmental Impact Statement (EIS) for the disposal and reuse of the excess portion of the NAVBASE was available to the public in January 1996. A public hearing on the DEIS was held in January 1996. The final EIS was filed in June 1996 and the Record of Decision (ROD) is in progress and expected to be completed in Fall 1996. No significant issues have been identified to date. The compliance process required by Section 106 of the National Historical Preservation Act is underway and should be completed at the same time as the ROD. Two endangered species have been identified in the area: the Peregrine Falcon and the Short-nose Sturgeon. The cultural survey report, finalized in 1994 found the following: three archeological sites with potential for eligibility on the National Register of Historic Places: a World War I Barracks site, a structure of unknown origin/use at the south end of the Marine Corps Parade Grounds, and an area surrounding Quarter A. The survey also found two National Register-eligible historic districts with 2,287 contributing buildings, structures and objects. Two buildings, Building 100 Marine Barracks, and the Commandant Quarters, Quarters A at NAVBASE are listed on the National Register of Historic Places with two others eligible and under consideration. Presently, the Pennsylvania State Historic Preservation Officer is reviewing the reports. The final cultural survey report of the Hospital parcel was completed in 1993 with the recommendation that the entire site, 47 buildings, be declared a National Register-eligible historic district. There are no potential significant archeological sites at the Hospital.

RISK - Philadelphia Naval Complex is not on the NPL, thus no comprehensive Agency for Toxic Substance and Disease Registry (ATSDR) Public Health Assessment was done. However, human health risk assessment and ecological screens are being done at a number of sites. Of the 17 sites evaluated, three are high, eight are medium and six are low under the Department of Defense (DOD) Relative Risk Ranking System.

REGULATORY ISSUES

LEGAL AGREEMENTS - A ROD for Sites 3, 6, 7 and 15 was signed in February 1992. An amended ROD for these sites was signed in December 1995. An Action Memorandum to implement bank stabilization at Site 4 was finalized in November 1993, and an Action Memorandum to remove blasting grits and debris was signed in August 1995.

PARTNERING - A partnering agreement has been developed and signed by BCT members. The members include: Naval Facilities Engineering Command (NAVFAC) Northern Division (NORTHDIV), Environmental Protection Agency (EPA) Region III, and the Commonwealth of Pennsylvania Department of Environmental Protection (PADEP).

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - In February 1994, a Restoration Advisory Board (RAB) was established, and is chaired by the BRAC Environmental Coordinator (BEC) and a representative from the community. Meetings have been held monthly since its inception, and are advertised in the local newspaper.

COMMUNITY RELATIONS PLAN - The Community Relations Plan (CRP) was issued in February 1995 and is being updated on a semi-annual basis.

INFORMATION REPOSITORY - An Information Repository was established at the Free Public Library of Philadelphia, Passyunk Branch, 20th and Shunk Streets.

BASE REALIGNMENT AND CLOSURE

BRAC - In FY94, an Environmental Baseline Survey (EBS) for the Hospital was completed. Two EBSs for the PNSY and the NAVBASE were completed in FY95. None of the property was identified in accordance with the Community Environmental Response Facilitation Act (CERFA) as uncontaminated. However, property was identified as transferable in accordance with CERCLA. The Navy conducted an EBS Phase II investigation which required a study of 57 areas at the Philadelphia Naval Complex. Currently 21 areas have been identified for further evaluation.

BRAC CLEANUP TEAM - The BRAC Cleanup Team (BCT) was formed in November 1993 and continues to expedite the review process and facilitate communication between its members through weekly meetings. The weekly meetings include a representative from the Local Reuse Authority and members of the project cleanup team.

DOCUMENTS - A BRAC Cleanup Plan (BCP) was prepared in March 1994. The plan was revised extensively in March 1995, and it is currently undergoing its annual revision to include new information and status of the properties. Three Environmental Baseline Survey (EBS) reports were prepared by NORTHDIV. The final report for the Hospital was completed in June 1994, and the final reports for PNSY and NAVBASE were issued in December 1994. The EBS was done in accordance with DOD and ASTM guidelines. The results identified 57 review items.

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
0 acres	627 acres	8 acres	0 acres	8 acres	83 acres	148 acres

The EBS Phase II work plan was prepared and implemented for the 31 sites in Categories 2 and 3 in January 1995. The results have been reviewed by the BCT. Twenty-one (21) of these sites were reviewed for Category 4, 14 were either closed-out based on additional investigation or addressed by another environmental program. The remaining eight sites (one item was divided and counted twice) required further investigation and/or surface cleaning, waste removal, or other action.

LEASE/TRANSFER - Property transfer in the excess areas of the Naval Complex will be performed by deed. Within the retained area, a master leasing agreement has been established.

PHILADELPHIA NAVAL COMPLEX
RELEVANT ISSUES

When the City expresses interest in a particular building, Northern Division performs a site-specific Environmental Baseline Survey. A Finding of Suitability for Lease (FOSL) is then issued and when approved, the lease is executed. The first sublease took effect on 1 May 1994 with three subsequent subleases approved. Nine FOSLs were completed for buildings and facilities.

REUSE - The disposal of the NAVHOSP and NAVBASE properties has been implemented in accordance with the Community Reuse Plan. This plan was developed by the City of Philadelphia, Office of Defense Conversion. The City of Philadelphia Office of Defense Conversion has issued reuse plans for the Philadelphia Complex in two parts. A plan for the hospital was issued in 1993, while the plan for the remainder of the complex (NAVBASE, PNSY and the Capehart housing area) was completed in September 1994. PNSY and NAVBASE have been divided into four areas for future development purposes. They are as follows: The Shipyard area's primary role will be providing locations for heavy industries. As part of BRAC IV, a significant portion of the PNSY is now planned for disposal rather than preservation. The Local Reuse Authority is revising the reuse plan and seeking tenants that would continue the shipbuilding/refitting or similar functions historically associated with the Philadelphia Naval Complex. The League Island Center Parcel is projected for research and development, educational, light industrial and commercial facilities and administrative facilities. The Girard Point Industrial Park is envisioned as an industrial and distribution warehouse area. The East End Commercial Park will accommodate an intermodal transportation facility. A waterfront park is planned along the Delaware River. The Capehart Housing area is to remain residential, and the redevelopment plan foresees the parcel being sold to a private developer.

The NAVHOSP reuse includes townhouses, a park, and a parking lot.

HISTORICAL PROGRESS

FY83

Sites 1-15 - An IAS, similar to a Preliminary Assessment (PA), and subsequent confirmation studies in 1986-1987 were performed for the NSWC and the PNSY. One UST site (Site 009) and fourteen CERCLA sites were identified.

FY87

Sites 1-8 and 12-15 (PNSY) - A Site Inspection (SI) was completed.

FY90

Sites 3, 6 and 15 - A Remedial Investigation/Feasibility Study (RI/FS) was completed.
USTs 4 and 5 (PNSY) - The Initial Site Characterization (ISC) was completed.
Site 7 (PNSY) - The RI/FS was completed.

FY91

Site 3 (PNSY) - An Interim Remedial Action (IRA) was completed.
USTs 1 and 2 (PNSY) - The ISC phase was completed.
UST 4 (PNSY) - The Corrective Action Plan (CAP) was completed.

FY93

UST 1 (NAVHOSP) - The ISC was completed, the RI/FS is in progress, and is expected to be completed in FY96.
UST 2 (NAVHOSP) - The PA was completed.

FY94

UST 3 (PNSY) - The ISC was completed.

FY95

UST 2 (NAVHOSP) - The CAP was completed, and the corrective action Design (DES) was completed.
Site 6 (PNSY) - The Remedial Design (RD) was completed.
Site 4 (PNSY) - An IRA was completed. The river bank was stabilized to prevent the corrosion of the existing waterfront landfill.
Sites 1 and 2 (PNSY) - IRAs were initiated to remove asbestos, debris and blasting grits.
UST 6 - The ISC was completed.
USTs 1, 2 and 4 - The CAPs were completed.
UST 4 - DES was completed.
SWMUs 1-16 - An RFA identified 16 SWMUs that require remediation. RFI was completed for SWMUs 5 and 13.
Site 7 (NSWC) - RD was completed.
SWMU 15 - Was determined to require NFA.

PROGRESS DURING FISCAL YEAR 1996

FY96

Sites 1, 2 and 5 (NS) - Completed one phase of a (IRA) removal action to remove construction debris and a second phase was started to remove sandblasting grit. This is expected to results in no further action.
Site 15 (NS) - Remedial Design was completed.
Site 3, 6 and 15 (NS) - remedial action is complete and site 6 was closed out.
Site 4 and 5 (NS) - continued in the RI/FS phase Another removal action was initiated to stabilize the river bank along site 5.
SWMU 14 (NS) - had a RCRA RFI/CMI completed and SWMU 5 had a RFI completed.
UST 3 and 4 (NS) - Implementation is underway.
Site 3, 6, 15 (NS) - Response Complete and is expected to be closed out.
USTs 1 and 2 (NH) - IMP was completed.
USTs 1 and 2 (NH) - Response Complete.
Site 12 (NSY) - a removal action was initiated and is on-going to remove free product, and a site characterization is underway.
SWMUs 3, 4, 6, 11 and 14 (NSY) - has completed an RCRA RFI/CMS.
SWMU 5 (NSY) - CMI was completed.
SWMUs 4, 6 and 11 (NSY) - Response Complete.
UST 1 (NSY) - IMP was completed.
UST 1 (NSY) - Response Completed.
UST 3 (NSY) - Design Completed
USTs 1 and 3 (NSY) - CAP Completed..
Site 7 (NSWCCD) - remediation was complete and the site closed out.
Site 8 (NSWCCD) - Ecological screen (RI/FS) was initiated to evaluate the risk of contaminated sediments.
Site 9 (NSWCCD) - A MILCON project removed contaminated solid soil from area, and site characterization was initiated
Site 14 (NSWCCD) - site characterization was drafted and it appears as if no further action will be required.
SWMU 2 (NSWCCD) - had a RFI completed and SWMUs 15, and 16 response is complete with no further action expected.

During FY96 environmental concerns continued to focus on the environmental concerns at the east side of the base. Also, remedy was complete for one UST. Remediation began at SWMU 13 to decontaminate the incinerator and remove the stack. Removal of the stack is currently on hold pending historic recordation and Pennsylvania State Historic Preservation Officer approval of the work as part of the National Historic Preservation Act.

PHILADELPHIA NAVAL COMPLEX
PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 1 and 2 (NS) - remedial action is expected to be compete and the sites closed out.
Sites 4 and 5 (NS) - the remedial investigation is expected to be complete and the remedial action initiated.
Sites 1, 2, 4 and 12 (NS) - RI/FS is expected to completed
Sites 4 and 5 (NS) - Remedial Design is to completed.
Sites 1, 2 and 13 (NS) - Remedial Action is scheduled for completion.
Sites 1, 2 and 13 (NS) - Response Complete is expected.
Site 13 (NS) - remedial action will be implemented.
CMI.
SWMU 9 (NS) - IRA is expected for completion.
SWMUs 3, 10, 12, 13 and 14 (NS) - Expect Response Completion.
USTs 3 and 4 (NS) - is expected to complete IMP.
UST 4 (NS) - IRA is anticipated for completion.
USTs 3 and 4 (NS) - is expected to be Response Complete.
Site 12 (NSY) - design for soil and possibly groundwater remediation is expected.
SWMU 3 (NSY) - is expected to have corrective measures complete and SWMU 10 is expected to have it's RFI complete.
UST 1 (NSY) - should have long-term operations completed.
UST 2 and 5 (NSY) - implementation should be complete with initiation of long-term operations underway for UST 5.
Site 9 (NSWCCD) - is expected to have the remedial implementation underway.
Site 14 (NSWCCD) - is expected to be closed out.

FY98

Site 5 (NS) - RI/FS is to be completed.
Site 12 (NS) - Remedial Design is expected to be completed.
Sites 4, 5 and 12 (NS) - is expected to have the remedial action in place with the beginning of long-term monitoring.
Sites 4 and 5 (NS) - Response Complete is expected.
SWMUs 7-9 (NS) - is expected to have all remedial actions complete.
SWMUs 7-9 (NS) - Expect to have Response Complete.
UST 12 (NSY) - Expect Design to be completed.
UST12 (NSY) - IMP is expected to be complete.
All remedial actions (NSY) are expected to be complete.
Site 9 (NSWCCD) - is expected to have it's remedial action initiated with the design for SWMU 1 complete.

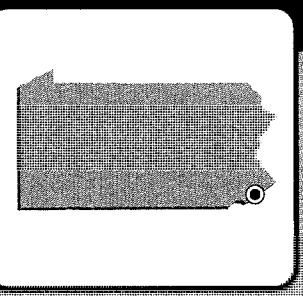
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	10							
RI / FS	3		4	1				
RD	1	2	2					
RAC		3	3	2				
RAO								
IRA	4(4)	3(3)						
RC	2	3	3	2				
Cumulative % RC	20%	50%	80%	100%	100%	100%	100%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	12							
RFI / CMS		5	5					
DES			1					
CMI		1	4	3				
CMO								1
IRA								
RC		3	5	3				1
Cumulative % RC	0%	25%	67%	92%	92%	92%	92%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	2							
CAP	3	3						
DES	2	1		1				
IMP	1	3	2	1				
IMO						1		
IRA			1(1)		1(1)			
RC	2	3	2			1		
Cumulative % RC	25%	63%	88%	88%	88%	100%	100%	100%

PHILADELPHIA NAVAL SURFACE WARFARE CENTER, CARDEROCK DIVISION
PHILADELPHIA, PENNSYLVANIA



Engineering Field Division/Activity: NORTHDIV

Major Claimant: COMNAVAIRSYSCOM

Size: 26 Acres

Funding to Date: $3,207,000

Estimated Funding to Complete: $2,597,000

Base Mission: Ensure operational readiness of U.S. and Allied Forces by providing full spectrum technical capabilities necessary to ready, sustain, and transition product from concept through product to operational employment.

Contaminants: Heavy metals, PCBs, PCBs

Number of Sites:

CERCLA:	3
RCRA Corrective Action:	4
RCRA UST:	0
Total Sites:	7

Relative Risk Ranking of Sites:

High:	2	Not Evaluated:	0
Medium:	2	Not Required:	1
Low:	1		

Sites Response Complete: 4

PROGRESS AND PLANS

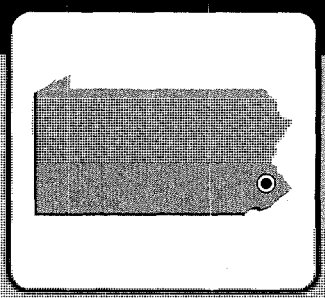
CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	3							
RI / FS	1		1	1				
RD	1							
RAC		1						
RAO								
IRA								
RC		1	1	1				
Cumulative % RC	0%	33%	67%	100%	100%	100%	100%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	1	2	1					
RFI / CMS		1						
DES					1			
CMI								1
CMO								
IRA								
RC		3						1
Cumulative % RC	0%	75%	75%	75%	75%	75%	75%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA			2					
CAP			1					
DES				1				
IMP					1			
IMO								
IRA								
RC			1		1			
Cumulative % RC	0%	0%	50%	50%	100%	100%	100%	100%

WARMINSTER NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION

WARMINSTER TOWNSHIP, PENNSYLVANIA



Engineering Field Division/Activity: NORTHDIV

Major Claimant: COMNAVAIRSYSCOM

Size: 618 Acres

Funding to Date: $11,362,000

Estimated Funding to Complete: $30,554,000

Base Mission: Research and development for Naval aircraft systems, antisubmarine warfare systems and the associated computer software

Contaminants: Firing range wastes, fuels, heavy metals, industrial wastewater sludges, non-industrial solid wastes, paint, PCBs, sewage treatment sludge, solvents, unidentified chemicals, volatile organic compounds

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	9	High:	8	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	1	Not Required:	1
RCRA UST:	1	Low:	0		
Total Sites:	10				

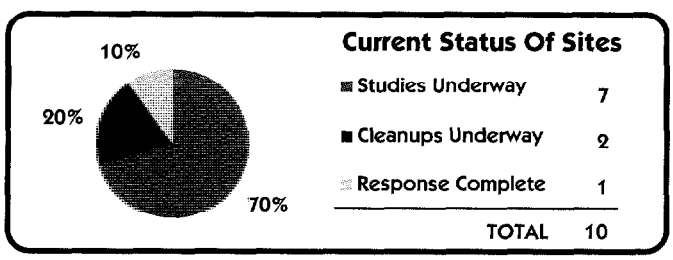
NPL | BRAC II

Sites Response Complete: 1

EXECUTIVE SUMMARY

Warminster Naval Air Warfare Center (NAWC) is in Warminster Township, Bucks County, Pennsylvania. The installation was commissioned in 1944 as the Naval Air Development Center. The mission is research, development, testing, and evaluation for Naval aircraft systems. Studies are also conducted in antisubmarine warfare systems and software development. Past operations include aircraft maintenance and repair, pest control, fire-fighting training, machine and plating shops, spray painting, and various materials research and testing . Wastes generated include paints, solvents, industrial wastewater treatment sludge, and waste oils. In 1979, Volatile Organic Compounds (VOCs), primarily the organic solvents TCE and PCE and metals were detected in groundwater wells. In 1980, the Navy began a study of contaminated waste disposal sites under the Naval Assessment and Control of Installation Pollutants (NACIP) program. In the early 1980's, TCE in the groundwater was suspected of causing birth defects in the area. A survey conducted by the Health Department concluded the birth defect rate was within the normal statistical range. NAWC Warminster is an Interim Status Treatment, Storage and Disposal Facility (TSDF) under the RCRA statute for hazardous wastes. Controlled under this permit are two industrial waste storage impoundments, one storage building and one waste oil Underground Storage Tank (UST). NAWC was placed on the NPL in 1989 due to potential groundwater contamination. A Federal Facility Agreement (FFA) was signed in September 1990.

NAWC lies in the Delaware River drainage basin. Surface runoff empties into the Delaware River, which is about 10 miles away. Bedrock underlying NAWC belongs to the Stockton Formation, which is dominantly sandstone with occasional layers of shale. The top layer of bedrock is typically extensively weathered. Due to the high permeability of the weathered rock layer, the greatest migration pathway is laterally. Contaminants can be carried by this lateral flow until the groundwater is either discharged to streams, or dispersed into joints and fractures. Contaminant migration pathways are surface water, soil, soils to groundwater, and groundwater, potentially affecting both human and ecological receptors.



A Technical Review Committee (TRC) was formed in April 1988 and converted to a Restoration Advisory Board (RAB) in December 1993. The RAB has 15 members and they meet monthly. Although the public was involved with the TRC, the new RAB has proven to be more effective in community outreach and soliciting community involvement. An Information Repository is available to the public at the Bucks County Public Library in Doylestown, Pennsylvania.

In April 1993, off-base residential well sampling indicated groundwater contamination in two neighborhoods. Working with the EPA, the Navy installed water treatment systems for over 50 private homes with contamination greater than drinking water standards. Connections to the local municipal water system were completed in 1994. This action removed potential health risks to the local community.

Currently, there are seven sites in the study phase. As of the end of FY96, an Interim Removal Action (excavation) at Site 4 was in progress from FY93 and now completed. Another Interim Removal Action was completed at Site 8 (Fire Fighting Training). Fieldwork for a soil/sediment RI (Sites 5 and 7) was completed during FY 96 and a draft version of the report is available. A pump and treat system was initiated and long-term monitoring began for Operable Unit 3. Sites 4 and 8 were combined into an Operable Unit in FY 95. Response is complete on UST 1. A Remedial Design was completed for Site 6.

WARMINSTER NAWCAD
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - NAWC lies in the Delaware River drainage basin. Surface runoff empties into the Delaware River, which is about 10 miles away. No constantly flowing streams course through the NAWC property. Intermittent streams are tributaries to Little Neshaminy and Southampton Creeks, which are used for light industrial purposes. Drainage patterns from the NAWC are radial with respect to the topographical high which bisects the property along the main east/west runway. Bedrock underlying NAWC belongs to the Stockton Formation, which is dominantly sandstone with occasional layers of shale. The top layer of bedrock is typically extensively weathered. The weathered rock ranges from 8 to 25 feet thick. Soils in the vicinity are dominantly silt loams.

Depth to groundwater ranges from 2 to 14 feet below the land surface. A saturated zone is typically located at the base of the layer of weathered bedrock. Contaminants can be carried by lateral flow until the groundwater is either discharged to streams, or dispersed into joints and fractures. Water is supplied by seven on-site wells. Three other existing wells are contaminated with the organic solvents TCE and PCE and are not used for potable water. In June 1993, the Navy provided bottled water, filtration systems, and city water system hookups for two residential areas due to the presence of the organic solvent TCE contamination in drinking water wells.

NATURAL RESOURCES - The airfield provides a large open field habitat for many terrestrial mammals and birds. There are also small wooded areas bordering the airfield that provide habitat and cover.

NAWC is divided between two drainage basins. There are two small tributaries of Little Neshaminy Creek to the north and headwaters of Southampton Creek to the south. Both local basins lie within the regional basin of the Delaware River.

No known threatened or endangered species are present. Contaminated groundwater affects the Stockton Formation aquifer, which provides water for over 100,000 persons within 3 miles of NAWC. Local surface water bodies are used for recreation and industrial purposes.

RISK - Of the nine CERCLA sites, one received a medium risk ranking and eight received high risk rankings under the Department of Defense (DOD) Relative Risk Ranking System. The high rank was determined by groundwater contamination for each of the eight sites ranked high. Contaminants include paints, oils, solvents, and metals. Groundwater will soon be undergoing treatment at all high risk sites.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - The installation was proposed for the National Priorities List (NPL) in 1986 with a Hazard Ranking System (HRS) score of 57.93. It was listed on the NPL in October 1989. A Pre-Record of Decision (ROD) for Sites 1-8 was signed on 4 October 1989.

LEGAL AGREEMENTS - A Federal Facility Agreement (FFA) was signed between the Department of the Navy (DON) and EPA on 20 September 1990. Operable Unit (OU) 1 was identified in December 1992 as containing Sites 1-3 and 5-7. The OU was addressed in a ROD signed in September 1993 for an interim remedy of a pump and treat system to treat groundwater.

PARTNERING - Successful partnering between the BRAC Cleanup Team (BCT) and the Restoration Advisory Board (RAB) resulted in compressing a project schedule to 15 months for study, design, and construction cost negotiations for the pump and treat system at OU 3. Another successful partnering effort between the BCT and the RAB was an RA for residential wells contaminated with the organic solvent TCE. A task order under the Comprehensive Long-Term Environmental Action Navy (CLEAN) contract was immediately started by Naval Facilities Engineering Command (NAVFAC), Northern Division (NORTHDIV). The Navy distributed bottled water, installed temporary treatment systems on each affected well, and then coordinated with EPA and the local water authority to install water service to the residential areas. The quick teamwork by the BCT, RAB, and NORTHDIV was significant in gaining credibility with the community.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in April 1988. They met regularly to address cleanup issues. The TRC was converted to a Restoration Advisory Board (RAB) in December 1993. The RAB has 15 members and they meet on a monthly basis. Although the public was involved with the TRC, the new RAB has proven to be more effective in community outreach and soliciting community involvement.

COMMUNITY RELATIONS PLAN - The Community Relations Plan (CRP) was drafted in FY90 and was updated in FY94.

INFORMATION REPOSITORY - An Administrative Record was established in December 1993. A copy of the Administration Record documents are contained in an Information Repository located at the Bucks County Public Library in Doylestown, Pennsylvania and at the Environmental Branch of the Public Works Office at NAWC and at NORTHDIV.

BASE REALIGNMENT AND CLOSURE

BRAC - NAWC Warminster was included on the 1991 Base Realignment and Closure (BRAC) list for realignment. The property was divided into eight parcels, with 353 acres identified as Community Environmental Response Facilitation Act (CERFA) clean. The 1995 BRAC Commission recommended NAWC for closure. Operations will be transferred to NAWC Patuxent River, Maryland, in September 1996. The closure date is anticipated to be March 1997, but the final property transfer date has not been determined. About 100 acres of the property will be retained by the Navy.

BRAC CLEANUP TEAM - The BRAC Cleanup Team (BCT) has been established and includes representatives from NORTHDIV, EPA Region III, and the Pennsylvania Department of Environmental Protection (DEP). The BCT works closely with the Federal Lands Reuse Authority of Bucks County and the Bucks County Commissioners to set goals and prioritize the remaining work. The BRAC Cleanup Plan (BCP) and an Environmental Baseline Survey (EBS) Phase I were completed in FY94. A Phase II EBS is planned for the future.

DOCUMENTS - The BRAC Cleanup Plan (BCP) and an Environmental Baseline Survey (EBS) Phase I were completed in FY94. A Phase II EBS is underway. A Final Draft Land Reuse Plan is currently being reviewed. The Environmental Condition Of Property (ECP) was developed using an EBS conducted by NORTHDIV and supplemented with additional information obtained through discussions with EPA Region III. These figures have not received regulatory concurrence. Additional information (aerial photographs, archive drawings and employee interviews) has recently been obtained and the EBS will be expanded to include this information. 53 Areas of Concern have been identified and are being evaluated.

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
353 acres	7 acres	0 acres	0 acres	7 acres	7 acres	359 acres

WARMINSTER NAWCAD
HISTORICAL PROGRESS

LEASE/TRANSFER - There are 733 acres available for disposal. Currently, 160 acres are being leased on an Agricultural Outlease. Approximately 25% of the property is currently eligible for transfer by deed. The remaining property requires further evaluation.

REUSE - A county reuse committee was formed to develop a Land Reuse Plan for Warminster, and to address social and economic issues. The Final Draft Land Reuse Plan has been completed.

FAST TRACK INITIATIVES - Implementation of a pump and treat remedy for OU 3 proceeded on a fast track basis with construction being awarded almost concurrent with the signing of the ROD.

HISTORICAL PROGRESS

FY85

Sites 1-9 - An Initial Assessment Study (IAS), and a Confirmation Study (CS), were completed that identified nine sites as potentially contaminated. The original Site 9 was closed out. The other eight sites were recommended for further study under a Remedial Investigation/Feasibility Study (RI/FS).

FY86

UST 1 - This Underground Storage Tank (UST) site was identified.

FY87

UST 1 - A leaking 1,000 gallon heating oil tank was removed.

FY90

UST 1 - Contaminated soil was removed and the site was closed out. No further UST remediations are expected.

FY91

Sites 1-8 - Phase I of the Remedial Investigation (RI) was completed.

FY93

Sites 1-3 and 5-7 - In June 1993, the Navy provided bottled water, filtration systems, and water hookups for two residential areas due to the presence of the solvent TCE contamination in drinking water wells. The RI/FS was completed and an interim groundwater Record of Decision (ROD) was signed.

FY94

Sites 4 and 8 - The RI/FS for groundwater was completed.
Sites 1-3 and 5-8 - The Remedial Design (RD) for groundwater was completed.

FY95

A Phase II Environmental Baseline Survey (EBS) was initiated and completed.
Sites 4 and 8 (OU 3) - The final ROD for extraction and treatment of groundwater was signed.

PROGRESS DURING FISCAL YEAR 1996

FY96

Sites 4 and 8 (OU 3) - IRA was completed.
Sites 5 and 7 - An RI/FS was completed.
Site 9 (Area D) - Source investigation field work started.
Site 4 - Source removal action started and completed.
Site 6 - RD was completed.
Sites 4 and 8 (OU 3) - Pump and treat operations started.
Phase III RI/FS nearing completion.
FOSL for Bldg. 108 signed out of NORTHDIV.
OU-3 - Initiate Long Term Monitoring/Operations (LTM/LTO).
EBS Phase II - Investigate 53 Areas of Concern.
Phase II UST - design was started and completed.
UST 1 - Design completed.
UST 1 - RC - tanks were removed; soil investigations continue.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 1, 2, 3, 4, 6, 8 and 9 - RI/FS scheduled for completion.
Sites 1, 2, 3 and 8 - Remedial Design is expected to be complete.
Sites 1, 2, 3, 6, 8 and 9 - IRA is planned to completed.
Site 3 - Expected to be Response Complete.
Sites 5-7 (Area B) - Final ROD is expected to be signed. Initiate groundwater remedy.
OUs 1 and 3 - LTM/LTO.
EBS Phase II - Complete Area of Concern investigation; Initiate course of action.
Phase II UST - Complete tank and soil removal.

FY98

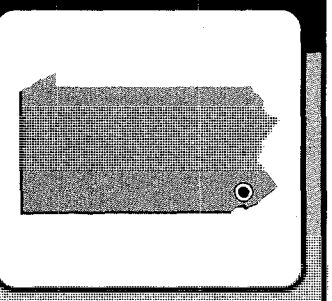
Complete land and building lease/transfer.
Sites 5 and 9 - Plan to complete Remedial Design.
Site 9 - Expect IRA (2) and RA completion. EBS Phase II - Finalize remedial/removal actions.
OUs 1 and 3 - LTM/LTO.
Issue No Further Action (NFA) RODs for applicable sites.

WARMINSTER NAWCAD
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	9							
RI / FS		2	7					
RD		1	4	2				
RAC			5	1			2	
RAO								6
IRA		2(2)	6(6)	1(2)				
RC			1				2	6
Cumulative % RC	0%	0%	11%	11%	11%	11%	33%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP								
DES		1						
IMP	1							
IMO								
IRA	1(2)							
RC		1						
Cumulative % RC	0%	100%	100%	100%	100%	100%	100%	100%

WILLOW GROVE NAVAL AIR STATION
WILLOW GROVE, PENNSYLVANIA



Engineering Field Division/Activity: NORTHDIV
Major Claimant: COMNAVRESFOR
Size: 1,350 Acres
Funding to Date: $2,639,000
Estimated Funding to Complete: $41,000,000

Base Mission: Reserve Naval Air Station for training of aviation activities

Contaminants: Heavy metals, PCBs, POLs, solvents

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	11	High:	5	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	6	Not Required:	2
RCRA UST:	2	Low:	0		
Total Sites:	13				

NPL

Sites Response Complete: 2

EXECUTIVE SUMMARY

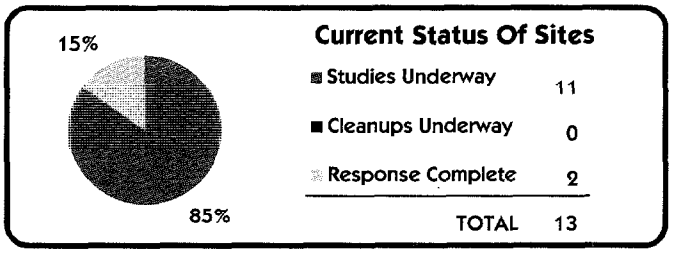
The Naval Air Station Joint Reserve Base (NASJRB) Willow Grove is located 25 miles northeast of Philadelphia, Pennsylvania. The Navy acquired the airfield in 1942, and has used it to train pilots ever since then. The major operations on base that contributed to the environmental problems were the landfilling of paint wastes, the conducting of fire fighter training, and the storing of fuel. The primary contaminants of concern are heavy metals, the chemical additive PCBs, petroleum products, and solvents. A Federal Facilities Agreement (FFA) is planned to be initiated in FY97. NASJRB Willow Grove is not in the process of applying for, renewing, or modifying a RCRA permit; therefore, no RCRA corrective action is required.

Although no perennial streams are located within the boundaries of NASJRB Willow Grove, tributaries of the Pennypack and Little Neshaminy Creeks extend to within 1/4 mile of NASJRB Willow Grove. Pennypack Creek is designated a warm water fishery by the Pennsylvania Department of Environmental Resources and trout stocking is practiced in Little Neshaminy Creek. Runoff from surface areas is conveyed by a storm drainage system to one of several outfalls to Pennypack Creek or Park Creek (a tributary of Little Neshaminy Creek). NASJRB Willow Grove lies on the Stockton aquifer, which is the primary source of drinking water in the region.

Subsequent to the recent NPL listing of NASJRB Willow Grove, the installation established a Restoration Advisory Board (RAB) and a Community Relations Plan (CRP). Interested parties from the community have contacted the installation about becoming RAB members. The first RAB meeting was held on August 29, 1996. RAB meetings have been held on a quarterly basis. The CRP is going to be submitted in FY97. The plan will provide fact sheets, press releases, and public notices. An Administrative Record (the official file) was established in March 1991 and is maintained by the Navy. The information in the Administrative Record was placed in two Information Repositories, established in 1991, for public access.

There are 13 IR sites, 11 are CERCLA sites and are 2 RCRA UST sites. Currently, there are eleven sites in the study phase. A Remedial Investigation/Feasibility Study (RI/FS) has determined that three sites are sources of chlorinated hydrocarbons in groundwater, and one may be a source of dieldrin contamination to surface water. A RI for four sites completed in FY93 recommended a Phase II RI/FS to fill data gaps and provide alternatives for cleanup actions. Phase II RI/FS Work Plan activities continue for Sites 1, 2, 3, and 5. There are two sites that are Response Complete (RC), however to date, no concurrence has been received from the State or EPA Region III regarding the proposals for no further action. An IRA was completed for Site 10.

The final approved work plan for the Phase II RI will be implemented during the first part of FY97. The fieldwork for the Phase II RI will then be completed in mid FY97. Also in FY97, the FS will be funded and its preparation initiated. The remainder of FY97 will be devoted to reviewing both the RI and FS documents for Sites 1 and 10 before completion in that same year.. Also in FY97, a Site Management Plan (SMP) will be developed in order to support the FFA negotiations with EPA Region III and PA Department of Environmental Protection. Finally in FY97, a Record of Decision will be developed for Site 10 based upon the results of the free product recovery pilot study. In FY98, a Record of Decision (ROD) will be developed based upon the results of the FS and a design for the preferred alternative initiated for Site 1 only. Also, the design for Site 10 will be developed in accordance with the ROD with completion scheduled for FY99. Finally in FY98, funding should be received and RI/FS initiated for Site 11. Sites 2, 3, 5 are expected to be completed. Site 1 Remedial Design is planned for completion.



WILLOW GROVE NAS RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Although no perennial streams are located within the boundaries of NASJRB Willow Grove, tributaries of the Pennypack and Little Neshaminy Creeks extend to within 1/4 mile of NASJRB Willow Grove. Surface water that is not retained in either the Recreational Pond or the Captain's House Pond is conveyed to one of several outfalls to the Pennypack Creek or Park Creek (a tributary of Little Neshaminy Creek). The soils at NASJRB Willow Grove are conducive to infiltration of rainfall. NASJRB Willow Grove lies on the outcrop of the middle member of the Stockton Formation. The Stockton Aquifer is the primary source of drinking water in the region. NASJRB Willow Grove by virtue of its location on the outcrop of the Stockton Formation, is in the recharge area for this aquifer. Of the rainfall which infiltrates into the soil, approximately half will eventually percolate to the water supply aquifer of the Stockton aquifer and be withdrawn by supply wells. Volatile Organic Compounds (VOCs) have been identified in the potable water supply wells at NASJRB Willow Grove in concentrations which exceed the Ambient Water Criteria of the EPA. The Privet Road Compound (Site 1), the 9th Street Landfill (Site 3), and the Fire Training Area (Site 5), were found to be sources of contamination to the water-table aquifer. The Antenna Field Landfill (Site 2) was found to be a source of the pesticide dieldrin found in surface water.

NATURAL RESOURCES - Wildlife species occurring at NASJRB Willow Grove are those that commonly occur near urbanized areas. It has been determined that endangered and threatened wildlife or plants as recognized by the State of Pennsylvania may be within the boundaries of NASJRB Willow Grove specifically the plant Hairy Beadgrass and the aquatic species Pearl Mussel. Both ponds on the base are available for fishing by military personnel. Pennypack Creek is designated a warm water fishery by the Pennsylvania Department of Environmental Resources and trout stocking is practiced in Little Neshaminy Creek. There are no known sites or buildings on NASJRB Willow Grove that have been listed or determined to be eligible for listing on the National Register of Historic Places.

RISK - An EPA Baseline Risk Assessment, both ecological and human health will be done as part of the Phase II RI. For the Department of Defense (DOD) Relative Risk Ranking System, five of the CERCLA sites were determined to have a high ranking. These sites were ranked primarily due to known contamination to groundwater and identified migration pathways to water supply wells. A Public Health Assessment (PHA) is required to be performed by the Agency for Toxic Substances and Disease Registry (ATSDR) and the Navy Environmental Health Center (NEHC) due to the NPL listing. ATSDR conducted a site visit in June 1996 to establish a site ranking for the Activity. Based upon their observations and site ranking scheme, NASJRB Willow Grove received a "D" classification which makes it low on ATSDR's priority list.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - The HRS score for NASJRB Willow Grove was 50.00. The NAS was listed on the NPL in September of 1995. This score was primarily based upon chlorinated hydrocarbons found in the water table aquifer and the pesticide dieldrin in the surface water.

LEGAL AGREEMENTS - For the CERCLA sites, it is planned to initiate an FFA in FY97. The FFA will be between the Department of the Navy, and the EPA Region III. Decision documents that are outdated will be revisited during FFA negotiations for Sites 4 and 6-9. For the two RCRA Underground Storage Tanks (USTs), Corrective Action was completed.

PARTNERING - Prior to Willow Grove's listing on the NPL in September 1995, no formal partnering had taken place. However, now that EPA Region III's involvement has increased, partnering will be integrated into the overall IR process for Willow Grove.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in FY90 and was very active. Fact sheets were provided for public meetings. Subsequent to the recent NPL listing of NASJRB Willow Grove, the installation initiated the establishment of a Restoration Advisory Board (RAB). The first RAB meeting was held on August 29, 1996. RAB meetings have been held on a quarterly basis.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) is under development and will be submitted during FY97. The plan will provide fact sheets, press releases and public notices.

INFORMATION REPOSITORY - An Administrative Record (the official file) was established in March 1991 and is maintained by the Navy. The information in the Administrative Record was placed in two Information Repositories, established in 1991, for public access. They are located at the Horsham Township Municipal Building and at the base Environmental Department. The Information Repositories are updated regularly by the Navy.

HISTORICAL PROGRESS

FY86

Sites 1-9 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), completed in February 1986, identified nine potentially contaminated sites at NASJRB Willow Grove.
Of the nine sites identified, four sites (Sites 6-9) were determined not to pose a threat to human health or the environment. Five sites (Sites 1-5) were recommended for further investigation because of potential surface and groundwater contamination. Although the recommendation was for further study only at Sites 1-5, all nine sites were included in the SI.

FY88

UST 1 - A waste oil tank was removed.

FY89

USTs 1 and 2 - The Initial Site Characterizations (ISCs) were completed. Contaminated soil and a smaller abandoned tank at UST 1 were found and removed during the removal action. Corrective Action was completed.

FY90

Site 10 - An SI for the original nine sites plus a new site, Site 10, Navy Fuel Farm, was completed in May 1990 and recommended No Further Action (NFA) for Sites 4, 6, 8 and 9. An extended SI was recommended for Site 7 because of trace levels of methylene chloride (a common laboratory contaminant). Sites 1-3 and Site 5 were recommended for an RI/FS. Sites 1, 3 and 5 were determined to be sources of chlorinated hydrocarbons in the water-table aquifer. Site 2 was found to be a source of dieldrin discharge to surface water.

FY91

UST 2 - At the former NEX Service Station, two gasoline tanks and associated contaminated soils were removed and the Corrective Action was completed. A Decision Document was finalized in June 1991 advising all agencies of the finding of NFA and site close-out for Sites 4, 6, 8 and 9. Copies were forwarded to the EPA and State of Pennsylvania notifying them of this action.

WILLOW GROVE NAS
HISTORICAL PROGRESS

FY92

Site 7 - A Decision Document was finalized in FY92 for Site 7.

FY93

Site 11 - During construction of an Air National Guard facility at NASJRB Willow Grove in FY93, a new site was found. Site 11, Aircraft Apron, was discovered while digging for drainage when a petroleum odor was detected. Site 11 was initially used as a defueling area for tank trucks. Preliminary sampling has indicated the presence of petroleum products. The contractor finished grading the area for drainage in appropriate personal protective equipment.
Sites 1-11 - At the end of the PA/SI phase, six of 11 CERCLA sites (Sites 1-3, 5, 10 and 11) were scheduled to move into the RI/FS phase. Five sites (Sites 4 and 6-9) were closed out.
Sites 1, 2, 3 and 5 - The RI recommended a Phase II RI/FS be conducted to fill in data gaps and provide alternatives for Remedial Actions (RAs) at Sites 1, 2, 3 and 5.
This Phase II RI/FS was to be awarded in FY93, but since NASJRB Willow Grove was not on or proposed for the NPL and carried a low funding priority, the Phase II RI/FS was delayed.
Site 10 - A Remedial Design (RD) was started. A pilot recovery system for free-product removal was installed.
Site 11 - Environmental investigations were put on hold due to this site's low risk ranking.

FY94

Site 10 - The free product recovery pilot system continued to operate.

FY95

Sites 1-3, 5 and 11 - A work plan for a Phase II RI was issued. Due to funding constraints and Site 11's low risk ranking, the site was removed from the workplan.
Site 10 - Completed a removal action for 6,000 cubic yards of soil, which had been stockpiled at the Navy Fuel Farm. The free product recovery pilot system continued to operate.

PROGRESS DURING FISCAL YEAR 1996

FY96

Sites 1-3, 5 and 10 - The workplan for RI activities was finalized and approved. Implementation of the workplan was negotiated and funded.
All Sites - Also negotiated and funded was a Site Management Plan to support upcoming FFA negotiations with EPA Region III.
Site 10 - Free product pilot study (IRA) completed.
All Sites - Established a Restoration Advisory Board and held kickoff meeting in August.
The Final Phase 2 RI Workplan was to be approved by EPA Region III at the end of FY96. However, in late August 1996, the RAB was established and a decision was made to allow the newly formed RAB to comment on the workplan as well since fieldwork could not start until the following Spring of FY97. RAB comments have been received and incorporated it was decided It was anticipated that this would occur in mid to late FY96. Approval is now anticipated during 2nd quarter of FY97. Therefore, the FY96 milestones regarding Site 1 and 10 workplan approvals and completion of fieldwork are now FY97 milestones.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 1 and 10 - Complete the fieldwork for the Phase II RI in mid FY97. Initiate and complete a Feasibility Study and Record of Decision for Site 1 only.
All Sites - Negotiate an FFA with Willow Grove's regulatory community and develop the SMP.
Site 10 - Complete the treatability study (FS). Prepare and complete a Record of Decision for restoration of the area based upon the results of the free product pilot study.

FY98

Site 1 - Initiate and complete a design for the preferred alternative.
Sites 2, 3 and 5 - Complete the Feasibility Study and Develop a Record of Decision (ROD) based upon the results of the FS.
Site 10 - Initiate a design for restoration of the area in accordance with the ROD.
Site 11 - Obtain funding and initiate RI/FS activities.

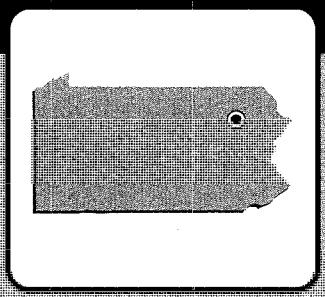
WILLOW GROVE NAS
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	11							
RI / FS			2	3	1			5
RD				1	1	1	1	2
RAC							1	5
RAO								5
IRA		1(1)					1(1)	2(2)
RC								11
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP								
DES								
IMP	2							
IMO								
IRA	2(2)							
RC	2							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

WYOMING MARINE CORPS RESERVE CENTER

WYOMING, PENNSYLVANIA



Engineering Field Division/Activity: NORTHDIV

Major Claimant: CINC

Size: 3 Acres

Funding to Date: $XX,(0)0

Estimated Funding to Complete: $0

Base Mission: Marine Corps equipment

Contaminants: POLs

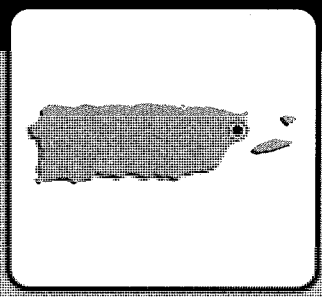
Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	2	High:	0	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	0	Not Required:	0
RCRA UST:	0	Low:	2		
Total Sites:	2				

Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	2							
RI / FS								
RD								
RAC								
RAO								
IRA			1(1)					
RC			2					
Cumulative % RC	0%	0%	100%	100%	100%	100%	100%	100%

ROOSEVELT ROADS NAVAL STATION
ROOSEVELT ROADS, PUERTO RICO



Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible] Acres

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: [illegible]

Contaminants: [illegible]

Number of Sites:

CERCLA:	7
RCRA Corrective Action:	25
RCRA UST:	16
Total Sites:	48

Relative Risk Ranking of Sites:

High:	16	Not Evaluated:	0
Medium:	3	Not Required:	20
Low:	10		

Sites Response Complete: 20

PROGRESS AND PLANS

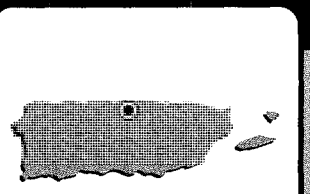
CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	6				1			
RI / FS	1	1		1	1			
RD								
RAC								
RAO								
IRA	1(1)							
RC	4	1		1	1			
Cumulative % RC	57%	71%	71%	86%	100%	100%	100%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	2			2		2		
RFI / CMS				1	7	15		1
DES					4	1	15	4
CMI							4	20
CMO								6
IRA	2(2)							
RC	2						3	21
Cumulative % RC	8%	8%	8%	8%	8%	8%	19%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	16							
CAP	1	7						
DES		2	1					
IMP			1	2				
IMO		2						3
IRA								2(2)
RC	9	4						3
Cumulative % RC	56%	81%	81%	81%	81%	81%	81%	100%

SABANA SECA NAVAL SECURITY GROUP ACTIVITY

SABANA SECA, PUERTO RICO



Engineering Field Division/Activity: [illegible]

Major Claimant: [illegible]

Size: [illegible] Acres

Funding to Date: [illegible]

Estimated Funding to Complete: [illegible]

Base Mission: Operates a high frequency direction finding facility and provides communication and related services, and manpower assistance to components of Department of the Navy and other Department of Defense elements within the area.

Contaminants: Heavy metals (arsenic, copper, lead, mercury, zinc), PCBs, pesticides/herbicides, phenols

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	7	High:	2	Not Evaluated:	1
RCRA Corrective Action:	0	Medium:	3	Not Required:	1
RCRA UST:	1	Low:	1		
Total Sites:	8				

NPL

Sites Response Complete: 1

EXECUTIVE SUMMARY

Sabana Seca Naval Security Group Activity (NSGA) is located on the north central coast of Puerto Rico, approximately 11 miles west of the capital city of San Juan, adjacent to the village of Sabana Seca. The station encompasses over 2,200 acres of land and is divided into the North and South Tracts.

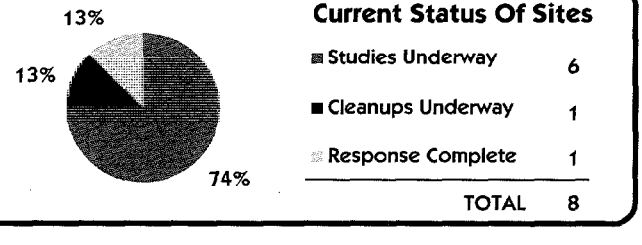
The South Tract consists of 921 acres and is known as the Support Site. The site contains the office of the Commanding Officer, facility maintenance, administration, housing, supply, health care facilities, recreation and retail outlets.

The 1,333 acre North Tract, commonly referred to as the Operations Site, contains the Circularly Disposed Antenna Array (CDAA); the CDAA operations building (Building 85), located in the center of the array; and the Naval Radio Receiver Facility, located adjacent to Building 85.

Both the North and South Tracts are surrounded by buffered zones which provide electromagnetic interference free zones for the communications receiving equipment. A total of four outleases covering in excess of 1,500 acres are presently in effect for agricultural uses at both tracts.

The mission of NSGA Sabana Seca is to operate a High Frequency Direction Finding Facility and provide communications and related support, including communications relay, communications security and communications manpower assistance to components of the US Navy and other Department of Defense (DOD) elements within the area as assigned by Chief of Naval Operations (CNO).

Typical operations that contributed to contaminated sites on the facility include paint shops, boiler plants, power plants, carpenter shop, pest control shop, electrical shop, air conditioning and refrigeration shop, plumbing shop, vehicle maintenance shop, fire fighting training and water treatment plants. Current operations include pollution prevention technologies to prevent further contamination. The primary sites of concern are a former pest control shop where pesticides and herbicides were disposed of and a leachate ponding area which receives leachate from an adjacent municipal landfill. This landfill accepts anything from residential, pharmaceutical, chemical, industrial and infectious waste. The NSGA is under an Federal Facility Agreement (FFA) with the EPA which was signed in March 1992.



A Technical Review Committee (TRC) was formed in FY90 to solicit community input in the cleanup decision-making process. The installation focuses its public involvement efforts on the specific needs of the local community. For example, the Community Relations Plan (CRP), prepared in FY91, was provided in both English and Spanish versions to accommodate a bilingual community. The Navy converted the TRC into a Restoration Advisory Board (RAB) in FY96, and included identifying additional members and soliciting their participation on the RAB. An Information Repository and Administrative Record were established in the community to ensure public access to documents related to the cleanup program.

Currently, six CERCLA sites are in a study phase. Of these six sites, Sites 1-4 are in a Site Inspection (SI) and two, Sites 6 and 7, are in a Remedial Investigation/Feasibility Study (RI/FS).

UST 1 is the only site currently Response Complete (RC). The cleanup at Site 5 was completed as a result of a removal action in 1984 to dispose of debris at a nearby municipal landfill. The remaining inert material was buried on-site. This site, along with Site 7 will be classified response complete upon receipt of documentation from EPA stating no further action is required. This is anticipated early FY97. A Corrective Action Plan (CAP) on the one RCRA Under Ground Storage Tank (UST) site, UST 1, was completed in FY94 resulting in the site being RC. Completion of the Site Investigation Report and NFRAP Decision Documents for Sites 2 and 4 were moved to FY97 in order to get better acquainted with the unique environment of Puerto Rico. Removal of cabinets housing transformers containing PCBs at Site 6 will be accomplished by the RA contractor during the RA phase.

SABANA SECA NSGA
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - The North tract of NSGA is primarily a swampy area covered by stagnant water. Sandy muck and clay sands, generally less than ten meters thick, predominate in the area. Alluvial deposits consisting of sand, clay and sandy clay with variable thickness up to 25 meters thick are located near the CDAA and the village of Ingenio. The alluvium and muck are underlain by limestone. Some of the soils on Sabana Seca are clays. They are mostly level, but some are well drained. The aquifer supplying the south tract is only about 40 feet below ground level. Contamination via leachates from the nearby municipal landfill is a potential threat. The South Tract is supplied by two wells 130 and 140 feet below ground level. The water from these wells is disinfected by direct chlorine injection.

NATURAL RESOURCES - The North Tract is bordered to the north by the Cocal River, agricultural land and further north the Atlantic Ocean. The rural community of Ingenio is located directly southwest of this tract. Agricultural lands abut the eastern perimeter and Route 867 forms the southern boundary of the tract, adjoining it to the South Tract.

The South Tract is bordered to the north by Route 867 and agricultural land. The village of Sabana Seca is located adjacent to the eastern perimeter and the De Diego Expressway traverses the southern portion of the tract. Land to the west of the tract is used primarily for agricultural purposes, cattle grazing and a municipal landfill. The US Department of Health and Human Services owns the land directly adjacent to the western perimeter of the base and leases it for a Primate Research Center (PRC). Department of Health and Human Services leases a small portion of land from the Navy to support the PRC.

Of the 21 federally listed endangered and threatened species of Puerto Rico only one, the Puerto Rican boa has been captured in areas similar to those found in the haystack hills in the South Tract; however, there have been no reported sightings of any wildlife species on the endangered or threatened species list at either the North or South Tracts or in the general vicinity of the activity.

RISK - A Baseline Risk Assessment, both ecological and human health, has been completed for Sites 6 and 7 and is currently ongoing for Sites 1 and 3 following the EPA guidance. For the DOD Relative Risk Ranking System, six of the eight sites have been ranked. This resulted in two sites being ranked as high. These high-ranked sites were so ranked primarily due to known soil and groundwater contamination and identified migration pathways.

The Agency for Toxic Substance and Disease Register (ATSDR) performed a public health assessment for the installation.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - The installation was placed on the NPL in October 1989 with a Hazard Ranking System score of 34.28. This score was a result of one site (Site 6) with pesticide contamination being adjacent to the base picnic/playground and housing areas.

LEGAL AGREEMENTS - A Federal Facilities Agreement (FFA), was signed in March 1992 between the Navy, EPA and Puerto Rican Environmental Quality Board (PREQB). The Site Scope of Work (SSOW), which is updated annually, contains the investigation and cleanup schedules for the sites and is included by reference as part of the FFA.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in FY90 to solicit community input in the cleanup decision-making process. The installation focuses its public involvement efforts on the specific needs of the local community. The TRC was converted into a Restoration Advisory Board (RAB) during FY96.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) Plan was prepared in FY91. It was provided in English as well as Spanish.

INFORMATION REPOSITORY - An Information Repository and Administrative Record were established in the community to ensure public access to documents related to the cleanup program.

HISTORICAL PROGRESS

FY84

Sites 1-7 - Preliminary Assessments (PAs) were completed.
Site 5 - An Interim Remedial Action (IRA) was completed. The majority of debris was removed and disposed of at the nearby municipal landfill. The remaining inert material was buried on-site.

FY88

Site 6 - An IRA was completed which included demolition and disposal of the Pesticide Shop at the nearby municipal landfill. Removal action included placing a six inch cover of clean soil over the site and surrounding the site with a fence to prevent exposure to spilled pesticides. Hazardous waste was removed and disposed of accordingly.

FY89

Sites 6 and 7 - SIs were completed.

FY92

UST 1 - An Initial Site Characterization (ISC) was completed.

FY93

Site 6 - An RI which focused on pesticide and herbicide contamination was completed.
Site 7 - An FS was conducted to determine the IRA needed to protect installation personnel from exposure to leachate from the municipal landfill.
UST 1 - An Investigation (INV) was completed.

FY94

Site 6 - A draft Proposed Remedial Action Plan (PRAP) was completed in September 1994 which called for excavation and disposal of contaminated soil to an off-site location. However, this proposed action was too aggressive, considering the very small quantity of contaminated soil present. Therefore, the draft PRAP is currently being revised and will present capping with asphalt as the Navy's preferred remedy. Prior to an RA, the cabinets that housed chemical additive PCB-containing transformers will be removed.

SABANA SECA NSGA
HISTORICAL PROGRESS

Site 7 - A Treatability Study (TS) was initiated for the Engineered Wetland alternative which called for the field construction of a pilot-scale engineered wetland system to be studied for a minimum of six months. The Engineered Wetland intended to biologically treat leachate-contaminated runoff that flows from the municipal landfill adjacent to Navy property. The TS was never completed due to significant changes in the site conditions. A No Further Response Action Planned (NFRAP) decision document will be prepared in FY96.
UST 1 - A CAP was completed.

FY95

Sites 1 and 3 - Initiated expanded SI efforts.
Sites 2 and 4 - SIs underway expected to be completed in FY96. Initiated preparation of No Further Response Action Planned (NFRAP) decision documents.
Site 6 - An RI/FS underway is expected to be completed in FY96. Initiated preparation of PRAP and Records of Decision (ROD).

PROGRESS DURING FISCAL YEAR 1996

FY96

Conversion of TRC into a RAB was completed.
Completed Photographic Album and Information Brochures to explain the cleanup program. Distributed completed brochures to RAB members and presented them during public meetings.

Sites 1 and 3 - Issued Draft Expanded SI Report in September 1996.
Site 6 - The RI/FS and PRAP were completed and the ROD was signed. The RD phase was completed and the RA was awarded.
Sites 5 and 7 - Consulted with EPA and EQB regarding the need to issue a formal NFRAP.
UST 1 - The IMO was completed and the site is now Response Complete

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 1, 2, 3 and 4 - SIs are expected to be complete.
Sites 1 and 3 - An RI/FS will be started and completed if required by results of the expanded SI.
Sites 1-4 - A NFRAP is expected to be to completed unless additional work is justified by results of studies currently underway.
Site 6 - An RA is expected to be completed.
Sites 5 and 7 - An RI/FS was planned for these two sites however based on consultations with EPA and EQB it is not required. A NFRAP is expected to be completed based on results of treatability study.

FY98

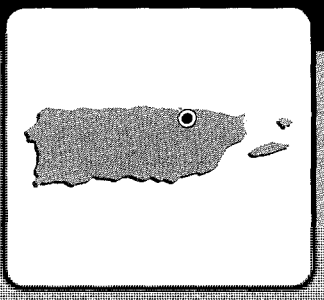
Proposed to remove activity from NPL.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	3		4					
RI / FS		1	4					
RD		1						
RAC			1					
RAO								1
IRA	3(6)							
RC			6					1
Cumulative % RC	0%	0%	86%	86%	86%	86%	86%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	1							
CAP	1							
DES								
IMP								
IMO		1						
IRA								
RC		1						
Cumulative % RC	0%	100%	100%	100%	100%	100%	100%	100%

SAN JUAN PUERTO RICO SUPERVISOR OF SHIPBUILDING
PUERTO RICO



Engineering Field Division/Activity: LANTDIV

Major Claimant: COMNAVSEASYSCOM

Size: 38 Acres

Funding to Date: $100,000

Estimated Funding to Complete: $0

Base Mission: Former base for support of Naval Aircraft and Operations in Caribbean, now leased to Puerto Rico government and Puerto Rico Dry-dock and Marine terminal, vessel servicing and repair.

Contaminants: Sandblasting grit, paint, fuel oil, diesel fuel

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	3	High:	0	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	0	Not Required:	3
RCRA UST:	0	Low:	0		
Total Sites:	3				

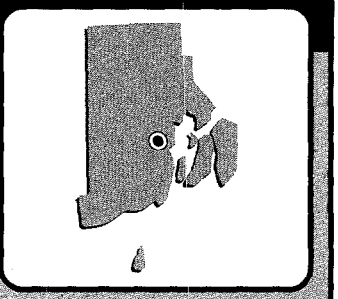
Sites Response Complete: 3

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	3							
RI / FS								
RD								
RAC								
RAO								
IRA								
RC	3							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

DAVISVILLE NAVAL CONSTRUCTION BATTALION CENTER

DAVISVILLE, RHODE ISLAND



Engineering Field Division/Activity: NORTHDIV
Major Claimant: COMNAVFACENGCOM
Size: 1,294 Acres
Funding to Date: $29,927,000
Estimated Funding to Complete: $29,143,000

Base Mission: Provided mobilization support to Naval Construction Forces

Contaminants: Heavy metals (lead), PCBs, pesticides (dichlorodiphenyl trichloroethane), POLs, volatile organic compounds

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	17	High:	3	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	4	Not Required:	10
RCRA UST:	8	Low:	8		
Total Sites:	25				

NPL | BRAC II

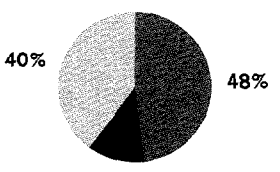
Sites Response Complete: 10

EXECUTIVE SUMMARY

The Davisville Naval Construction Battalion Center (NCBC) is 18 miles south of Providence in North Kingstown, Washington County, Rhode Island. It was a military installation from World War II until its operational closure in 1994. The area is now primarily residential. Operations that contributed to contamination include shops such as carpentry, painting, plumbing, power plant maintenance, vehicle maintenance, pier operations, equipment maintenance and ordnance operations. Site types of concern include landfills, storage and disposal areas, transformer storage areas, spill areas, Underground Storage Tanks (USTs) and fire fighting training areas.

NCBC was placed on the National Priorities List (NPL) because Site 9 (Allen Harbor Landfill) and Site 7 (Calf Pasture Disposal Area), threaten Allen Harbor and Narragansett Bay. Both sites were used for the disposal of solid and liquid wastes without any method of containment other than burial. The proximity of Site 9 to Allen Harbor makes the landfill a potential source for the high molecular weight Polynuclear Aromatic Hydrocarbons and metals detected in the shoreline and sediments. The waters off Site 7 provide an important shellfish resource in Narragansett Bay. A Federal Facility Agreement (FFA) was signed by EPA Region I, the State of Rhode Island and the Navy in 1992.

NCBC consisted of three geographic areas. The Main Center, which includes Sites 2, 3, 5. 6, 7, 9, 11, 13, 14, 16 and Study Areas 1, 4, 15 and Calf Pasture Point Munitions Bunkers (17), is located on Narragansett Bay. The West Davisville Storage Area, which includes Sites 8 and 12, is located three miles west of the Main Center. Camp Fogarty, a former training center, and is the location of Site 10, is located four miles west of the Main Center. Camp Fogarty was transferred to the Department of the Army in December 1993 and is assigned to the Rhode Island National Guard. Municipal water supply wells for the town of North Kingstown are located within a three mile radius of NCBC.



Current Status Of Sites

Studies Underway	12
Cleanups Underway	3
Response Complete	10
TOTAL	25

The Community Relations Plan (CRP) was completed in May 1989. An Administrative Record was established in 1989 and an Information Repository is located at a local library. A Technical Review Committee (TRC), established in April 1988, was converted to a Restoration Advisory Board (RAB) in December 1993. The RAB has 21 members who meet bi-monthly.

There are 25 IR sites consisting of 17 CERCLA sites and 8 UST sites at NCBC. At the end of FY96, two (Sites 9, 17) of the CERCLA sites at NCBC were in the Study Phase, three (Sites 2, 4, 9) were in the Cleanup Phase, three (Sites 6, 10, 11) were in process of a PRAP/ROD for no further response action (NFA) and one (Site 17) site was Response Complete (RC). Removal of an underground tank and leachfield at Site 2 and cleaning of two former battery rooms, removal of asphalt from Study Area 4 and removal of debris from Site 10 was completed in FY 96. Corrective Action Plans (CAP) have been approved by the Rhode Island Department of Environmental Management (RIDEM) for five UST sites from the removal action completed in 1992 calling for NFA at two sites (USTs 7, 8). Corrective action has been completed at three UST sites in FY96. Response Complete for USTs 2, 3, 7, 8 in FY96. The CAP for seven of 27 tanks that were removed in 1995 have been submitted recommending NFA and are under review by RIDEM.

All field investigations, except at Sites 3 and 7 will be complete in FY97. Feasibility Studies (FSs) are underway for Sites 2, 3, 7 and 13. A basewide groundwater evaluation will also be completed leading to a PRAP and ROD for groundwater at West Davisville, Camp Fogarty and Zones 1, 2 and 4 at the Main Center. Munitions bunkers at Calf Pasture Point will be cleaned to remove lead and PCB contaminated soil at Sites 12 and 13. Also in FY97, Proposed Remedial Action Plans (PRAPs) and RODs for Sites 6, 9, 10, 11 and 13 will be prepared.

The BRAC Cleanup Team (BCT), formed in FY94, has helped resolve issues related to the Ecological Risk Assessment and Remedial Investigation/Feasibility Study (RI/FS) reports. The BCT also renegotiated new FFA schedules. A BRAC Business Plan was prepared in February 1996. The reuse plan was completed in January 1994. Future uses will be primarily industrial and some recreational. In FY96, Phase II of the Environmental Baseline Survey (EBS) to characterize all parcels was completed. Fast Track Initiatives have expedited cleanups. Removal actions at four sites were completed in advance of the PRAP and the ROD. Overlapping phases when sufficient information is available to safely begin the next phase has saved time. Final draft FS preparation and review periods were shortened by including revised text on draft comments.

DAVISVILLE NCBC
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Two sites at NCBC Davisville are within 1,000 feet of one another. Site 9 (Allen Harbor Landfill) is located adjacent to Allen Harbor and Site 7 (Calf Pasture Point Disposal Area). Both sites threaten Allen Harbor and Narragansett Bay. Municipal supply wells for the town of North Kingstown, which serves approximately 27,000 persons, are located within three miles of hazardous substances on the sites in an unrelated aquifer. Both Allen Harbor Landfill and Calf Pasture Point Disposal Area were used for the disposal of a variety of solid and liquid wastes without any method of containment other than burial. The proximity of Site 9 to the surface water of Allen Harbor makes the landfill a potential source for the high molecular weight PAHs and metals detected in the shoreline and sediments of Allen Harbor, however, recently completed statistical and geostatistical analysis of the data collected in multiple studies concludes that the landfill groundwater is not a contaminant pathway to the harbor sediments.

NATURAL RESOURCES - Allen Harbor is a small inlet from Narragansett Bay. The harbor was closed to shellfishing in 1984 by the Rhode Island Department of Environmental Management (RIDEM). The waters off Calf Pasture Point provide an important shellfish resource. Both saltwater and fresh water wetlands are located on NCBC. No rare, threatened, or endangered species have been observed on the center, but some are occasionally seen in the area. There is a nesting colony of Common Terns on the east side of the Quonset Point NAS airfield.

NCBC has two historical sites eligible for the National Register of Historic Places that include warehouses and residential headquarters. Buildings used as warehouses (Camp Endicott) have been recorded and will be delisted upon completion of a MOA between Navy and RISHPO. The buildings which are structurally unsound will then be demolished.

RISK - In FY94, an Ecological Risk Assessment was done in conjunction with an on-going Remedial Investigation/ Feasibility Study (RI/FS) under EPA guidelines. Three of the 25 sites at NCBC (Sites 3, 7 and 9) received a high ranking, four were ranked medium, and eight were low, under the DOD Relative Risk Ranking System. All high rankings were attributed to either soil or groundwater contamination. Contaminants include petroleum products, PAHs, metals, volatile organic compounds and the chemical additive PCBs. Potential receptors are human and ecological. The Agency for Toxic Substances and Disease Registry (ATSDR) completed a Public Health Assessment in October 1995. Limited concern was expressed about shellfish taken from near shore areas surrounding the landfill.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - In November 1989, NCBC Davisville was added to the National Priorities List (NPL) with a Hazard Ranking System (HRS) score of 34.52. RAs are being conducted under CERCLA while compliance actions are governed by Federal and Rhode Island state laws.

LEGAL AGREEMENTS - A Federal Facility Agreement (FFA) was signed in March 1992 by the EPA Region I, the State of Rhode Island and the Navy. The Base Realignment and Closure (BRAC) Cleanup Plan (BCP) will be used in lieu of a Site Management Plan (SMP).

PARTNERING - The University of Rhode Island received a grant of $1.3 million from DOD and has established an environmental education and training facility at NCBC. The intent of the training facility is to educate students and train former defense workers in environmental cleanup. The facility is located in buildings recently leased to Rhode Island Economic Development Corporation.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was established in April 1988 and converted to a Restoration Advisory Board (RAB) in December 1993. The RAB has 21 members who meet bi-monthly or as necessary. Meeting agenda items are addressed in an open discussion format. In addition, the Rhode Island Resource Conservation and Development Council, who participate in the RAB has received Technical Assistance Grant (TAG) through EPA to provide continued support to the RAB. Represented on the RAB are the Rhode Island Economic Development Corporation (RIEDC), Town of North Kingstown, Narragansett Indian Tribe, US Fish and Wildlife Service, US Public Health Service, Narragansett Bay Project and the Rhode Island Resource, Conservation and Development Council.

COMMUNITY RELATIONS PLAN - The Community Relations Plan (CRP) was completed in May 1989. An update CRP was completed in FY96 and will be again updated in FY97.

INFORMATION REPOSITORY - An Administrative Record was established in 1989 and an Information Repository was set up in a local library in May 1989. Copies of Administrative Record documents are maintained in the Information Repository for public access.

BASE REALIGNMENT AND CLOSURE

BRAC - In July 1991, the Base Realignment And Closure (BRAC) Commission recommended closure of NCBC. The official closure date was 1 April 1994. Construction battalion training and mobilization activities were transferred to Naval Construction Battalion Center, Gulfport, Mississippi and to Naval Construction Battalion Center, Port Hueneme, California. (It happened long before then, beginning in 1974) Camp Fogarty (374 acres) was transferred to the Army in December 1993. Portions of West Davisville (70 acres) were leased to Rhode Island Port Authority in November 1993 and 21 buildings and a 90 acre storage area were leased in February 1996 and 3 more buildings were leased in July 1996. An additional 10 acres (leased) are associated with the leasing of 24 buildings.

BRAC CLEANUP TEAM - The BRAC Cleanup Team (BCT) was formed in December 1993 and meets regularly to discuss current and future cleanup initiatives. The BCT has helped resolve issues related to the Ecological Risk Assessment and several RI/FS reports. The BCT also renegotiated new FFA schedules. The BCT has representatives from Naval Facilities Engineering Command's Northern Division (NORTHDIV), EPA Region I and the Rhode Island Department of Environmental Management (RIDEM).

DOCUMENTS - The BCP was completed in February 1994 and was updated in 1995. A BRAC Business Plan was prepared in February 1996. A Phase I Environmental Baseline Survey (EBS) was completed in October 1995 and a Phase II EBS Investigation is underway. Field work is complete and the report is under review by the BCT.

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
7 acres	63 acres	448 acres	0 acres	3 acres	31 acres	732 acres

LEASE/TRANSFER - There are 1,284 acres available for disposal. Currently, 170 acres are leased. There are 518 acres environmentally available for transfer, of which 374 have been transferred.

DAVISVILLE NCBC
RELEVANT ISSUES

REUSE - Future uses will be mainly industrial with some recreational use of certain areas. The Reuse Plan was completed in January 1994. The plan was approved by the North Kingstown Town Council and the RIPA Board of Directors in February 1994.

FAST TRACK INITIATIVES - Fast Track Initiatives have expedited cleanups. For example, removal actions at four sites will be completed in advance of the Proposed Remedial Action Plan (PRAP) and the Record of Decision (ROD). Also, overlapping phases when sufficient information is available to safely begin the next phase has saved time. Final draft feasibility study preparation and review periods have been eliminated by expanding response to comments on drafts to include proposed revised text.

HISTORICAL PROGRESS

FY80

NCBC Davisville was issued a RCRA Generator Facility Permit that identified 13 Solid Waste Management Units (SWMUs) (nine landfills, two storage areas, one waste oil tank storage area and an injection well). Ten of the RCRA SWMUs are the same as 10 CERCLA sites: Sites 2, 3, 6, 7, 8, 9, 10, 11, 13 and 15. The remaining three SWMUs are not currently Defense Environmental Restoration Account (DERA) funded.

FY84

Sites 1-14 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), identified fourteen potentially contaminated sites. The IAS recommended Sites 5, 7 and 9 for further investigation in a Confirmation Study (CS). Sites 12 and 14 were recommended for limited investigation. Sites 1-4, 6, 8, 10, 11 and 13 were found not to pose a threat to human health or the environment and were not recommended for further investigation. However, all sites except Site 1 were investigated further in the CS.

FY87

Sites 2-14 - The CS, equivalent to a Site Inspection (SI), was completed. No further action was recommended for Sites 4 and 5. Sites 2, 3, 6, 7, 9 and 10-14 were recommended for further investigation.

FY92

Sites 2, 3, 5-11 and 13 - A Phase I Remedial Investigation/Feasibility Study (RI/FS) that began in 1988 was completed. Concurrent with this Phase I RI/FS, a Federal Facility Agreement (FFA) was signed between the Department of the Navy, the State of Rhode Island and the EPA.
Sites 1, 4 and 15 - The FFA identified these three sites as Study Areas. Study Area 15 was used to store containerized waste petroleum products and solvents and was added by agreement of the parties concerned.
Sites 2, 3 and 5-14 - The FFA identified these twelve sites as Areas of Concern (AOC).

USTs 1-7 - Fifty-six tanks were removed. Sampling following tank removals indicated seven areas that required further investigation to determine if remediation is necessary. An Initial Site Characterization (ISC) was completed.

FY93

Sites 12 and 14 - The RI/FS was completed. Asphalt and concrete were removed as an Interim Remedial Action (IRA). A Record of Decision (ROD) for removal of the remaining contaminated concrete was prepared. This will be the Final Remedial Action (FRA) for these sites. The Phase I FS consisted of an Initial Screening of Alternatives. Based on the results of Phase I and a Risk Assessment Technical Memorandum, there was enough information to support a ROD.
Site 16 - A removal action was completed. The extent of the contamination was determined through sampling. The creosote-contaminated soil was removed and taken to a hazardous waste landfill. Additional sampling and analysis were done to confirm cleanup levels were achieved. This was the FRA at this site.

FY94

Site 12 - A revised Remedial Design (RD) was completed.
Site 5 - Phase II RI/FS was completed.
Site 8 - Recommended for no further action.
Sites 1 and 15 - A Site Investigation (SI) was completed.

FY95

All Sites - Completed basewide groundwater contour map.
USTs 1-7 - Prepared a CAP for seven of the 56 tanks that were removed in FY92. Investigations have been underway to prepare a CAP for seven of the 27 tanks that were removed in FY95.
Site 14 - Completed RA for removal of soil contaminated with PCB.
Sites 5 and 8 - Signed ROD for No Further Action.
Sites 2 and 13 - Initiated the process for a time critical removal action.
Study Area 4 - Initiated the process for a non-time critical removal action.

PROGRESS DURING FISCAL YEAR 1996

FY96

All Sites - Started Phase II of the EBS to characterize all parcels. Phase II field work was completed in FY96 and a draft report issued in August 1996. Regulator review, response to comments and BCT development of corrective actions required as a result of the investigation are ongoing and the final Phase II report was expected to be issued in 2nd Quarter FY97. Work plans were completed. Field work was completed on 92 EBS Phase II review items. The basewide groundwater study to establish inorganic background levels was completed and a draft Ground Water Evaluation was submitted.
Site 9 (Allen Harbor Landfill) - The draft FS was completed.
Site 2 - Removal of underground tanks and piping were completed along with cleaning of the battery rooms.
Site 3 - Investigation at Site 3 was begun to characterize an off-site source in an area under cognizance of the Army Corps of Engineers as a Formerly Used Defense Site (FUDS). Investigation expanded to include natural attenuation of volatile organic chlorides as possible remedial action.
Site 4 - Removed asphalt material.
Site 17 - Completed PA/SI.
Sites 2, 4, 10, and 12 - Completed Remedial Design.
No FS for Sites 6, 10 and 11 since they are NFA.
Sites 6, 9, 10 and 11 - Initiated Proposed Remedial Action Plans (PRAPs) and RODs.
Site 13 - Began PCB contaminated soil removal action. Confirmatory sampling shows that additional removal is required. PRAP and ROD will be initiated as soon as removal action is completed.
Twenty-one (21) buildings and a 90 acre storage area were leased in February 1996 and 3 more buildings were leased in July 1996 to the Rhode Island Port Authority.
An updated CRP was completed in FY96.

DAVISVILLE NCBC
PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Basewide - Complete Phase II EBS Investigation Report and begin corrective actions. Complete groundwater evaluation, PRAP and ROD.
Site 3 - Field sampling to test for natural attenuation will be completed. The RI for off-site source characterization will be completed and a comprehensive RI/FS submitted.
Study Area 4 - Complete removal of asphalt pool and close out the site.
Sites 6, 10 and 11 - The NFA ROD will be completed.
Site 7 - The RI/FS and PRAP/ROD (including Study Area 17) is scheduled to be completed in September 1997.
Site 9 - Complete RI/FS for remedy selection and PRAP/ROD.
Site 12 - Complete the Remedial Action (RA) and close out the site.
Site 13 - Complete the removal action, revised HHRA and Ecological Risk Assessment and submit the FS and a draft PRAP.
Site 14 - Submit site close-out and receive completion certification from EPA.
Study Area 15 - Update SASE and NFA Decision Document.

FY98

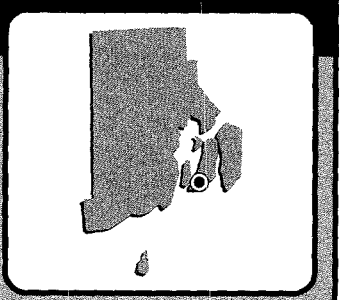
Basewide - Complete EBS Phase II corrective actions.
Site 3 - Complete FS, PRAP and ROD which will include Site 2 and Study Areas 1 and 4 including groundwater.
Site 7 - Implement ROD remedial action or long term monitoring as required.
Site 9 - Implement ROD remedial action.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	15	1						
RI / FS	2	1	12					
RD	1	4	4	1				1
RAC	2		2	4	1			1
RAO								3
IRA	5(5)	3(3)	2(2)					
RC	2	1	8	3				3
Cumulative % RC	12%	18%	65%	82%	82%	82%	82%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA		1						
CAP	7							
DES	2	2						
IMP		3	1					
IMO								
IRA		2(2)						
RC	3	4	1					
Cumulative % RC	38%	88%	100%	100%	100%	100%	100%	100%

NEWPORT NAVAL EDUCATION AND TRAINING CENTER
NEWPORT, RHODE ISLAND



Engineering Field Division/Activity: NORTHDIV
Major Claimant: CNET
Size: 1,400 Acres
Funding to Date: $40,558,000
Estimated Funding to Complete: $35,853,000

Base Mission: Training center and provides logistics support

Contaminants: Base-neutral and acid extractable organics, PCBs, volatile organic compounds

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	19				
RCRA Corrective Action:	0	High:	11	Not Evaluated:	0
RCRA UST:	4	Medium:	4	Not Required:	8
Total Sites:	23	Low:	0		

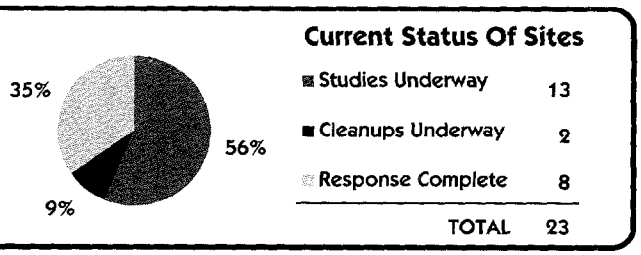
NPL

Sites Response Complete: 8

EXECUTIVE SUMMARY

Newport Naval Education and Training Center (NETC) is located 60 miles south of Boston, Massachusetts and 25 miles southeast of Providence, Rhode Island. The installation is spread along six miles of the western shoreline of Aquidneck Island, north of Newport, Newport County, Rhode Island. Newport NETC facilities are also on Gould Island, west of Aquidneck Island. NETC currently covers 1,439 acres; prior to 1973, it covered 2,692 acres. The excess acreage was turned over to the General Services Administration (GSA) in 1973. NETC was used as a refueling depot beginning in the early 1900's. Refueling facilities were expanded during World War II (WWII), as the base had a much larger role then as the home port for many warships. After WWII, the installation was restructured to support research, development and specialized training. Currently, NETC provides education and training to naval officers. Past operations included boiler plant maintenance, pest control, stormwater collection, sewage collection and treatment, bilge water disposal, hazardous waste disposal, fueling operations, waste oil recovery, sludge disposal, ordnance operations and materials storage. Landfills contain contaminants that could potentially affect nearshore sediments as well as groundwater and surface water. The Navy has changed its operational processes to prevent further contamination. The primary contaminants of concern are the chemical additive PCB, copper, tetra-ethyl lead and ethyl benzene. A Federal Facility Agreement (FFA) was signed in 1992 with the EPA which provides a schedule and plan for site cleanup.

Newport NETC is situated along the shoreline of Aquidneck Island, and surface runoff quickly finds its way into Narragansett Bay. All of the streams which receive drainage from areas of NETC also discharge directly into the bay. The groundwater moves in a westward direction and discharges into the bay. None of the streams or ponds within the boundaries of Newport NETC are used for potable water. The potable water supply for NETC is purchased from the City of Newport which utilizes a series of reservoirs. Groundwater at NETC, including Gould Island, is generally within a depth of 10 feet. The groundwater in areas close to the bay is often within just 2 or 3 feet of the surface. This shallow depth, coupled with the facts that the average annual precipitation is 43 inches and that the soils are moderately permeable, makes contamination of the groundwater possible. There are no wells within the boundaries of NETC, with the exception of Gould Island, but numerous wells exist in close proximity. These are domestic wells, but they are upgradient from NETC and are not threatened by the activity.



A Technical Review Committee (TRC) was formed in April 1988, and was converted to a Restoration Advisory Board (RAB) in FY95. The first formal RAB meeting was held early in FY96. Information Repositories were set up in June 1990 at public libraries in Newport, Middletown, and Portsmouth, Rhode Island. An Administrative Record was established in December 1991.

There are 23 IR sites consisting of 19 CERCLA sites and 4 USTs sites. At the end of FY96, 13 sites were in the study phase and 2 cleanups are underway. Site 13 has a Record of Decision (ROD) for groundwater and pump and treat is active. A ROD has been completed for Site 1 and a cap is under construction at the landfill. A treatability study for the use of cement for fixating Toxic Characteristics Leaching Procedure (TCLP), lead solids, excavated from the landfill at Site 2, was completed in FY95 with indications of feasibility for the procedure. A second treatability study for the destruction of petroleum contamination in the soil by using an innovative technology, white rot fungus, was initiated. In FY95, used sandblast grit was removed at Site 19. The grit from Site 19 and the treated soil from Site 2 is being used as fill material under the cap at Site 1 for cost savings. Off shore Ecological Risk Assessments (ERA) are underway at Sites 1 and 19. An onshore Study Area Screening Evaluation (SASE), which includes an ERA, is underway and continuing at Site 19, since FY96. Response is complete on eight sites. A Remedial Investigation/ Feasibility Study (RI/FS) is being performed at Site 2 (Melville North Landfill).

There are seven Formerly Used Defense Sites (FUDS) at NETC Newport; Sites 3, 5, 6, 14, 15, 16 and 18. The Army Corps of Engineers will be conducting further investigation for the other FUDS sites (Sites 3, 5, 6, 14-16 and 18). These seven FUDS sites are Response Complete (RC) in the Navy's program due to transfer to the FUDS program.

NEWPORT NETC RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Newport NETC is situated along the shoreline of Aquidneck Island, and surface runoff quickly finds its way into Narragansett Bay. All of the streams which receive drainage from areas of NETC also discharge directly into the bay. None of the streams or ponds within the boundaries of NETC, present or past areas, are used for potable water. The potable water supply for NETC is purchased from the City of Newport. The upper portion of the bay, in the vicinity of Providence, is much more industrialized than the lower portions of the bay where NETC is located and is likely to be more contaminated. The Melville Fishing Area occurs just off-site.

Groundwater at NETC, including Gould Island, is generally within a depth of ten feet. The groundwater in areas close to the bay is often within just two or three feet of the surface. This shallow depth, coupled with the facts that the average annual precipitation is 43 inches and that the soils are moderately permeable, makes contamination of the groundwater possible. The groundwater moves in a westward direction and discharges into Narragansett Bay. The groundwater is not being utilized at NETC, although during World War II, wells supplied the potable water on Gould Island. NETC receives its potable water from the city of Newport which utilizes a series of reservoirs. There are no wells within the boundaries of NETC, with the exception of Gould Island, but numerous wells exist in close proximity. These are domestic wells, but they are upgradient from NETC and are not threatened by the contamination from the base.

One possible off-site source of environmental contamination is an unofficial landfill on Portsmouth town property which is located adjacent to NETC in the Melville North area. This landfill receives mostly municipal refuse type wastes. The groundwater in the area could be adversely affected by potential contaminants disposed of at this site. The groundwater in the area of the landfill is migrating towards NETC. According to a 1986 report, sediments collected from Narragansett Bay just off the shoreline of McAllister Point Landfill contain lead, copper and nickel. Surface water and groundwater flow from the landfill into the bay, which is used for boating and fishing. Because the bay is an inlet to the Atlantic Ocean, it is influenced by tides. One tank farm is 300 feet from a coastal wetland.

NATURAL RESOURCES - There are no visible signs of stress to the bay biota along the NETC shoreline. There is a 'dead zone' in the bay adjacent to Derecktor Shipyard where no biota can be observed. It is unknown if this is the result of contamination or lack of oxygen produced by poor water circulation. The entire shoreline of NETC is closed to commercial shellfishing. However, much of the remainder of the bay is open to shellfishing. The materials within the landfills and other potential contamination sites on the base may cause chronic or acute effects on area biota. Possible receptors include shellfish, plankton and mummichog/cunner fish. The shellfish have life histories which include filter feeding and burrowing in the sediments. This tends to accumulate contaminants in the body tissues. Shellfish in the bay having these characteristics include quahogs, soft shelled clams, oysters and blue mussels. All of these organisms are heavily harvested and consumed by humans. The plankters most affected by potential contaminants would be the early life stages of fish and shellfish. The eggs and larvae are non-mobile and remain suspended in the water column. In this stage of development, sensitive tissues and membranes are not protected as in adults and leaves them susceptible to contaminants. There is a commercial mussel farm (Blue-Gold Sea Farm) located on the northern border of the NETC waterfront. Mussels from this farm are commercially harvested and shipped throughout the United States for human consumption.

RISK - A Baseline Human Health Risk Assessment for Sites 1, 2, 9, 12 and 13 was completed in November 1991. An offshore Ecological Risk Assessment for Site 1 was also completed in November 1992.

Under the DOD Relative Risk Ranking System, 10 sites and one Underground Storage Tank (UST) site Newport NETC received a high relative risk ranking. These sites include two landfills, two tank farms, a fire fighting training area, an electroplating shop and a shipbuilding area. Groundwater and sediments are the primary media affected by the landfills. Receptors are human and ecological. Landfill wastes include solvents, paints and the chemical additive PCB. The tank farms were storage areas for various fuels. Primary media affected is groundwater. The fire fighting area has free product and metals contamination. Affected media are groundwater, soils and sediment. Migration is towards the bay due to tidal flushing. The bay is a recreational area.

The electroplating shop had waste discharged directly to the ocean through discharge pipes. The shipyard area had large quantities of oils, paints and solvents released into the soils. Metals and the chemical additive PCB have been detected in sediments. Potential receptors include ecological and humans through the ingestion of shellfish. To reduce risk, a RCRA Subtitle C cap will be placed over Site 1, including shore protection. Hot spot soil removals are planned for Site 2. Since NETC is on the National Priorities List (NPL), the Agency for Toxic Substances and Disease Registry (ATSDR) completed a Public Health Assessment in June 1993.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - NETC Newport was proposed for the National Priorities List (NPL) in July 1989. In November 1989, NETC was listed on the NPL with a Hazard Ranking System (HRS) score of 32.25. EPA combined data from two sites, Site 1 (McAllister Point Landfill) and Site 7 (Tank Farm #1) to determine the HRS score. Since the sites are not contiguous, the Navy recommended revising the score to assess each site individually, but no rescoring was done. Contaminants of concern from these two sites were the chemical additive PCB, copper, and the fuel components tetra-ethyl lead and ethyl benzene. Migration routes of concern were groundwater and surface water.

LEGAL AGREEMENTS - Concurrent with Phase I of the Remedial Investigation/Feasibility Study (RI/FS), a Federal Facility Agreement (FFA) was signed between the Department of the Navy (DON), State of Rhode Island and EPA Region 1 on 23 March 1992. The FFA identified a total of 18 sites, six Study Areas (SAs 4, 7, 8, 10, 11 and 17), and four Areas of Concern (AOCs 1, 9, 12 and 13). Newport NETC was issued a RCRA Hazardous and Solid Waste Amendments (HSWA) permit in 1986. This permit includes a schedule for cleanup of Solid Waste Management Units (SWMUs) under the RCRA Corrective Action process.

PARTNERING - In FY94, the Navy partnered with the University of Rhode Island School of Oceanography to conduct estuarine Ecological Risk Assessments in Narragansett Bay. Ecological Risk Assessments began at Sites 1, 9 and 19 with the assistance of the university.

The installation was involved in two partnering sessions. The Navy, Trustees and regulatory agencies shortened document turn around time by clarifying lines of communication and incorporating meetings into the document review process. Consensus statements on issue resolution were produced by the participants. Another partnering session involved the Navy and the contractors who are performing the studies and cleanups.

The installation held a formal partnering session with EPA Region I and the Rhode Island Department of Environmental Management (RIDEM) 30-31 August 1995.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed and meetings have been held periodically since April 1988. The TRC was converted to a

NEWPORT NETC
RELEVANT ISSUES

Restoration Advisory Board (RAB) in FY95. The RAB has met monthly since having their first meeting in February 1996.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was completed in July 1990. An update of the CRP was started in FY96 and will be completed in the spring of 1997.

INFORMATION REPOSITORY - Three Information Repositories were set up in June 1990 at the Newport Public Library, Newport, Rhode Island, at the Middletown Public Library, Middletown, Rhode Island, and at the Portsmouth Public Library, Portsmouth, Rhode Island. An Administrative Record was established in December 1991. Copies of some of the Administrative Record documents are contained in the Information Repositories.

HISTORICAL PROGRESS

FY83

Sites 1-18 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), was completed in 1983 and identified 18 potentially contaminated sites at Newport NETC. Sites 1, 2, 5-7, 10-15, 17 and 18 were recommended for further studies. No Further Action (NFA) was recommended for Sites 4, 8 and 9; however, these sites were brought back into the program during the Remedial Investigation/Feasibility Study (RI/FS) phase. Sites 3 and 16 are not discussed in the IAS because they were determined to be outside the scope of the Naval Assessment and Control of Installation Pollutants (NACIP) program.

FY86

Sites 1, 2, 7, 12, 14 and 17 - A Confirmation Study (CS), equivalent to a Site Inspection (SI), was completed. Additional work was recommended for five sites. NFA was recommended for Site 17, however, the site was brought back into the program during the RI/FS phase.
Sites 1, 2, 7, 10-14 and 17 - Newport NETC was issued a Hazardous and Solid Waste Amendments (HSWA) permit and identified nine Solid Waste Management Units (SWMUs). The closure plans for these SWMUs are being handled through the RCRA Corrective Action Plan (CAP) and will include remediation of soil contamination. The groundwater contamination for the SWMUs will be addressed under CERCLA.

FY91

Sites 1, 2, 9, 12 and 13 - A Phase I RI/FS which began in 1989 was completed. Even though Site 2 was determined outside the property boundaries of Newport NETC and classified as a Formerly Used Defense Site (FUDS), the Department of the Navy decided to include this site in the Phase I RI/FS. Additional work was recommended for all sites.

FY92

Sites 2, 3, 5, 6, 14-16 and 18 - The Federal Facility Agreement (FFA) determined these sites to be outside the property boundaries of NETC Newport and they were classified as FUDS.
Sites 1, 2, 9, 12 and 13 - A Phase II RI/FS began.
Sites 4, 7, 8, 10, 11 and 17 - These sites were included in the RI/FS in 1992.
Sites 4, 8 and 17 - A Study Area Screening Evaluation (SASE) work plan, analogous to a mini-RI/FS, was completed.
Sites 7, 10 and 11 - The Defense Logistic Agency (DLA) continued study at these tank farms, with periodic reports submitted to NETC. No other studies are ongoing or planned for these sites.
Site 13 - An Interim Record of Decision (IROD) for Site 13 (Tanks 53 and 56) Tank Farm #5 was signed in September 1992. The remedy consists of groundwater extraction, treatment using coagulation/filtration and ultraviolet (UV) oxidation and Long Term Monitoring (LTM). The remedy will prevent migration of contaminants.

FY93

Site 1 - A Phase II Remedial Investigation (RI) was completed. A Record of Decision (ROD) specifying the Remedial Action (RA) for McAllister Point Landfill was signed in September 1993. The RA consists of securing and isolating the landfill contents utilizing a multilayer cap in combination with fencing, surface controls, deed restriction and LTM. This is the final action for Operable Unit (OU) 1.
Site 2 - A removal action, consisting of the removal of petroleum contaminated soil, was completed.

FY94

Site 1 - The Remedial Design (RD) to cap the landfill was completed.
Site 2 - The RD was completed for additional hot spot removals at the landfill.
UST 2 - Tank removal was completed and free product recovery began in September 1994 and is still underway.

FY95

Site 1 - Began construction of the cap for the landfill.
Site 2 - A treatability study for the use of cement for fixating Toxic Characteristics Leaching Procedure (TCLP) lead solids excavated from the landfill was completed with indications of feasibility for the procedure. A second treatability study for the destruction of petroleum contamination in the soil by using an innovative technology, white rot fungus, has been initiated.
Site 19 - Removal of used sandblast grit was completed. The grit was then used as fill material under the cap at Site 1.
UST 3 - Removed tank contents.
USTs 3 and 4 - Completed RIs.
Site 17 - A Study Area Screening Evaluation for the electroplating shop began.

PROGRESS DURING FISCAL YEAR 1996

FY96

Site 1 - Construction of the RCRA cap was suspended over the winter of FY96 with the implementation of an erosion control and protection shutdown plan. Completion of the cap was delayed due to weather. The cap was completed (IRA) in the fall of 1996. The Fate and Transport Model, used for predicting the pathway of any contaminants migrating from the landfill through the groundwater, will be evaluated during the Feasibility Study (FS) to assess the need for RA regarding the groundwater and near shore sediments.
Sites 1 and 9 - The FY95 funding rescission postponed the following Newport NETC projects: FS for Site 9 (Old Fire Fighting Training Area), and the Landfill Management of Migration Plan for Site 1 (McAllister Point Landfill) OU 2. FY97 funding will be applied toward Site 1 and or, OU 2 design, if required.
Sites 1 and 19 - The Ecological Risk Assessment is underway.
Sites 2 and 19 - Completed a hot spot soil removal action (IRA).
Site 19 - Began Study Area Screening Evaluation.
USTs 1-3 - CAP was completed. UST 2 was Response Complete.
UST 3 - Design was completed.
UST 3 - Two IRAs were completed.

NEWPORT NETC
PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Site 1 - RI/FS will be completed.
Site 2 - Remedial Design to be completed.
UST 4 - CAP proposed for completion.
USTs 1 and 3 - IMP is scheduled for completion.
USTs 1, 3 and 4 - IRA is expected to be completed.
Site 1 - Expecting Response Complete.
The ERA for Site 1 will be completed and the FS for OU#2 at site 1 will be started.

FY98

Site 2 - RI/FS is scheduled for completion.
Site 1 - Remedial Design is expected for completion.
Site 1 OU 2 -The FS will be completed and the PRAP and ROD will be underway.
Site 2 - Soil removal IRA planned for completion.
UST 4 - Design is planned for completion.

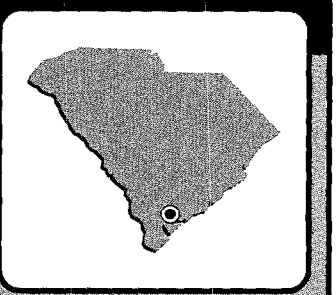
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	12							
RI / FS			1	2		3	2	4
RD			1	1	1		4	5
RAC					1	2		9
RAO								9
IRA	1(1)	3(3)		1(1)	1(1)			
RC	7							12
Cumulative % RC	37%	37%	37%	37%	37%	37%	37%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP		3	1					
DES		1		1				
IMP			2		1			
IMO								2
IRA		1(2)	3(3)					
RC		1	1					2
Cumulative % RC	0%	25%	50%	50%	50%	50%	50%	100%

BEAUFORT MARINE CORPS AIR STATION

BEAUFORT, SOUTH CAROLINA



Engineering Field Division/Activity: SOUTHDIV

Major Claimant: CMC

Size: 6,676 Acres

Funding to Date: $2,314,000

Estimated Funding to Complete: $17,442,000

Base Mission: Provides operations, logistics and administrative support to the Fleet Marine Forces tenant units

Contaminants: Jet fuel waste oils, hydraulic fluids, antifreeze, solvents, pesticides/herbicides, paint, paint thinners and strippers, mercury amalgam, asbestos, sludge

Number of Sites:

CERCLA:	22
RCRA Corrective Action:	14
RCRA UST:	5
Total Sites:	41

Relative Risk Ranking of Sites:

High:	2	Not Evaluated:	2
Medium:	13	Not Required:	16
Low:	8		

Sites Response Complete: 16

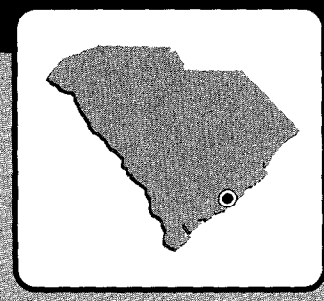
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	20							1
RI / FS								6
RD								3
RAC								3
RAO								
IRA								
RC	16							6
Cumulative % RC	73%	73%	73%	73%	73%	73%	73%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	12							2
RFI / CMS							1	11
DES								7
CMI								7
CMO								
IRA								
RC								14
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	5							
CAP	1	2	2					
DES	1							1
IMP			2					2
IMO								1
IRA	1(2)			1(1)			1(1)	2(3)
RC			1					4
Cumulative % RC	0%	0%	20%	20%	20%	20%	20%	100%

CHARLESTON NAVAL COMPLEX
CHARLESTON, SOUTH CAROLINA



Engineering Field Division/Activity: SOUTHDIV
Major Claimant: COMNAVFACENGCOM/CNET/COMNAVRESFOR
Size: 2,879 Acres
Funding to Date: $38,398,000
Estimated Funding to Complete: $37,127,000

Base Mission: Provided support and supplies for assigned ships, drydocking, research and test work, and training

Contaminants: Asbestos, organic compounds, cyanide, decontaminating agents, paint, PCBs, POLs, solvents, heavy metals, pesticides, chemical agents

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	0				
RCRA Corrective Action:	115	High:	30	Not Evaluated:	8
RCRA UST:	7	Medium:	64	Not Required:	3
Total Sites:	122	Low:	17		

BRAC III, IV

Sites Response Complete: 3

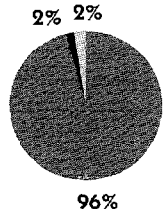
EXECUTIVE SUMMARY

The Charleston Naval Complex is located on the west bank of the Cooper River about 5 miles north of Charleston, South Carolina. There are multiple Naval commands located on the complex: Naval Shipyard (NSY), Naval Station (NS), Naval Fleet and Industrial Supply Center (FISC), Fleet and Mine Warfare Training Center (FMWTC), and the Naval Reserve Center (NRC) (which is not a closing facility) and several other small organizations. The property and the majority of the commands were slated for closure by the Base Realignment and Closure (BRAC) commission in 1993, except for the FISC, which was closed by the BRAC commission in 1995. Operational closure of the base was completed on 01 April 1996. In support of the various missions of the multiple commands, typical operations on the complex which contributed to contaminated sites included welding shops, machining shops, metal shops, electrical and electronics shops, painting and sandblasting shops, chemical treatment shops, public works shops, photographic and printing shops, firefighting training areas, medical and dental clinics, storage of supplies, materials and fuels, and treatment and disposal of waste waters and solid wastes. In the early 1980's, the Navy changed its operational processes to prevent further contamination. The primary sites of concern are areas that were used as landfills or disposal pits without controls for runoff and leachate. The area, originally a tidal marsh, drains to groundwater and nearby wetlands areas, therefore providing a pathway through which contaminants could migrate. The wetlands, high water table, known surface soil contamination and potential for personnel exposure were the primary cause for the high-ranked sites in the Relative Risk Site Evaluation. The facility was granted a RCRA Part B permit in 1990 which contains legal requirements for remediation of past releases.

The complex is surrounded by commercial, industrial and residential areas. Due to its location on the river's edge, it is also surrounded by diverse ecosystems. There are many wetlands and tidal marsh areas with a great variety of aquatic life as well as plants, birds and animals. The nearby waterways are sources for fishing and recreational use. The water table is within 3 to 7 feet of the ground surface which increases the possibilities for contaminant migration. The shallow aquifers are not a practical source of drinking water due to the high levels of dissolved solids and chlorides. The deeper aquifers are protected by a thick layer of impermeable clay. Drinking water supplies for this area are from surface water sources some distance from the base.

The complex has been divided into 12 zones to manage the restoration program efficiently. There are 115 RCRA SWMUs and 7 USTs on the complex. The NS has 54 SWMUs and 3 USTs (1 RC), the NSY has 39 SWMUs, and the FISC has 22 SWMUs and 2 USTs. The remaining two UST sites are RC with one on FMWTC and the other is on NRC. These sites are within the first ten zones. The first ten zones also include hundreds of AOC undergoing confirmatory sampling. Zones J and L which are currently under RFI stage are the waterside areas and the sanitary sewer system which may include contamination from any site or AOC. The UST sites are being remediated under the RCRA UST program. The NRC site and one FISC UST site have completed the cleanup. Two sites, UST 7 at FISC and UST 1 on FMWTC have cleanup underway. The tank program includes 141 tanks. 54 have been removed and the remaining are scheduled for removal in FY97 and FY98.

The establishment of the Shipyard Detachment, consisting of former shipyard engineers, technicians and production workers, has greatly accelerated the cleanup process at the Charleston Naval Complex. The Detachment has been involved in tank removals, asbestos abatement, process closures, groundwater monitoring, soil sampling, waste management, site surveying and remediation activities. The Detachment is providing support in other areas relating to property transfer in the development of lease specific Environmental Baseline Surveys (EBSLs). The community members on the Restoration Advisory Board have been highly supportive of the Navy to continue to employ these members of the community to allow many of them to complete their service with the Navy by continued service in installation restoration.



Current Status Of Sites

Studies Underway	117
Cleanups Underway	2
Response Complete	3
TOTAL	122

CHARLESTON NAVAL COMPLEX
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - The base is located on the west side of the Cooper River which flows on the east side of the town of Charleston, South Carolina. The eastern bank is undeveloped and contains extensive wetlands along Clouter Creek and Thomas Island. The Naval facilities that comprise the base are located on the western bank of the Cooper River. Much of the base is situated on dredge spoils that were used as fill in the low-lying tidal marsh areas by several small creeks. All surface drainage is directly into Cooper River. The Cooper River flows into the Charleston Harbor which eventually flows to the Atlantic Ocean. Most potable water in the Charleston area comes from surface water sources. There are two aquifers underlying the area, one of which is used as an industrial water source. All shallow groundwater aquifers under the base (water table at 3 to 7 feet) drain to the Cooper River. Pathways exist for contaminants to migrate via surface water runoff and via infiltration into the shallow aquifer to sensitive ecosystems downstream. Dredging in the navigable waterways and the Naval Base docking berths dumps potentially contaminated dredge spoils into nearby wetlands and wildlife habitats. From the 1930's to the early 1970's, these dredge spoils were used to fill in swampy areas on the base. Several large areas of the base are built on dredge spoils.

NATURAL RESOURCES - The wildlife of this area is diverse and includes terrestrial, aquatic, and marine mammals, numerous resident and migratory inland and coastal birds, and a great variety of reptiles and amphibians. Finfish and shellfish are abundant in the estuarine water of the Cooper River, Wando River, and Charleston Harbor. A survey of both Federal and State protected species included twelve animal and one plant species listed as endangered or threatened in the area. The bodies of water in the area are resources used for recreational fishing and collection of shellfish. The area has numerous salt marshes and wetlands. There is 1 archaeological site and 114 historical buildings in 3 historic districts. There are also 4 individual eligible structures. A Programmatic Agreement is in effect with the State and the Advisory Council on Historic Preservation.

RISK - A Baseline Risk Assessment for Human Health and an Ecological Risk assessment will be done by zone in accordance with EPA guidance when the appropriate data has been collected. A major difficulty was encountered in trying to determine background levels of metals for comparison to site data due to the many historical layers of dredge spoils underlying the base. With the cooperation of the EPA, a statistical methodology was developed to establish background levels, a supporting sampling plan designed, and sampling is underway. The Ecological Risk Assessment is being conducted in phases. A preliminary assessment has been done including habitat evaluation, biological inventory, migration route and exposure route determinations. As site sampling data becomes available, the risk assessment will go on to the next phase. Using the DOD Relative Risk Ranking Model 30 sites were ranked as high relative risk. The high rankings are primarily due to known contamination on the sites and the migration potential to the nearby wetlands or exposure of on-site personnel through direct contact with both the soil and the near surface groundwater table.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - The Hazard Ranking System (HRS) score of 52 for the complex would normally place the base on the National Priorities List (NPL). Since there was no advantage to be gained under CERCLA compared to the Corrective Action program already underway under RCRA, the BRAC Cleanup Team (BCT), including the regulatory agencies, agreed there was no reason to pursue the CERCLA NPL listing. A Compliance Order was issued in 1992 to close Solid Waste Management Unit (SWMU) 25, a plating facility. The tanks and waste were removed and the facility closed in 1993.

LEGAL AGREEMENTS - The compliance actions are dictated by the RCRA Part B Permit rather than a Federal Facility Agreement (FFA). The permit was signed on 5 June 1990. As a condition of the permit, Installation Restoration (IR) program cleanups are done as RCRA Corrective Action under the Hazardous and Solid Waste Amendments (HSWA) portion of the permit. A Corrective Action Management Plan (CAMP) was prepared to provide a compliance schedule including start and completion dates for various phases and submittal dates for documents. Efforts to renegotiate the CAMP schedules were successful and a new CAMP schedule was established in March 1996.

PARTNERING - The EPA and the South Carolina Department of Health and Environmental Control (SCDHEC) have participated in the partnering efforts sponsored by the Navy. Discussions are underway to identify problem areas and ideas for improvement. This partnering effort includes the regulatory agencies, the BRAC Cleanup Team and outside agencies and organizations involved in cleanup decisions.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in the late 1980's and met quarterly. The TRC was converted to a Restoration Advisory Board (RAB) in March 1994. The RAB has 24 members who represent the Navy, EPA, SCDHEC, natural resource trustees, community members and academia. The RAB meets monthly, and has had presentations on the environmental restoration process and soil sampling demonstrations from local experts. Two site visits have been conducted and several public meetings held. Of major concern to the public is the level of cleanup — how clean the Navy is going to leave the property after it closes.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was first published in the late 1980's. The CRP was updated in February 1993 to include the recently added Solid Waste Management Units (SWMUs). The CRP was revised in November 1995 to incorporate the establishment of the RAB. The RAB participated in creating seven Fact Sheets that have been distributed.

INFORMATION REPOSITORY - Although an Administrative Record (official file) is not required under RCRA. An Information Repository (public information source) has been created and is being updated with the latest documents that are relevant to the cleanup and transfer of any property on the complex. The repository is located at the Dorchester Road Regional Branch of the Charleston County Library in North Charleston, SC.

BASE REALIGNMENT AND CLOSURE

BRAC - There are multiple Navy activities on the complex. Four of the largest activities were listed for closure by the 1993 Base Realignment and Closure (BRAC) Commission: The Shipyard, Naval Station, Fleet and Industrial Supply Center, and the Fleet and Mine Warfare Training Center. Operations on the complex ceased on 01 April 1996 with the complex to be transferred sometime after that, depending on the cleanup schedule. Southern Division of the Naval Facilities Engineering Command is the cognizant caretaker for the base.

BRAC CLEANUP TEAM - A BRAC Cleanup Team (BCT) was formed in November 1993. The team members are representatives from the Navy, State of South Carolina and EPA Region IV. The BCT has been instrumental in accelerating the cleanup program by providing a decision-making group on site. The team holds regular meetings to discuss documents, resolve problems and review status of the cleanup efforts.

CHARLESTON NAVAL COMPLEX
RELEVANT ISSUES

DOCUMENTS - A BRAC Business Plan was prepared in March 1996. The BRAC Business Plan was done in lieu of updating the BRAC Cleanup Plan (BCP). The Business Plan outlines the environmental restoration status, strategies and goals pertaining to the cleanup of Naval Base Charleston. An Environmental Baseline Survey (EBS) was completed in January 1996 and is currently under review by the regulators. It has been delayed due to radiological issues. In the EBS, the Environmental Condition of Property was assessed according to DOD and American Society for Testing and Materials (ASTM) guidelines.

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
0 acres	0 acres	0 acres	0 acres	29 acres	605 acres	2,246 acres

LEASE/TRANSFER - Findings Of Suitability to Lease (FOSL) have been completed for 472 facilities at Naval Base Charleston. FOSLs for an additional 231 facilities are currently being prepared. No Findings of Suitability to Transfer (FOST) have been completed to date. The Federal to Federal transfer of property (no FOST is necessary for fed to fed) at Naval Base Charleston to the National Oceanic and Atmospheric Administration (NOAA), the State Department, the United States Coast Guard, the United States Marine Corps, Naval Command Control and Ocean Surveillance Center In Service Engineering - East (NISE-East), and the United States Army Corps of Engineers involving over 1400 acres has taken place. The majority of the former controlled industrial area of the shipyard has been leased by three manufacturing and ship repair companies. There are several other private businesses that are leasing facilities at the base. Several of the local governmental agencies are also leasing facilities on the base. The Border Patrol has set up an academy on the base for the training of Border Patrol and Immigration and Naturalization Service agents. The National Community Civilian Corps (NCCC) is also located on the base. The Defense Financial Accounting Service (DFAS) and the Defense Printing Services Detachment Office (DPSDO) are using facilities on the base.

REUSE - A local reuse committee was formed and called "BEST" which stands for Building Economic Solutions Together. This committee was established by the governor and includes local residents, government agencies, schools and businesses to identify potential reuse options. A second reuse group, the Charleston Naval Complex Redevelopment Authority (CNCRA) is a state agency. The Community Reuse Plan was approved in June 1994 and an Environmental Impact Statement (EIS) survey has been completed with the Record of Decision being signed on 07 May 96. Initial reuse plans include a privately-owned commercial shipyard, public recreational facilities and other community and commercial uses.

FAST TRACK INITIATIVES - One of the primary fast-track efforts is to shorten document review time. By working closely with the regulatory agencies and the public, and through the partnering agreement being established, the cleanup process is expected to proceed as quickly as possible. In the field, the Rotosonic drilling process for monitoring well installation has contributed to a fast-track investigation of sites by reducing installation time and reducing the volume of wastes generated. This technology has been in use at the complex since FY95.

HISTORICAL PROGRESS

FY83

Sites 1-8 The Initial Assessment Study, equivalent to a Preliminary Assessment (PA) was completed which identified 8 potential CERCLA sites (Sites 1-8). This study recommended all eight sites for a Confirmation Study, equivalent to an Site Inspection (SI).

FY88

UST 7 (FISC) - The Initial Site Characterization (ISC) was completed.

FY90

UST 7 (FISC) - The Corrective Action Plan (CAP) was completed.

FY92

USTs 1 and 2 (NS) - Five tanks were removed from the two Underground Storage Tank (UST) sites and the Initial Site Characterization was completed.

FY93

UST 3 (NS) - The ISC phase was completed.
UST 1 (FISC) - The ISC was completed.

FY94

All Sites and SWMUs - The RCRA Facility Assessment (RFA) started in January for all sites on the Naval complex.
Sites 1 and 5, SWMUs 13-17, 19, 20, 44, 47, 121, 136, 138, 159, 177, 178, 503, 516, 653, 655, 656, 662, 667, 670, 677, 681, 684, 689, 690 and 700 (NS) - The RCRA Facility Investigation (RFI) phase began.
Sites 3 and 8 (FISC) - The RFI phase began.
UST 1 (NS) - The CAP was completed.
UST 1 (FISC) - The Implementation of Corrective Action (groundwater monitoring) was completed. The site is considered to be Response Complete.

FY95

RFA was completed on 48 SWMUs.
SWMUs (NSY) - The RFI started for the SWMUs.
SWMUs (FISC) - The RFI began for all SWMUs .
SWMUs 4, 36, 37, 109, 504, 556, 607, 609, 613, 620, 621, 691, 692 and 699 (NS) - The RFI phase was started.
UST 2 (NS) - The Contamination Assessment was nearing completion.
UST 7 (FISC) - The Implementation of Corrective Action is underway. Bioremediation was the corrective action used.

PROGRESS DURING FISCAL YEAR 1996

FY96

SWMUs 635, 659 and 678 - The RFA was completed.
Environmental Impact Statement (EIS) survey has been completed with the Record of Decision being signed on 07 May 96.
BCP was modified.
EBS still not approved due to review delays.

UST 1 (NS) - Completed 1 IRA and began 2 IRAs, which will include removal of contaminated soil, groundwater treatment and bioremediation.
UST 2 (NS) - CAP was completed.
UST (Removals) - Fifty-four USTs were removed in FY96.

CHARLESTON NAVAL COMPLEX
PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

EBS to be approved.
SWMUs 4, 6-8, 11-17, 19, 20, 24, 38, 120, 505, 624, 626, 627, 631, 637, 642, 692, 36, 37, 44, 47, 109, 121, 136, 138, 159, 162, 175, 177, 178, 503, 504, 556, 607, 609, 613, 620, 621, 653, 655, 656, 662, 663, 666, 667, 670, 677, 681, 684, 685, 689-692 and 698-700 - RFA will be complete for these 64 sites.
SWMUs 3, 4, 6, 8, 9, 12-17, 19, 20, 24, 36-38, 44, 47, 109, 136, 138, 159, 175, 177, 178, 503, 505, 516, 607, 609, 613, 620, 621, 624, 626, 627, 631, 635, 637, 642, 653, 655, 656, 659, 662, 663, 666, 667, 677, 678, 681, 684, 685, 689, 690, 692 and 698-700 - RFI/CMS will be complete for these 60 sites.
SWMUs 9, 13, 14, 17, 21, 83, 605, 653, 655, 656, 659 and 697 - The Design will be complete for these 12 sites.
SWMU 17 - The CMI will be complete.
SWMUs 12, 16, 24, 120, 175, 637 and 692 - These 7 sites will be RC.
UST 1 (NS) - Complete the SA. Complete the CAP. Complete the RD. Begin the IMP.
UST 2 (NS) - The Design and IMP will be completed. IRAs will continue
UST 3 (NS) - The SA will be completed. The Design and IMP will be complete. LTO will begin.
UST (Removals) - Fifty USTs are scheduled for removal in FY97.

FY98

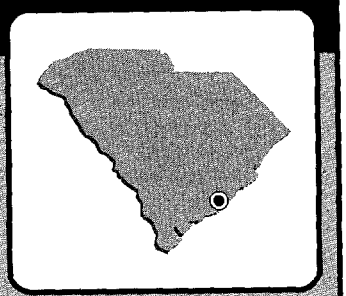
SWMUs 1, 2, 5, 7, 11, 18, 21-23, 25, 39, 42, 43, 53, 54, 65, 70, 83, 84, 100, 102, 106, 121, 145, 172, 188, 504, 525, 526, 538, 539, 540, 544, 549, 556, 559, 561, 569-574, 578, 583, 590, 598, 603, 605, 670, 691, 692 and 694 - The RFI/CMS for these 53 sites will be completed.
SWMUs 1, 4, 5, 15, 18, 20, 22, 23, 37-39, 42, 44, 53, 65, 70, 84, 109, 121, 136, 138, 159, 177, 178, 505, 631, 662, 663, 666, 667, 684, 685, 689, 690 and 700 - The Designs for these 35 sites will be completed.
SWMUs 21, 605, 653, 655, 656, 662, 666, 667, 677 and 700 - The CMI for these 10 sites will be completed.
SWMUs 53, 65, 70 and 84 - IRAs to be completed.
SWMUs 21, 43, 605, 653, 655, 656, 662, 666, 677, 691, 692 and 700 - These 12 sites will go RC.
UST 3 (NS) - The CAP will be completed.
UST 1 (NS) - The IMP will be completed.
USTs 1 and 2 - A total of 4 IRAs will be completed. 2 at each UST site.
UST (Removals)- The remaining 37 identified USTs will be removed.

PROGRESS AND PLANS

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	48	3	64					
RFI / CMS			60	53				
DES			12	35	35	15	7	
CMI			1	10	18	38	16	21
CMO						1		3
IRA				4(4)	11(11)	1(1)		
RC			7	12	20	37	16	23
Cumulative % RC	0%	0%	6%	17%	34%	66%	80%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	5		2					
CAP	3	1	1	1				
DES			3					
IMP	2		2	1		1		
IMO								3
IRA	2(3)	1(1)		2(4)				
RC	3					1		3
Cumulative % RC	43%	43%	43%	43%	43%	57%	57%	100%

CHARLESTON NAVAL WEAPONS STATION
CHARLESTON, SOUTH CAROLINA



Engineering Field Division/Activity: SOUTHDIV
Major Claimant: COMNAVSEASYSCOM
Size: 16,668 Acres
Funding to Date: $8,783,000
Estimated Funding to Complete: $37,070,000

Base Mission: Provides assigned weapons and weapon systems; supports fleet and shore activities with guided missiles, conventional ammunition, torpedoes and other underwater weapons

Contaminants: Waste oils, solvents, unexploded ordnance, TNT, black powder, primer materials, pesticides, sludges, paint residues, laboratory chemicals, PCBs, metals, POLs

Number of Sites:

CERCLA:	4
RCRA Corrective Action:	33
RCRA UST:	3
Total Sites:	40

Relative Risk Ranking of Sites:

High:	5	Not Evaluated:	1
Medium:	14	Not Required:	11
Low:	9		

Sites Response Complete: 11

PROGRESS AND PLANS

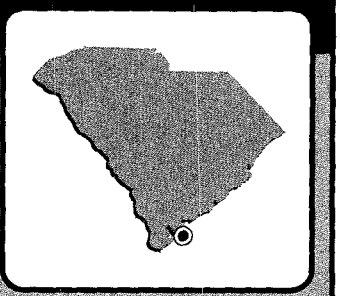
CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	4							
RI / FS								1
RD								
RAC								
RAO								
IRA								
RC	3							1
Cumulative % RC	75%	75%	75%	75%	75%	75%	75%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	24	2	1					
RFI / CMS	1		1	10		2		12
DES	1	1						15
CMI	1							7
CMO								1
IRA	2(2)		1(1)					1(1)
RC	7		1	5	2			18
Cumulative % RC	21%	21%	24%	39%	45%	45%	45%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	3							
CAP	2	1						
DES								
IMP					1			1
IMO								
IRA					1(1)			1(1)
RC	1				1			1
Cumulative % RC	33%	33%	33%	33%	67%	67%	67%	100%

PARRIS ISLAND MARINE CORPS RECRUIT DEPOT

PARRIS ISLAND, SOUTH CAROLINA



Engineering Field Division/Activity: SOUTHDIV

Major Claimant: CMC

Size: 8,043 Acres

Funding to Date: $3,489,000

Estimated Funding to Complete: $19,181,000

Base Mission: Provides basic and combat training of enlisted personnel upon their first entry into the Marine Corps

Contaminants: Industrial wastes, pesticides, paint, POLs, PCBs, solvents, ordnance compounds, metals, acids, electrolyte

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	17				
RCRA Corrective Action:	0	High:	9	Not Evaluated:	0
RCRA UST:	8	Medium:	2	Not Required:	9
Total Sites:	25	Low:	5		

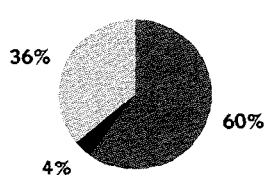
NPL

Sites Response Complete: 9

EXECUTIVE SUMMARY

Parris Island Marine Corps Recruit Depot (MCRD) is located on an island that lies along the southeastern coast of South Carolina, approximately one mile south of the city of Port Royal and 30 miles northeast of Savannah, Georgia. Hilton Head, South Carolina, a major recreational area, is located across Port Royal Sound, southwest of the Depot. Parris Island has been operated as a US Marine Corps recruit training facility since 1915. The installation consists of administrative buildings, training facilities, family and troop housing, maintenance, training and community facilities. Typical operations at the Depot that contributed to contaminated sites include recruit training, maintenance of boats and ground vehicles, and storage and maintenance of ordnance. Most of the sites at the installation are landfills or spill areas where groundwater and sediment are contaminated with solid waste, paint waste, construction debris, incinerator ash, solvents and petroleum products. Current operations include pollution prevention technologies to prevent further contamination. The contaminants in the landfill sites (Sites 1, 2 and 3) and the placement of landfills in tidal marshes were the primary drivers for the installation being added to the National Priorities List (NPL). The influences of the tidal waters on the marshes has allowed the contaminants to migrate out of the confines of the landfills. To date, a Federal Facility Agreement (FFA) is not in place at the Depot, but it is currently under negotiation.

Parris Island is one of several barrier islands used by the MCRD. There are 3,274 acres of dry land at the Depot, 4,344 acres of salt marshes and 429 acres of tidal ponds and streams. Buildings were built on the "high" areas, no more than 20 feet above sea level. Over the years wastes were thrown into the landfills which were built in the marshes. As the waters, marine, groundwater and surface water, flowed in and out of the tidal marshes, the contaminants in the marshes were carried with water and formed contaminated sediments in the surrounding marine environment. Commercial and recreational fishing activities are conducted in the vicinity of the base. The surrounding area is the home for several endangered wildlife species.



Current Status Of Sites

Studies Underway	15
Cleanups Underway	1
Response Complete	9
TOTAL	25

A Restoration Advisory Board (RAB) is currently being established for the installation and expects to hold it's first RAB meeting in 1997. The Community Relations Plan (CRP) is currently under development. It is being developed in partnership with the Navy Environmental Health Center (NEHC).

Of the 48 Installation Restoration (IR) and Underground Storage Tank (UST) sites that have been identified at Parris Island, 25 remain as official sites. Nine of these sites are currently recorded as Response Complete (RC). Two of the sites currently recorded as RC (Sites 9 and 15) are expected to be reopened in 1997 for further investigation. In FY86 an Initial Assessment Study (IAS) identified 16 sites. Ten sites (Sites 5 and 7 - 15) were recorded as RC at that time and 6 sites (Sites 1 - 4, 6 and 16) were recommended for further evaluation. In FY88 two RCRA Underground Storage Tank (UST) sites (UST 1 and 2) were identified. In FY89 Site 17 was identified. In FY90 Site 4 was recorded as RC. During FY90 EPA prepared a RCRA Facility Assessment (RFA), identifying 44 Solid Waste Management Units (SWMUs) and 4 Areas of Concern (AOCs). All of the previously identified Sites and USTs were included as SWMUs or AOCs. As a result of the RFA findings, 5 new sites were added (Sites 21, 27, 28, 35 and 38) and all 5 sites were recorded as RC at that time. In FY92 Site 17 was recorded as RC following an Interim Remedial Action (IRA). In FY93 Site 6 was recorded as RC following a Final Remedial Action (FRA). In FY94 Site 45 was identified. In FY95 after Parris Island was placed on the NPL, regulators reassessed the 18 sites previously recorded as RC and reopened a total of 9 sites (Sites 5, 7, 8, 12, 13, 14, 21, 27 and 35) for further evaluation. A total of 9 sites (Sites 4, 6, 9, 10, 11, 15, 17, 28 and 38) remain RC at this time. Sites 9 and 15 are currently being considered for further investigation and are expected to be reopened in FY97. The two RCRA UST sites on the base are scheduled for Corrective Action Plan (CAP) and Implementation (IMP) phases prior to completion. The scheduled completion dates are UST 1 in FY98 and UST 2 in FY00.

PARRIS ISLAND MCRD
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Parris Island MCRD is located on a system of islands, marshes and interconnecting man-made causeways that form a peninsula. The islands are made up of barrier-island sand, silt and clay deposits that contain a surficial aquifer. While there is potential for contamination of this aquifer, its shallow depth and geographic isolation from other land masses would make the migration of contamination off-base to areas that use the aquifer as a water source highly unlikely. Salt water intrusion and a high sulfur content make the water in the surficial aquifer unfit for consumption. The facility is bordered by marsh areas and tidal creeks which drain into the Beaufort River and Broad River to form the Port Royal Sound. Surface runoff from most of the base flows into storm sewers that discharge into the marshes. Any contamination in the water of the surficial aquifer or surface runoff is transferred to the surface waters of the marshes and creeks and then into the rivers, the Sound and out to the Atlantic Ocean. Beneath the surficial aquifer lies the Tertiary Limestone Aquifer. It is a relatively large aquifer, extending from South Carolina to Florida, supplying groundwater to hundreds of wells, although water from this aquifer is not used for human consumption in the vicinity of Parris Island. There is little or no risk of surficial aquifer contamination penetrating into the water of the deeper Tertiary Limestone Aquifer. The aquifer is artesian and it is expected to be hydrologically separate from the overlying surficial aquifer. The top surface of the Tertiary Limestone Aquifer ranges from approximately 60 to 90 feet below the surface of the land with approximately 20 feet of the low permeable Hawthorn Formation separating the two aquifers. Water from the Tertiary Limestone Aquifer on base is not used for human consumption due to high saltwater contamination.

NATURAL RESOURCES - The installation has several past disposal sites adjacent to or in direct contact with salt water marshes, and previous studies have documented contaminant releases from some of these sites. The potential exists for contaminants to impact fish, shrimp, crabs, and mollusks that inhabit the marshes and are harvested commercially and by recreational fishermen. Surface waters of the area are used for recreational and commercial fishing and shellfish harvesting. Therefore, contamination of the water could have an adverse impact on human health and the environment. These surface waters also provide habitats for migratory, threatened and endangered species of wildlife (including the southern bald eagle, the wood stork, the Eskimo curlew and the short-nosed sturgeon), as well as their food sources.

RISK - A Department of Defense (DOD) Relative Risk Ranking was completed for the installation in FY95. Six of the 25 sites at Parris Island received a "High" ranking and an additional three sites received a "High" ranking after a sampling event conducted in FY96. Most of the contamination problems are due to the location of the installation; several small islands nestled between salt marshes and the surrounding ocean. The three landfill sites (Sites 1-3) were ranked "High" because of contaminated sediment found in the marine environment which surrounds the sites. The three landfill sites were located in salt marshes. Over the years as solid waste, paint waste, fill material and construction debris were placed in landfills, contamination was being forced into the surrounding marine areas by the flow of the tidal creeks through the marshes. Contaminants from the Jericho Island Disposal Area (Site 12, the Weapons Power Plant O/W Separator (Site 21) and Storm Sewer Outfalls (Site 14) discharge directly into the marshes and rivers surrounding the island. At Site 45 (Dry Cleaning Facility Spill Area), the organic solvent PCE and petroleum based solvents were detected during an investigation of an accidental spill. The groundwater in the area was impacted and it discharges directly into the surrounding water bodies. The two Underground Storage Tank (UST) sites (USTs 1 and 2) had a high ranking for groundwater contamination with a potential for migration to human water supplies.

Following the installations placement on the National Priorities List (NPL), the Agency for Toxic Substances and Diseases Register (ATSDR) performed the initial public health assessment (PHA) in June 1995 and assessed a total of 60 areas across the Depot. The PHA was completed in FY96 and identified 2 potentially contaminated areas as posing "no apparent public health hazard" and identified the remaining 58 as posing "no public health hazard".

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - The installation was proposed for the National Priorities List (NPL) in August 1994 and listed on 16 December 1994. Contamination at three landfill sites were the main drivers for placement on the NPL. As a result of being placed on the NPL, 9 of the 18 sites, originally identified as Response Complete (RC), were reopened by regulators and rescheduled for investigation, with a completion date in FY08. An additional 2 sites remain RC, but are expected to be reopened by regulators in 1997 for further evaluation with a completion date to be determined.

LEGAL AGREEMENTS - EPA conducted a RCRA Facility Assessment (RFA) as part of a RCRA permit application in FY90. The RFA identified 44 Solid Waste Management Units (SWMUs) and four Areas of Concern (AOCs). All the previously identified CERCLA sites were included as SWMUs or AOCs. The application for the installation's RCRA permit has since been withdrawn, and any further study of the SWMUs will most likely be conducted under CERCLA.

In September 1995, Federal Facility Agreement (FFA) negotiations were initiated between the Navy, EPA, and South Carolina Department of Environmental Control (DHEC). An FFA is expected to be signed in FY97. A Site Management Plan (SMP) is expected to be issued in conjunction with the FFA, and then be reissued on an annual basis.

PARTNERING - A formal partnering arrangement between the Navy, Marine Corps, EPA Region IV and South Carolina state regulators has been initiated. The team participated in a workshop, kicking off the formal partnering arrangement in November 1995.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Restoration Advisory Board (RAB) is in the process of being established for the installation. The RAB expects to hold it's first meeting in 1997.

COMMUNITY RELATIONS PLAN - The Community Relations Plan (CRP) is currently under development. It is being developed in partnership with the Navy Environmental Health Center (NEHC).

INFORMATION REPOSITORY - Establishment of the Information Repository and Administrative Record are currently underway.

PARRIS ISLAND MCRD
HISTORICAL PROGRESS

FY86

Sites 1-16 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA) was completed in September 1986 and identified 16 potential sites.
Sites 5, 7, 8, 9, 10, 11, 12, 13, 14 and 15 - These ten sites were listed as Response Complete (RC) following the IAS.

FY87

Sites 1, 2, 3, 4, 6 and 16 - Site Inspections (SI) started at these six sites.

FY88

USTs 1 and 2 - An Initial Site Characterization (ISC), equivalent to a PA for RCRA Underground Storage Tank (UST) program, established two UST sites. The ISC for UST 1 was completed in FY88, and the ISC for UST 2 will continue through FY97.

FY89

Site 17 - This new site was identified and an SI was started without a previous PA being accomplished.

FY90

All Sites - EPA prepared a RCRA Facility Assessment (RFA) as part of a RCRA permit application. The RFA identified 44 SWMUs and 4 AOCs. All previously identified IR sites were included as SWMUs or AOCs.
Sites 1, 2, 3, 4, 6 and 16 - An SI was completed at six sites. Site 4 was recorded as RC.
Sites 21, 27, 28, 35 and 38 - Additional PA identified five additional sites. Following the PA all five sites were listed as RC.

FY92

Site 17 - An SI and Remedial Action (RA) phase and an Interim Remedial Action (IRA) were completed. Following the tank removal it was listed as RC.

FY93

Site 3 - An Expanded Site Inspection (ESI) was completed. The ESI, which consisted of an ecological study of aquatic biota surrounding the site, is currently being reviewed by regulatory agencies.
Site 6 - Following the RA phase and Final Remedial Action (FRA) for a tank removal action was listed as RC.

FY94

Site 45 - This new site was identifies and an SI was completed.

FY95

All Sites - Initiated process for Remedial Investigation/Feasibility Study (RI/FS) scoping of milestones plan.
All Sites - Agency for Toxic Substances and Diseases Register (ATSDR) performed the initial public health assessment in June 1995.
Site 2 - In an effort to reduce risk to human health this site was fenced.
Sites 4, 28 and 38 - After the depot was placed on the NPL, these 3 sites were reopened by regulators for further consideration and then reclosed with a new RC date of 1995.
Sites 5, 7, 8, 12, 13, 14, 21, 27 and 35 - These 9 sites were reopened by regulators for further evaluation after the depot was placed on the NPL.
Sites 9 and 15 - These 2 sites remain RC but are currently being considered for reopening by regulators for additional investigation.
UST 1 - Corrective Action Plan (CAP) phase was completed. Implementation (IMP) phase and IRA for removal of four tanks, soil removal, free product recovery and soil vapor extraction were started, with completion scheduled for FY98.

PROGRESS DURING FISCAL YEAR 1996

FY96

Generic Work Plans were drafted for cleanup of all active IR sites.
Draft community relations plan were prepared and submitted to regulators.
A Draft FFA was prepared.
Started Administrative Record.
CRP is being prepared. It was not completed in FY96 due to late start because of delayed funding.
RAB is being established. It was not completed because recruiting members has taken longer than first thought.
Sites 1, 2 and 3 - Began RI/FS activities for 3 sites.
Sites 4, 21 and 27 - PA/SI complete for all 3 sites.
Site 45 - Began RI/FS. Began an IRA.
UST 2 - SA complete. Began Corrective Action Plan (CAP).
Sites 9 and 15 - Evaluated the need for additional investigation at these 2 sites and considered appropriateness of reopening for further investigation.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Finalize generic workplans.
Finalize the Community Relations Plan.
Establish RAB.
Sign the FFA.
Sites 1, 2 and 3 - Field investigation will begin under the RI/FS.
Site 45 - Work continues on the IRA.
UST 2 - The CAP will be completed.
Sites 9 and 15 - Reopen sites for further investigation.

FY98

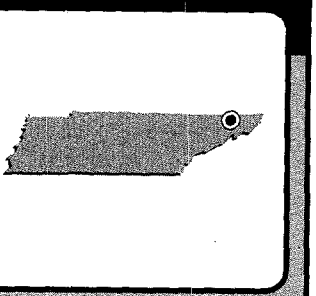
Sites 1 and 2 - RI/FS will be completed.
Site 3 - Work continues on the RI/FS.
Site 45 - Complete the IRA.
Sites 12, 14, 21 and 45 - Begin RI/FS.
UST 1 - IMP complete. IRA complete. IMO to begin.
UST 2 - Will begin the RA.

PARRIS ISLAND MCRD
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	14	3						
RI / FS				2	1	4	1	6
RD					2			5
RAC						2	1	5
RAO								5
IRA				1(1)				
RC	3					2	1	11
Cumulative % RC	18%	18%	18%	18%	18%	29%	35%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	7	1						
CAP	1		1					
DES								
IMP	2			1		1		
IMO					1			1
IRA	3(3)			1(1)		1(1)		
RC	6				1			1
Cumulative % RC	75%	75%	75%	75%	88%	88%	88%	100%

BRISTOL NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
BRISTOL, TENNESSEE



Engineering Field Division/Activity: SOUTHDIV
Major Claimant: COMNAVSEASYSCOM
Size: 100 Acres
Funding to Date: $9,230,000
Estimated Funding to Complete: $8,844,000

Base Mission: Government-Owned Contractor-Operated (GOCO) production facility providing research and development, design engineering and testing of advanced weapons systems

Contaminants: Heavy metals, refuse with hazardous waste, plating waste, industrial sludge, industrial wastewater, acid, POLs, POL sludge, paint, ash

Number of Sites:

CERCLA:	9
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	9

Relative Risk Ranking of Sites:

High:	3	Not Evaluated:	0
Medium:	2	Not Required:	4
Low:	0		

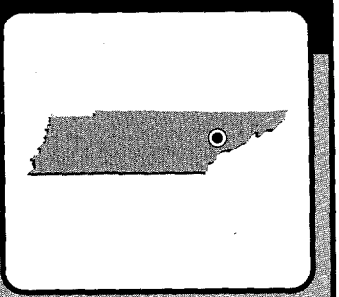
Sites Response Complete: 4

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	9							
RI / FS						5		
RD								5
RAC								5
RAO								
IRA	2(4)	1(1)					1(1)	2(2)
RC	4							5
Cumulative % RC	44%	44%	44%	44%	44%	44%	44%	100%

KNOXVILLE NAVAL AND MARINE CORPS RESERVE CENTER

KNOXVILLE, TENNESSEE



Engineering Field Division/Activity: SOUTHDIV

Major Claimant: COMNAVRESFOR

Size: 11 Acres

Funding to Date: $1,130,000

Estimated Funding to Complete: $0

Base Mission: Provides training support for administrative, logistics and mobilization of Marine Corps Reserve Units

Contaminants: POLs

Number of Sites:

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

Relative Risk Ranking of Sites:

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

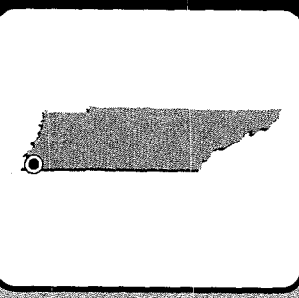
Sites Response Complete: 1

PROGRESS AND PLANS

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP	1							
DES	1							
IMP		1						
IMO								
IRA		1(1)						
RC		1						
Cumulative % RC	0%	100%	100%	100%	100%	100%	100%	100%

MEMPHIS NAVAL AIR STATION

MEMPHIS, TENNESSEE



Engineering Field Division/Activity: SOUTHDIV
Major Claimant: CNET
Size: 3,450 Acres
Funding to Date: $4,249,000
Estimated Funding to Complete: $10,631,000

Base Mission: Maintains and operates facilities and provides services and material to support operations of aviation activities. Only part of the installation is closing.

Contaminants: Pesticides, solvents, PCBs, refuse, POLs

Number of Sites:
CERCLA: 4
RCRA Corrective Action: 68
RCRA UST: 6
Total Sites: 78

Relative Risk Ranking of Sites:
High: 9 Not Evaluated: 1
Medium: 14 Not Required: 19
Low: 35

BRAC III

Sites Response Complete: 19

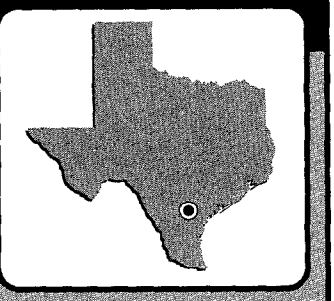
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI			3	1				
RI / FS								
RD								
RAC								
RAO								
IRA		2(2)	1(1)					
RC			3	1				
Cumulative % RC	0%	0%	75%	100%	100%	100%	100%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	66		2					
RFI / CMS		1	20	15	9	1	3	3
DES			5	1	1	1	1	2
CMI			1	3	1		2	2
CMO				2	5			2
IRA	1(1)	1(1)						
RC	15	1	16	15	12	1	2	6
Cumulative % RC	22%	24%	47%	69%	87%	88%	91%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA				1				
CAP	5							
DES		1						1
IMP				1				1
IMO							1	
IRA								
RC	3			1			1	1
Cumulative % RC	50%	50%	50%	67%	67%	67%	83%	100%

CHASE FIELD NAVAL AIR STATION
BEEVILLE, TEXAS



Engineering Field Division/Activity: SOUTHDIV
Major Claimant: COMNAVFACENGCOM
Size: 1,800 Acres
Funding to Date: $31,249,000
Estimated Funding to Complete: $0

Base Mission: Provided facilities, services and material to support jet pilot training program of the Naval Air Training Command

Contaminants: Acids, heavy metals, paint, PCBs, POLs, photographic chemicals, solvents

Number of Sites:

CERCLA:	6
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	6

Relative Risk Ranking of Sites:

High:	0	Not Evaluated:	0
Medium:	0	Not Required:	6
Low:	0		

BRAC II

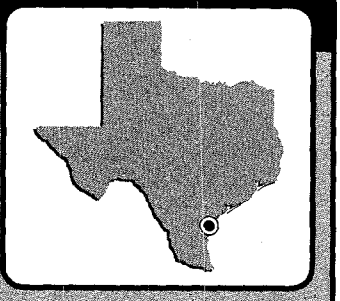
Sites Response Complete: 6

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	6							
RI / FS	5							
RD	4							
RAC	4							
RAO								
IRA	4(4)							
RC	6							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

CORPUS CHRISTI NAVAL AIR STATION

CORPUS CHRISTI, TEXAS



Engineering Field Division/Activity: SOUTHDIV
Major Claimant: CNET
Size: 3,618 Acres
Funding to Date: $5,853,000
Estimated Funding to Complete: $22,946,000

Base Mission: Provides pilot training, provides facilities operation, maintenance and logistical support of aviation activities

Contaminants: Heavy metals, volatile organic compounds

Number of Sites:

CERCLA:	12
RCRA Corrective Action:	5
RCRA UST:	4
Total Sites:	21

Relative Risk Ranking of Sites:

High:	5	Not Evaluated:	1
Medium:	0	Not Required:	13
Low:	2		

Sites Response Complete: 13

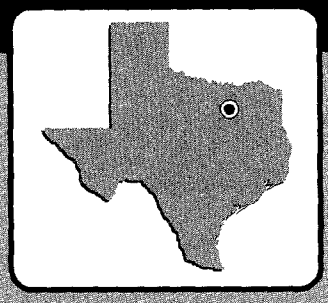
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	12							
RI / FS								
RD								
RAC								
RAO								
IRA								
RC	12							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	1		4					
RFI / CMS	1			3	1			
DES	1			1		1	1	
CMI						2	1	
CMO								
IRA					1(1)			
RC				1	1	2	1	
Cumulative % RC	0%	0%	0%	90%	40%	80%	100%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	4							
CAP	2	1						
DES								
IMP		2	1			1		
IMO								1
IRA		1(3)	1(3)					1(1)
RC		1	1			1		1
Cumulative % RC	0%	25%	50%	50%	50%	75%	75%	100%

DALLAS NAVAL AIR STATION
DALLAS, TEXAS



Engineering Field Division/Activity: SOUTHDIV

Major Claimant: COMNAVRESFOR

Size: 875 Acres

Funding to Date: $6,907,000

Estimated Funding to Complete: $82,227,000

Base Mission: Provides administrative training and logistical support for Naval Air Reserve Units, Marine Air Reserve Training detachments, Texas Air National Guard, Army Reserve and Army National Guard.

Contaminants: Acid, base, electrolyte, industrial wastewater and sludge, inert material, POLs, lubricants sludge, PCBs, plating waste, scrap metal, solvents, heavy metals

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	0				
RCRA Corrective Action:	41	High:	24	Not Evaluated:	6
RCRA UST:	1	Medium:	4	Not Required:	0
Total Sites:	42	Low:	8		

BRAC III

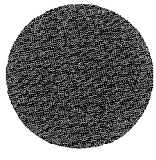
Sites Response Complete: 0

EXECUTIVE SUMMARY

Dallas Naval Air Station (NAS) occupies 877 acres in the center of the Dallas - Fort Worth metropolitan area, about 12 miles southwest of downtown Dallas, Texas. This includes a runway clear zone being leased for grazing and a separate housing area. The station was established in 1932 as Hensley Field of the US Army Air Corps and became NAS Dallas in 1943. Industrial operations associated with the base's pilot training mission that lead to contaminated sites include the following: aircraft and vehicle maintenance; fueling of aircraft and vehicles; washracks for aircraft and vehicles; fire fighter training; carpentry, paint, pipe, metal and battery shops; material storage facilities; photo labs; dental and medical clinics; pest control, landfills and sewage treatment. The Navy changed its operational processes to prevent further contamination. The most prevalent contaminants on base as a result of the past operations are petroleum products and sludge, solvents and heavy metals. The cleanup of the past contamination is being conducted under the RCRA Corrective Action Program with the requirements prescribed in a RCRA HSWA permit.

The environmental restoration program is divided into six categorical areas, which contain the 41 permitted RCRA Solid Waste Management Units (SWMUs) and the 1 RCRA Underground Storage Tank (UST). The categories were developed based the geographical area and associated land use. Within each category is a group of SWMUs. They are investigated and remediated according to the applicable reuse of these categories. Along with the official restoration program, there is an investigation into 191 Gray area sites, which are potential restoration sites. These sites are scattered amongst the Categories listed below.

Category A. Most of this category is operated by the Texas Army National Guard (ANG). This area consists of administrative and industrial support buildings for the Guard. A former landfill and the diversion channel from Cottonwood Creek to Mountain Creek Lake are located within this category. SWMUs 1, 3, 6-14, 27, 29, 32 and 81 are in Category A.



100%

Current Status Of Sites

Studies Underway	42
Cleanups Underway	0
Response Complete	0
TOTAL	42

Category B - This category is mainly the Navy industrialized area of the base. Activities such as gasoline motor vehicle refueling, auto maintenance, hazardous waste storage, jet engine testing, and shipping/receiving are located within this category. SWMUs 2, 26, 30, 31, 36, 37, 38, 60, 84, 85, 124 and 125 are in Category B.

Category C - This category consists of the Navy administrative offices. Medical, housing, recreational, retail and training activities take place in the area of the base. The Naval Exchange gas station, and auto maintenance facility is located in this category. SWMUs 15, 16, 20 and 79 are in Category C.

Category D - Most of this category is operated by the Texas Air National Guard (TANG). This area consist of administrative and industrial support buildings for the Guard. SWMUs 4, 17, 18, 19, 21, 68 and 92 are in Category D.

Category E and off-site - This category is made up of the runways, aprons, and the clear zone. The clear zone is located off-site north of the main runway. SWMUs 78 and 80 are in Category E.

Category F - The Main Fuel Farm makes up this entire Category. Jet fueling and washing is all that takes place in this category. SWMU 136 is in Category F.

There are currently 42 SWMUs and 191 Gray area sites in a study phase. Future plans for submitting the interim RFI reports include Categories D, F, A and E, in that order. Recently, a significant accomplishment was the completion of a soil background study and a model Finding of Suitability to Lease (FOSL).

In 1993, the Base Realignment and Closure (BRAC) commission recommended Dallas NAS for closure. The operations will be transferred to Naval Air Station Forth Worth and operational closure is planned for September 1998. A BRAC Cleanup Team (BCT) was been formed and BRAC Cleanup Plan (BCP) was published in FY94. The Environmental Baseline Survey conducted in 1994 shows the majority of the property falls in Environmental Condition of Property Classification 7, which requires investigation before transfer. In 1995, a reuse committee was established and it has adopted a reuse plan that presents the primary reuse concept of industrial aviation use. Fast track initiatives used include non-intrusive screening methods and geostatistics to determine the extent of contaminant releases. Recently, Category B and C interim RFI reports have been submitted to the Texas Natural Resource Conservation Commission for their approval.

DALLAS NAS
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Dallas NAS is located within the Blackland Prairie which has a topography of low relief plains broken by the meandering courses of streams and rivers. The south side of the facility borders on the northern shore of Mountain Creek Lake, a large reservoir created by a dam on Mountain Creek, a tributary to the west fork of the Trinity River. The area is characterized by broad terraces sloping to the east and interrupted by westward facing escarpments created by the eastward dipping geological units. The soil layer is composed of primarily calcareous clayey soils with lenses of loam, sand or gravel. The surface soils have a low permeability so rainfall runoff is high. Drainage from Dallas NAS is discharged through storm sewers directly into Mountain Creek Lake and Mountain Creek downstream of the lake.

NATURAL RESOURCES - Most of the land on the base is occupied by hangars, buildings, parking lots and other structures with interspersed small undeveloped areas that have been planted with exotic species. These undeveloped areas provide some modified habitats for local wildlife, such as common birds and rodents. The areas around the lake also provide habitat for local species and the lake is a fishery for bass, crappie, carp and other fish. According to the 1989 National Wetlands Inventory maps published by the U.S. Fish and Wildlife Service, three wetlands are within base boundaries and total about five acres in area. All three wetlands appear as open water year round and are diked or impounded. No rare, threatened, or endangered species have been discovered on the property, although there are several endangered species that have been spotted within the county. The land surrounding the base is used for industrial, commercial, residential purposes with interspersed undeveloped areas. Several buildings on the base have been identified for potential historic preservation.

RISK - 36 of the 42 sites have been relatively risk ranked by the Navy. There are 24 sites that received the "High" ranking, 4 received a "Medium" ranking and 8 received a "Low" ranking. The rankings are not driving the priority for cleanup at this point, the priority is driven by reuse issues, although if there was an immediate risk to human, health or the environment, it would be addressed regardless of the reuse issue.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - This facility is not currently listed on the National Priorities List (NPL) because the Hazard Ranking System (HRS) score of 26.38. The EPA is currently reviewing the HRS scoring package to determine the status of the base. The base does fall under the Texas Solid Waste Disposal Act which incorporates RCRA requirements including the 1984 Hazardous and Solid Waste Amendments (HSWA).

LEGAL AGREEMENTS - A draft HSWA permit (Permit Number HW-50276-000) was issued 24 February 1992 for NAS Dallas that prescribes requirements for the Corrective Action program. A Site Management Plan will be written for incorporation in the permit specifying the cleanup schedule and requirements.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - The RAB has 10 members representing the following community interests : local government, environment, economic development, schools, and unions. A community co-chair has been selected. The RAB has received training/presentations on the role of RAB members and base closure. The RAB has reviewed the following documents: RFI Workplan, the Gray Area Workplan, the Soil Background Study, the Baseline Survey, and Category reports from initial screenings and follow-on investigations. Also they have reviewed fact sheets sent to the public. The RAB has impacted the decision to use a bilingual information program and has initiated a small business program and seminar in FY96.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was written in January 1996. There have been six public meetings held, 3 fact sheets prepared and distributed and 2 tours of the installation conducted for the general public. Other community relations activities include presentation on base closure activities on local TV.

INFORMATION REPOSITORY - Information Repositories have been established at Grand Prairie Library, Grand Prairie, Texas. The Navy maintains and updates the Information Repository regularly.

BASE REALIGNMENT AND CLOSURE

BRAC - In 1993, the Base Realignment and Closure Act recommended Dallas NAS for closure under BRAC III because the mission was realigned to the former Carswell AFB. The date for operational closure in September 1998. The operations at Dallas NAS will be transferred to NAS JRB Forth Worth.

BRAC CLEANUP TEAM - A BRAC Cleanup Team (BCT) was formed in January 1994 and meets every quarter. Team members include the Navy, EPA Region IV and Texas Natural Resource Conservation Commission. A technical subcommittee meets about every three weeks. The BCT has directed reporting and sampling activities in and around the base in FY 96.

DOCUMENTS - The BRAC Cleanup Plan (BCP) was completed in March 1994 and was updated in February 1995. The Environmental Baseline Survey (EBS) was conducted in 1994. A preliminary EBS report was published in May 1994. The report identified the following condition of property.

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
3 acres	5 acres	96 acres	1 acres	7 acres	26 acres	749 acres

LEASE/TRANSFER - No property has been leased or transferred to date. A model EBSL has been prepared.

REUSE - A reuse committee called the NAS Dallas Redevelopment Commission was established in 1995 and the first meeting was held at the end of January. The National Environmental Policy Act (NEPA) Draft Environmental Impact Statement (DEIS) is complete and the public meeting was held on 16 August 1995 on the base. The DEIS is for the parcels owned by the Navy. The reuse concept set forth in the DEIS and adopted by the reuse committee calls for industrial aviation uses. The impact of noise as related to reuse is being revisited at the request of the Federal Aviation Administration (FAA)

FAST TRACK INITIATIVES - Fast track initiatives have been taken to accelerate both the RCRA and non-RCRA investigations simultaneously through the use of non-intrusive, less expensive screening techniques and the use of geostatistics in defining the extent of releases.

DALLAS NAS
HISTORICAL PROGRESS

FY85

Sites 1-12 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), was completed in September 1985 which identified 12 potential sites, none of which were recommended for further study by the IAS. After regulatory review, Sites 1, 4, 5, 9 and 11 proceeded to a Confirmation Study phase (equivalent to a Site Inspection (SI)).

FY86

Sites 1, 4, 5, 9 and 11 - An agreement was reached with US EPA Region IV to perform sampling and analysis of the fire fighter training areas, the landfill, PCB spill site, and the TANG drainage ditch.

FY87

Sites 1, 4, 5, 9 and 11 - A Confirmation Step Study was completed in January which recommended further investigation of Sites 1, 4, 5 and 11. One additional site was discovered by activity personnel and added to the study.

FY89

The EPA conducted a RCRA Facility Assessment (RFA) in March which identified 135 potential Solid Waste Management Units (SWMUs) and 44 potential Areas Of Concern (AOCs). These qualify for DERA funding under the IR program and covers the sites from the IAS that were recommended for further investigation. This program was reduced to a total of 40 SWMUs. Site1 became SWMU 7, Site 4 became SWMU 1, Site 5 became SWMU 85, Site 9 became SWMU 84 and Site 11 became SWMU 78.

FY92

A draft HSWA permit (Permit Number HW-50276-000) was issued 24 February 1992 for NAS Dallas that lists requirements for the Corrective Action program. The 40 SWMUs became permitted.

FY93

The Base Realignment and Closure (BRAC) commission recommended NAS Dallas for closure and realignment to NAS Joint Reserve Base, Fort Worth, Texas. The BRAC Cleanup Team (BCT) was established and the Environmental Baseline Survey (EBS) was begun in order to document the environmental condition of the base as of that time.

FY94

All SWMUs - RI/FS workplan was completed for all SWMUs and Gray area sites.
UST 1 - Begin IRA.
The EBS was completed and identified 118 AOCs to be investigated. BCT reviewed and approved work plans for environmental investigations. The RAB held its first meetings, expanded its own membership to fourteen members. and held bi-monthly meetings. The BCT agreed that 191 Gray area potential sites would need to be looked at, as well as the 40 SWMUs and 1 UST site.
The initial BCP was completed.

FY95

RI/FS Field work was begun in Category B.
RI/FS Field work was begun in Category C.

PROGRESS DURING FISCAL YEAR 1996

FY96

CRP was completed.
SWMU 136 - Identified and placed into official restoration program, bringing the number of SWMUs up to 41. No RFA was conducted.
Category B - In March of 1996 an Interim RFI report of Category B was submitted to TNRCC for approval. SWMUs 2, 26, 31, 38, 85, and 124 were determined to require further investigation. Four groundwater solvent plumes, three groundwater pesticide/PCB plumes, two soil solvent plumes, two soil pesticides/PCB plumes, and one soil VOC (benzene) plume were identified.
Category C - In September of 1996 an Interim RFI report of Category C was submitted to TNRCC for approval. Additional sampling will be required to delineate the extent of the impact on soil and/or groundwater at permitted SWMUs 15, 16, and 79. Evidence of release has also been detected in the area adjacent to Buildings 13 and 16. A sewage lift station adjacent to Building 16 appears to be the source of this release. Additionally several areas will require sampling for inorganics at low analytical detection limits to determine if a release has occurred. 7 Gray area sites have been identified as potential release sources for inorganics.
BCP was modified and BCP abstracts were modified.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Interim RFI reports for the 4 remaining categories will be submitted.
SWMUs 2, 3, 6, 8, 10, 14, 26, 27, 29, 30, 31 and 32 - Final RFI/CMS to be completed.
SWMUs 36, 37, 38, 60, 68, 81, 84, 124 and 125 - Final RFI/CMS to be completed.
SWMU 3 - RD to be completed.
The transfer of Duncanville housing is also anticipated to be completed.
The tract occupied by the Army Reserve units is expected to be returned to the City of Dallas for use by the Texas Army National Guard, provided the reuse does not interfere with the ongoing environmental investigations and any remediation.
Update the BCP and BCP abstract.

FY98

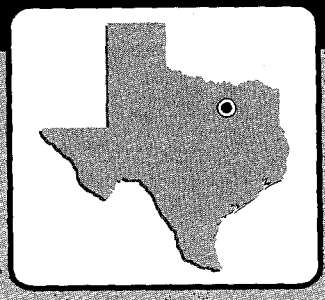
SWMUs 4, 7, 15, 16, 17, 19, 21 and 78 - Final RFI/CMS to be completed.
SWMUs 2, 16, 26, 29, 31, 36, 37, 60, 68, 81, 84, 124 and 125 - RD to be completed.
SWMUs 32, 29, 81, 124 and 125 - CMI to be completed and sites would be RC.
UST 1 - SA to be completed. CAP to be completed. Design to be completed. IMP to begin. IRA begun in FY94 to be completed.
Continue on Gray site investigation.
Update the BCP and BCP abstract.

DALLAS NAS
PROGRESS AND PLANS

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	40							
RFI / CMS			21	8	7	5		
DES			1	13	6	8	2	1
CMI				5	2	3	2	29
CMO								
IRA								
RC				5	2	3	2	29
Cumulative % RC	0%	0%	0%	12%	17%	24%	29%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA				1				
CAP				1				
DES				1				
IMP						1		
IMO								
IRA				1(1)				
RC						1		
Cumulative % RC	0%	0%	0%	0%	0%	100%	100%	100%

DALLAS NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
DALLAS, TEXAS



Engineering Field Division/Activity: SOUTHDIV
Major Claimant: COMNAVAIRSYSCOM
Size: 314 Acres
Funding to Date: $11,949,000
Estimated Funding to Complete: $39,239,000

Base Mission: Produces Naval weapons systems; provides and maintains a reserve industrial facility

Contaminants: Plating and finishing solutions and rinsewaters, solvents, POLs, herbicides, acids, alkaline solution, paints and thinners, strippers, paint sludges, cyanide sludges, firebricks containing cyanide, polynuclear aromatics, metals, phthalates, PCBs

Number of Sites:

CERCLA:	0
RCRA Corrective Action:	23
RCRA UST:	0
Total Sites:	23

Relative Risk Ranking of Sites:

High:	16	Not Evaluated:	0
Medium:	4	Not Required:	0
Low:	3		

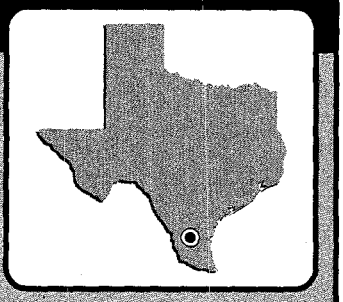
Sites Response Complete: 0

PROGRESS AND PLANS

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	23							
RFI / CMS			1		22			
DES				1	3		2	6
CMI					1	3		9
CMO								2
IRA			1(1)	2(2)				1(1)
RC			1		9	2		11
Cumulative % RC	0%	0%	4%	4%	43%	52%	52%	100%

KINGSVILLE NAVAL AIR STATION

KINGSVILLE, TEXAS



Engineering Field Division/Activity: SOUTHDIV

Major Claimant: CNET

Size: 3,985 Acres

Funding to Date: $4,354,000

Estimated Funding to Complete: $8,492,000

Base Mission: Maintains and operates facilities and provides services and materials to support operations of aviation activities

Contaminants: Waste oils and fuels, solvents, paint, thinners, low concentration of heavy metals

Number of Sites:

CERCLA:	10
RCRA Corrective Action:	0
RCRA UST:	10
Total Sites:	20

Relative Risk Ranking of Sites:

High:	2	Not Evaluated:	1
Medium:	7	Not Required:	10
Low:	0		

Sites Response Complete: 10

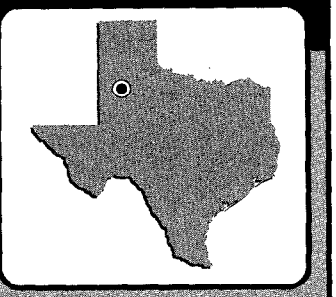
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	5	1	4					
RI / FS								4
RD								4
RAC								
RAO								
IRA								4(4)
RC	5	1						4
Cumulative % RC	50%	60%	60%	60%	60%	60%	60%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	10							
CAP	9							
DES					2			
IMP		1	3			2		
IMO						1		
IRA			3(3)					1(2)
RC	4		3			2		1
Cumulative % RC	40%	40%	70%	70%	70%	90%	90%	100%

LUBBOCK NAVAL AND MARINE CORPS RESERVE CENTER

LUBBOCK, TEXAS



Engineering Field Division/Activity: SOUTHDIV

Major Claimant: COMNAVRESFOR

Size: 8 Acres

Funding to Date: $101,000

Estimated Funding to Complete: $0

Base Mission: Trains Naval and Marine Corps Reserve Units

Contaminants: POLs

Number of Sites:

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

Relative Risk Ranking of Sites:

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

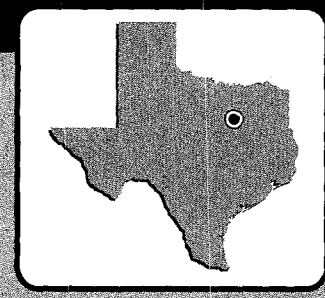
Sites Response Complete: 1

PROGRESS AND PLANS

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	1							
CAP	1							
DES								
IMP	1							
IMO								
IRA								
RC	1							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

McGregor Naval Weapons Industrial Reserve Plant

McClennan, Texas



Engineering Field Division/Activity: SOUTHDIV

Major Claimant: COMNAVAIRSYSCOM

Size: 9,755 Acres

Funding to Date: $1,045,000

Estimated Funding to Complete: $5,120,000

Base Mission: Government-Owned Contractor-Operated (GOCO) facility operated by Hercules, Inc., formally operated as aircraft bomb loading plant which produced solid propellant rocket motors

Contaminants: Waste oils and fuels, solvents, acids, caustics, ordnance compounds, pesticides, asbestos, heavy metals

Number of Sites:

CERCLA:	10
RCRA Corrective Action:	8
RCRA UST:	1
Total Sites:	19

Relative Risk Ranking of Sites:

High:	2	Not Evaluated:	0
Medium:	3	Not Required:	12
Low:	2		

Sites Response Complete: 12

PROGRESS AND PLANS

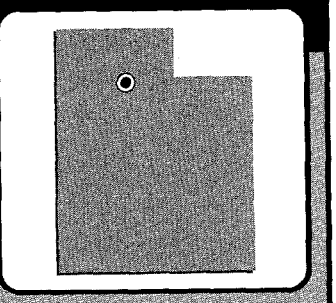
CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	10							
RI / FS								
RD								
RAC								
RAO								
IRA								
RC	10							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA		8						
RFI / CMS				4	3			
DES				4				
CMI					1	2	1	
CMO								1
IRA								
RC		1		1	3	2		1
Cumulative % RC	0%	13%	13%	25%	63%	88%	88%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	1							
CAP	1							
DES								
IMP	1							
IMO								
IRA								
RC	1							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

MAGNA NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT

MAGNA, UTAH



Engineering Field Division/Activity: EFAWEST

Major Claimant: SSP

Size: 522 Acres

Funding to Date: $677,000

Estimated Funding to Complete: $0

Base Mission: Government-Owned Contractor-Operated (GOCO) facility operated by Hercules, Inc., for production of rocket motors

Contaminants: POLs, solvents, PCBs, heavy metals, explosive chemicals

Number of Sites:

CERCLA:	0
RCRA Corrective Action:	16
RCRA UST:	0
Total Sites:	16

Relative Risk Ranking of Sites:

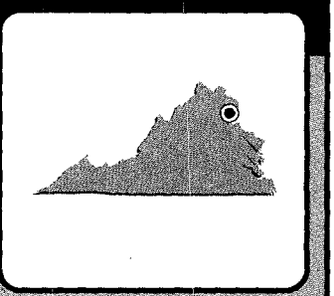
High:	0	Not Evaluated:	0
Medium:	0	Not Required:	16
Low:	0		

Sites Response Complete: 16

PROGRESS AND PLANS

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	8							
RFI / CMS	13							
DES								
CMI								
CMO								
IRA								
RC	16							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

ARLINGTON HEADQUARTERS BATTALION
ARLINGTON, VIRGINIA



Engineering Field Division/Activity: EFACHES

Major Claimant: CMC

Size: 22 Acres

Funding to Date: $20,000

Estimated Funding to Complete: $0

Base Mission: Provides administrative, personnel and logistics support to active and retired Marine Corps personnel

Contaminants: PCBs

Number of Sites:

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

Relative Risk Ranking of Sites:

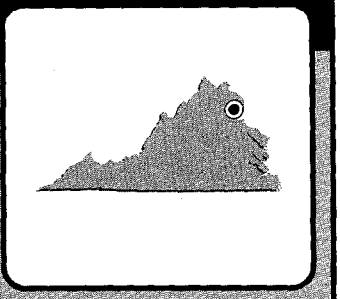
High:	0	Not Evaluated:	0
Medium:	0	Not Required:	1
Low:	0		

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								
RD								
RAC								
RAO								
IRA	1(1)							
RC	1							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

ARLINGTON SERVICE CENTER
ARLINGTON, VIRGINIA



Engineering Field Division/Activity: EFACHES
Major Claimant: CNO
Size: 23 Acres
Funding to Date: $1,321,000
Estimated Funding to Complete: $1,000,000

Base Mission: Provides DOD communications support
Contaminants: POLs

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	0	High:	1	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	0	Not Required:	2
RCRA UST:	3	Low:	0		
Total Sites:	3				

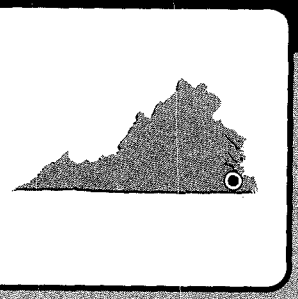
Sites Response Complete: 2

PROGRESS AND PLANS

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	3							
CAP	2							
DES	1							
IMP		2						
IMO							1	
IRA								
RC	1	1					1	
Cumulative % RC	33%	67%	67%	67%	67%	67%	100%	100%

CHESAPEAKE NAVAL SECURITY GROUP ACTIVITY NORTHWEST

CHESAPEAKE, VIRGINIA



Engineering Field Division/Activity: LANTDIV

Major Claimant: COMNAVSECGRU

Size: 4,038 Acres

Funding to Date: $777,000

Estimated Funding to Complete: $2,783,000

Base Mission: Provides communications and intelligence support to the Atlantic Fleet

Contaminants: POLs

Number of Sites:

CERCLA:	0
RCRA Corrective Action:	0
RCRA UST:	4
Total Sites:	4

Relative Risk Ranking of Sites:

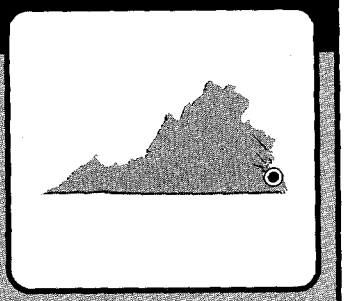
High:	1	Not Evaluated:	0
Medium:	0	Not Required:	3
Low:	0		

Sites Response Complete: 3

PROGRESS AND PLANS

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	4							
CAP	4							
DES	1							
IMP				1				
IMO								1
IRA								1(1)
RC	3							1
Cumulative % RC	75%	75%	75%	75%	75%	75%	75%	100%

CRANEY ISLAND FLEET AND INDUSTRIAL SUPPLY CENTER
NORFOLK, VIRGINIA



Engineering Field Division/Activity: LANTDIV

Major Claimant: COMNAVSUPSYSCOM

Size: 895 Acres

Funding to Date: $16,237,000

Estimated Funding to Complete: $10,932,000

Base Mission: Operates and maintains a primary fuel terminal; receives, stores and issues fuels

Contaminants: Heavy metals (cadmium, mercury), pesticides, POLs, phenols, volatile organic compounds

Number of Sites:

CERCLA:	13
RCRA Corrective Action:	0
RCRA UST:	5
Total Sites:	18

Relative Risk Ranking of Sites:

High:	6	Not Evaluated:	1
Medium:	2	Not Required:	9
Low:	0		

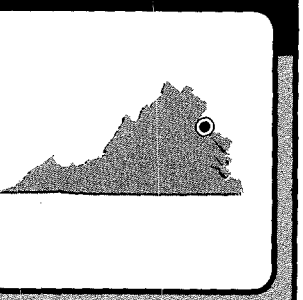
Sites Response Complete: 8

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	11							2
RI / FS	2	1				1		
RD	4		3					
RAC	1	1		1	3	1		1
RAO								
IRA	1(1)							
RC	5	1		1	3	1		2
Cumulative % RC	38%	46%	46%	54%	77%	85%	85%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	5							
CAP	5							
DES		2						
IMP	1		1	1				
IMO								3
IRA								2(2)
RC	2							3
Cumulative % RC	40%	40%	40%	40%	40%	40%	40%	100%

DAHLGREN NAVAL SURFACE WARFARE CENTER
DAHLGREN, VIRGINIA



Engineering Field Division/Activity: EFACHES
Major Claimant: COMNAVSEASYSCOM
Size: Main Site: 2,677 Acres; Explosive Experimental Area: 1,614
Funding to Date: $19,441,000
Estimated Funding to Complete: $34,688,000

Base Mission: Proofs and tests Department of the Navy ordnance

Contaminants: Cleaning solvents, explosive residues, heavy metals, low-level radioactive materials, mercury, PCBs, pesticides

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	65				
RCRA Corrective Action:	1	High:	23	Not Evaluated:	0
RCRA UST:	0	Medium:	14	Not Required:	26
Total Sites:	66	Low:	3		

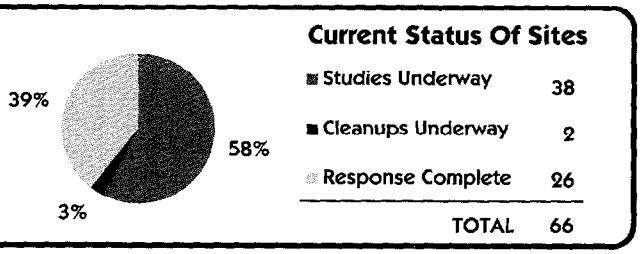
NPL

Sites Response Complete: 26

EXECUTIVE SUMMARY

Dahlgren Naval Surface Warfare Center (NSWC) is located in King George County, on the Virginia shore of the Potomac River, 28 miles east of Fredericksburg and 53 miles south of Washington, D.C. NSWC has carried out an extensive mission in the proof and testing of naval ordnance since 1918. Proof and testing have included work in the areas of guns of all sizes, aircraft bombs, rockets and projectiles. Limited work has been done with chemical and radiological warfare agents. A number of non-ordnance operations have been carried out, including metal plating, degreasing and metal treating, painting and carpentry, machining, metal trades, vehicle and locomotive maintenance, battery service, printing, electrical work, steam production, vehicle washing, water treatment, photography and pesticide mixing and application. Low level radiological operations conducted included atomic weaponry development, use of depleted uranium in 20 mm rounds, and use of thorium-magnesium in special weapons development. Current operations include pollution prevention technologies to prevent further contamination. The primary Areas of Concern (AOCs) that caused National Priorities List (NPL) placement are mercury contamination at Hideaway Pond (Site 10), oil containing the chemical additive PCB from Transformer Draining (Site 19), and pesticides at the Pesticide Rinse Area (Site 25). Dahlgren NSWC is under a Federal Facility Agreement (FFA) with the EPA Region III and the Commonwealth of Virginia, which was signed in September 1994.

NSWC is surrounded by low-density rural residential and agricultural areas. NSWC is bounded on the north by Route 301 and on the east by the Potomac River. The Mainside is separated from the Explosive Experimental Area (EEA) by Upper Machodoc Creek, which drains the EEA. Both Gambo and Williams Creeks collect the surface runoff from the Mainside. All waterways drain to the Potomac River. Approximately 40 percent of the Mainside is composed of residential/developed areas. The northern and western portions of the site contain large blocks of mature forest. Forests in the central and eastern areas tend to be younger, with large areas of pine plantations. Over 60 percent of the EEA is hardwood and pine forest, with only eight percent of the area residential/developed. There are numerous marshes in the EEA. Three freshwater water bodies also exist on-site. Approximately 326 acres are wetlands. There are large wildlife populations in the forested areas and the wetlands. The main potential contaminant migration pathway is via surface water runoff. The groundwater aquifer is very deep and protected by impermeable layers.



A Restoration Advisory Board (RAB) was started in FY95. A Community Relations Plan (CRP) was updated in October 1995 and receives periodic updates. In FY91, an Administrative Record and an Information Repository were established at local libraries.

There are 65 IR sites. Currently, 38 sites are in a study phase. Twenty-two sites are underway in Site Inspections (SIs), while sixteen sites have Remedial Investigations/Feasibility Studies (RI/FSs) ongoing. Designs and Remedial Actions are scheduled for 10 sites in FY97. The remaining sites are awaiting funding to complete the study phase. The Gambo Creek Ecological Assessment Phase II is underway and is expected to be completed in FY97. Three sites in the Site Screening Process, Sites 22, 51 and 53 were recommended for No Further Action. Response is complete at 26 sites.

Major successes in the cleanup program at NSWC include: removal of soil contaminated by the chemical additive PCB at Site 19; removal of petroleum contaminated soil at the Tar Tank Storage Area Solid Waste Management Unit (SWMU) #67; use of immunoassay field screening tests to reduce costs and obtain quick turnaround times. Desktop screening of Appendix B sites have enabled (4) No Further Actions, and initiated several removal actions from soil and groundwater sampling data.

Site Screening Process (SSP) investigations and Master Work Plan submittals were developed and initiated. These initiatives have helped streamline investigations, reduced work plan costs and shortened review times.

NSWC recently completed a pilot-scale Bioremediation Treatability study on a pesticide rinse site. The treatability study evaluated methods of bioremediating pesticide contaminated soils as part of an overall effort to look into innovative technologies that can save money and reduce risks to the environment.

DAHLGREN NSWC RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - The major hydrological characteristic of NSWC is an artesian aquifer approximately 600 to 800 feet below the surface. In general, the impermeable nature of the surface geology minimizes potential downward migration of surface pollutants. Consequently, pollutant migration pathways are largely restricted to near surface migration and surface runoff. The site geology serves to minimize the possibility of contamination of the deep on-site aquifer that serves as a drinking water source for base residents and workers. Most of the Main Site falls into the Gambo Creek watershed. The remainder of the surface runoff drains into peripheral drainage swales which flow directly into Upper Machodoc Creek and eventually into the Potomac River. Surface runoff from the Explosive Experimental Area (EEA) will either drain into Black Marsh to the east or the Upper Machodoc Creek, which borders the west and northern sides. Three freshwater bodies exist on NSWC: Upper Gambo Creek, Hideaway Pond and the Cooling Pond. Approximately 326 acres of NSWC are wetlands.

The U.S. Geological Survey (USGS) has performed hydrogeologic and water quality studies on the Mainside and the EEA to better define the hydrology and the general water quality at the installation. The Fish and Wildlife Service has assisted Dahlgren in reviewing and providing technical guidance for the Gambo Creek Ecological Assessment. This guidance has focused our sampling efforts to better define the ecologically sensitive areas.

NATURAL RESOURCES - A large number of mammalian, avian and herpetofaunal species were observed or expected at NSWC. The only immediately evident area that may be potentially affected by contamination from waste disposal practices is the Hideaway Pond drainage area. Fish tissue samples indicate mercury levels exceeding EPA maximum contaminant limits. Investigations to identify the potential sources of mercury in Hideaway Pond have focused on Site 17, the 1400 Area Landfill. The Bald Eagle is the only known endangered species among the flora and fauna found at the activity.

RISK - A Baseline Risk Assessment, both ecological and human health, has been performed for Sites 2, 9, 10, 12, 17, 19, 25 and 29 using EPA guidance. The DOD's Relative Risk Ranking System was used to rank 59 sites. Twenty-three (23) sites resulted in "high" risk levels primarily due to known soil and groundwater contamination and identified migration pathways to nearby wetlands and ecological resources. The Agency for Toxic Substance and Disease Register (ATSDR) performed a Site Scoping visit on 10 December 1992. This report was received on 19 May 1994.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - In October 1992, NSWC was placed on the National Priorities List (NPL) with a Hazard Ranking System (HRS) score of 50.26. Three sites that drove the listing are: Hideaway Pond (Site 10), Transformer Draining Area (Site 19) and the Pesticide Rinse Area (Site 25) due to the potential migration of releases that could affect the Potomoc River, Gambo Creek, associated wetlands and local groundwater aquifers that are used for drinking water.

LEGAL AGREEMENTS - The Department of the Navy (DON), EPA and the Commonwealth of Virginia negotiated a Federal Facility Agreement (FFA) which was signed in September 1994. A Site Management Plan (SMP), which is updated annually, contains the investigation and cleanup schedules for sites included in the FFA.

PARTNERING - The installation holds frequent meetings and conference calls with the EPA Region III and the Virginia Department of Environmental Quality remedial project manager's as well as other regulatory agencies, as appropriate to communicate on particular issues of importance. A formal partnering session is scheduled for November 1996 to aid in communication and understanding between the regulators, contractors and the Navy. Partnering has been an important step to increase communication and understanding across the board.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was established in FY92. The TRC was converted to a Restoration Advisory Board (RAB) in October 1994. Currently, the RAB meets periodically to review project plans and progress of investigations and cleanup. As a result of these meetings, many suggestions from the community have been incorporated into the cleanup program. Community concerns and continual feedback are vital to the success of the IR program.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was established in August 1992 and updated again in October 1995.

INFORMATION REPOSITORY - An Administrative Record was established at the NSWC General Library and an Information Repository at the Smoot Memorial Library in FY91.

HISTORICAL PROGRESS

FY83

Sites 1-36 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), identified 36 potentially contaminated sites in May 1983 at NSWC. All but 12 of the sites were recommended for further study.

FY86

Sites 9, 10, 12, 17, 19 and 25 - The Confirmation Study (CS), equivalent to a Site Inspection (SI), was completed.
Site 37 - A new site, Lead Contaminated Sand from an old firing range, was identified by the activity.

FY92

Sites 2, 9, 10, 12, 17, 19, 25, 29 and 37 - The Remedial Investigation/ Feasibility Study (RI/FS) was awarded.
Site 34 - A removal action involving soil and concrete sampling, excavation and disposal was completed in May 1992. No further action is anticipated at this site.

FY93

SWMUs and AOCs - During the SI phase, a RCRA Facility Assessment (RFA) was completed in December 1992 by EPA and identified over 100 Solid Waste Management Units (SWMUs). The Department of the Navy (DON) and EPA did an initial screening and six Areas of Concern (AOCs) and 31 SWMUs were added to the Installation Restoration Program (IRP). An RFA was completed in December 1992. However, all the AOCs and SWMUs were incorporated into the FFA for action under CERCLA.

FY94

Sites 19, 38, 48, and SWMUs 10, 18, 68 and 85 - Removal actions were initiated at Sites 19 and 36. Interim Remedial Actions/Remedial Actions (IRAs/RAs) were completed in FY94 including: a Tar Tank Storage Area (Site 48) containing petroleum contaminated soil was removed. Welding slag was removed from the ground at SWMU 10. A cover was placed on SWMU 18 (Incinerator Ash Dumpster). A waste drum was removed from SWMU 68 and contractor materials and debris was removed from SWMU 85. NFA is anticipated at these sites.

DAHLGREN NSWC
HISTORICAL PROGRESS

FY95

Sites 36 and 39 - An Engineering Evaluation/Cost Analysis (EE/CA) and a joint venture with the U.S. Naval Academy to perform a treatability study on two Depleted Uranium sites (Sites 36 and 49) was initiated. These sites contained soils contaminated with depleted uranium.

Sites 6, 21, 22, 31, 32, 39, 45, 46, 48, 50, 51 and 53 - The SIs were initiated and have been completed.
Site 19 - A removal action was completed at the Transformer Draining Area. Soil was contaminated with the PCB's. Field Screening immunoassay tests were used to determine the extent of PCB contamination and reduce laboratory and mobilization costs.

PROGRESS DURING FISCAL YEAR 1996

FY96

Sites 6, 21, 22, 31, 32, 45, 46, 50, 51 and 53 - SSP's were completed and recommended: (3) sites (22, 51, and 53) No Further Action (upon confirmatory sampling), (3) sites (19,39, and 60).
Sites 2, 9, 10, 12, 17, 19, 25, 29 and 58 - RI's are completed. FS's are expected to be completed by 2nd quarter FY97.
Sites 3 and 44 - RI's were initiated as part of RCRA Closure requirements.
Sites 13, 20, 23, 37, 54, 56 and 57 - SSP's were initiated. SSP's will be investigated under a "Desk-Top" screening process, planned in FY97 and FY98.

Gambo Creek Ecological Assessment was completed. A Phase II Workplan was initiated to address concerns and further delineate problem areas identified in Phase I.
FFA Appendix B sites Closed Out - SWMU 15, 70, AOC A and AOC O.
FS's for six sites (2, 9, 10, 12, 17, 25) were pushed into FY97 to accommodate additional sampling due to data gaps.
Sites 19, 39 and 60 - IRAs completed.
Sites 22, 39, 48, 51, 53 and 60 - Response Complete.
A Benchscale Bioremediation Treatability Study was performed on Site 25, indicating potential for biodegradation of the site. These results are currently being reviewed by the regulators.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 36 and 49 - DU contaminated soil Removal Actions planned.
Sites 2, 9, 10, 12, 17, 19, 25 and 29 - FSs and Remedial Designs are expected to be completed. 3rd quarter remedial actions are planned for award.
Site 25 - Benchscale Treatability Study for the Pesticide Rinse Area is planned for completion. Remedial Design and 3rd quarter remedial actions are planned.
Sites 3, 44 and 58 - RIs are planned for completion.
Sites 2, 9, 10, 12, 17, 25, 36 and 49 - These sites are expected to enter either the RI phase or a potential removal action in FY97, if warranted.

Appendix B sites - Perform sampling to continue screening sites and risk ranking, perform removal actions, where appropriate.

FY98

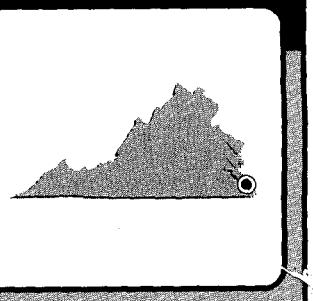
Sites 13, 20, 23, 37, 54, 55, 56 and 57 - SI's are planned.
Site 29 - Remedial Designs is planned.
Complete Phase II Gambo Creek Ecological Assessment.
Sites 2, 9, 10, 17 and 25 - Complete Remedial Actions.
Appendix B sites - Complete sampling for screening and risk ranking, perform removal actions, where appropriate.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	29	12	1	8				12
RI / FS			11		6		1	17
RD			8	1		2		26
RAC			2	5	1			31
RAO								5
IRA	7(7)	3(3)						
RC	19	6	3	5	1			31
Cumulative % RC	29%	38%	43%	51%	52%	52%	52%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	1							
RFI / CMS								
DES								
CMI								
CMO								
IRA								
RC	1							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

DAM NECK FLEET COMBAT TRAINING CENTER ATLANTIC
DAM NECK, VIRGINIA



Engineering Field Division/Activity: LANTDIV
Major Claimant: CNET
Size: 1,100 Acres
Funding to Date: $603,000
Estimated Funding to Complete: $213,000

Base Mission: Provides training in the operation, maintenance and employment of specified tactical combat direction and control systems typical to naval warfare; provides facilities, logistical maintenance and personnel support to tenant commands

Contaminants: Pesticides, heavy metals, POLs, paint, PCBs, solvents

Number of Sites:

CERCLA:	6
RCRA Corrective Action:	0
RCRA UST:	5
Total Sites:	11

Relative Risk Ranking of Sites:

High:	0	Not Evaluated:	0
Medium:	1	Not Required:	10
Low:	0		

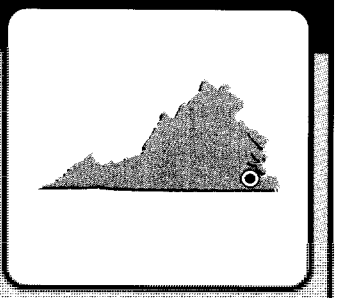
Sites Response Complete: 9

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	6							
RI / FS	2							
RD								
RAC								
RAO			2					
IRA								
RC	4		2					
Cumulative % RC	67%	67%	100%	100%	100%	100%	100%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	5							
CAP	2							
DES								
IMP								
IMO								
IRA	1(1)							
RC	5							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

DRIVER NAVAL RADIO STATION
DRIVER, VIRGINIA



Engineering Field Division/Activity: LANTDIV

Major Claimant: COMNAVFACENGCOM

Size: 597 Acres

Funding to Date: $6,738,000

Estimated Funding to Complete: $111,000

Base Mission: Provides radio transmitting services for administrative, operational and command control of fleet units and other DoD agencies in the Atlantic and Caribbean; maintains communication links from the Arctic to the Antarctic, from the Gulf of Mexico to the Indian Ocean.

Contaminants: Pesticides, solvents, PCBs, refuse, POLs

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	11				
RCRA Corrective Action:	0	High:	0	Not Evaluated:	0
RCRA UST:	0	Medium:	0	Not Required:	11
Total Sites:	11	Low:	0		

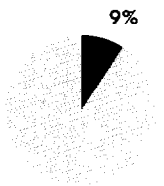
BRAC III

Sites Response Complete: 10

EXECUTIVE SUMMARY

The Driver Naval Radio Station (NRS) was established as an air station during World War II to train pilots. After the war it was converted to a radio transmitting facility. It is located in the Driver Community of the City of Suffolk, Virginia, thirteen miles from Portsmouth, Virginia. NRS was operationally closed in March 1994 after being recommended for complete closure by the Base Realignment and Closure (BRAC) Commission. The communications system consisted of antenna structures and one microwave tower. Past operations that contributed to contamination include painting, pest control, vehicle maintenance, transformer maintenance, boiler maintenance, and solid waste disposal. Site types where contamination was found include spill sites, landfills, a burn area, storage areas, disposal areas, and a gas station.

NRS is located in a low coastal plain area, surrounded by tidal streams, marshes, and swamps. The area is relatively flat with drainage on almost all sides to the Nansemond River or its tributaries. The area is bounded by the Nansemond River and its tributaries to the west and south, residential land to the north, and farmland to the east. The major potential contaminant migration pathways are surface water flow and groundwater movement. Most of the sites are near the perimeter of the activity, close to low lying areas occupied by intertidal salt marshes. Migration in these areas is facilitated by inundation of tidal events, flooding, and surface water runoff. Pollution migration may also occur through groundwater movement. The water table aquifer is 1-11 feet below the land surface. The relatively small distance to groundwater, combined with the moderate to moderately rapid permeability of soils is highly conducive to subsurface contaminant migration. Community and city water supply wells in the area are screened in the lower artesian aquifer. Both the Nansemond River and the James River are estuarine and support commercial fish and shellfish harvesting. The greatest concern to the local community is for the Navy to commit to and implement an environmental program that is protective of human health and the environment.



Current Status Of Sites

Studies Underway	0
Cleanups Underway	1
Response Complete	10
TOTAL	11

A Technical Review Committee (TRC) was formed in FY88 and was converted to a Restoration Advisory Board (RAB) in 1994. The Community Relations Plan was completed in FY92. An Administrative Record and an Information Repository were established in FY92.

The Installation Restoration Program at NRS is complete, with the exception of Site 1. Of the eleven sites identified, five were cleaned up and six were classified as no further action required. Site 5 was remediated for PCB contamination. Sites 1, 5, 7 and 10 are all under the long term monitoring program. Site 1 will be RC upon the completion of LTO (natural attenuation of groundwater contamination) efforts in FY01.

Three examples of Driver's success with respect to cost savings, minimizing delays, and time savings are expanded upon below:

a. An estimated 300K was saved because concerns about ecological risk at several sites bordering the Nansemond River Wetlands prompted development of a multi-site, Long Term, Ecological Monitoring Plan in lieu of additional pre-transfer ecological risk assessments or a Natural Resources Damage Assessment (LTEMP). Development of the LTEMP was possible due to the BCT Forum which allowed stakeholders to identify data needs, propose design strategies, and balance objectives with DON cost, time, and property transfer concerns.

b. An estimated 300K was saved because an agreement among BCT members to retain a number of sites and AOC's in the SI Phase, until pre-remedial risk assessment based removal actions were completed. This resulted in processing NFRAP decisions without the execution of an RI/FS.

c. An estimated amount between 750K and 1 million was saved due to the experience and background of the BCT members. A BCT review of the workplan for the Site 5 removal action resulted in a trade off of a sheet pile dike for a coffer dam dike which was also used for clean backfill to complete the removal action. Cost savings permitted the RPM to integrate the removal action and avoid programming additional funds for the study and design phase as well as time to complete the cleanup.

The Naval Facilities Engineering Command's Atlantic Division assumed caretaker responsibilities in October 1994. A BRAC Cleanup Team (BCT) was formed and a BRAC Cleanup Plan (BCP) written in 1994. Probable reuse will be recreational, with a small portion being light industrial and residential.

DRIVER NAVRADSTA RELEVANT ISSUES

RELEVANT ISSUES: Uncertain reuse partitioning between the Department of Interior and the private sector impacted the risk assessments and final remedies.

ENVIRONMENTAL RISK: Shallow groundwater aquifers and surface/subsurface soils were of the most concern and had impacted the progress the most. Ecological risk concerns with sites bordering the Nansemond River and associated wetlands became a stumbling block until the BCT developed a multi-site Long Term Monitoring program to include ecological monitoring.

ENVIRONMENTAL RISK

HYDROGEOLOGY - Driver NRS is located entirely within the drainage area of the Nansemond River, a tributary of the James River. Significant tidal wetlands border the western and southern part of the facility. Surface water drains into ditches and streams which discharge to wetland areas along the Nansemond River and Oyster House Creek. Groundwater in Southeastern Virginia occurs in three major aquifer systems: the water-table aquifer, upper artesian aquifer, and lower artesian aquifer. Contaminants may migrate by means of surface runoff to creeks and rivers or by infiltration to the groundwater aquifers. The potential for groundwater contamination is enhanced by the presence of well drained soils in the area. Bottled water is used for drinking water. None of the water from any of the aquifers is used for drinking water. Untreated well water is not suitable for drinking, but is used for fire hydrants, restrooms, and air conditioners at NRS.

NATURAL RESOURCES - Prior to development, NRS was a salt marsh-upland. Salt marsh cordgrass covered significant tidal areas along the Nansemond River and bottom land forests were found on higher ground. Most of these forests were cleared by early farmers. The land was further cleared and graded when the Navy acquired it in 1941. Most of the land at NRS is maintained as grassland by mowing to prevent excessive growth from interfering with the maintenance and operation of radio transmitters and antenna. In 1972, 207 acres of undisturbed salt marsh along the Nansemond River and Oyster House Creek were excessed to the U.S. Department of the Interior and are now the Nansemond National Wildlife Refuge. No federal or state designated endangered plant species are supported on NRS. Several species of endangered sea turtles, the Green, the Hawkbill, the Leatherback, the Loggerhead, and the Atlantic Ridley, are know to feed in the Chesapeake Bay and may swim up the James River during summer. The southern bald eagle is on the federal endangered species list and is known to nest about two and a half miles from NRS. The red-cockaded woodpecker, also on the federal endangered species list, lives in mature pine strands in the Great Dismal Swamp, about two miles southeast of NRS Driver.

RISK - A Baseline Human Health Risk Assessment was conducted in conjunction with the Remedial Investigation/Feasibility Study (RI/FS) for Site 5 in 1992. Site 5 is a marshy area near Star Creek where five PCB transformers were disposed of (probably in the early 1970's). The PCB-containing transformers were removed in 1983. The potential for migration of the contaminant to surface water was high, as the site lies in an intertidal zone. The major exposure pathways are dermal contact and accidental ingestion of surface soils and sediments by base personnel. Humans may also be exposed to PCBs through ingesting polluted fish or shellfish. An Ecological Risk Assessment, also conducted during the RI/FS, found the overall health of fish captured during the survey to be normal, based on external examination. Sediment contamination and possibly limited surface water contamination, again with PCBs, may be causing chronic physiological stresses to resident organisms in the marsh areas and channel of No-Name Creek.

RESTORATION PROJECTS - At Site 5, 2,200 cubic yards of PCB contaminated soil were removed and disposed of in an EPA-approved TSCA landfill. The wetlands were restored to its natural state upon the completion of the remediation. The wetland restoration portion of the project was very successful. The proper planning, staging of equipment and activity sequencing of the construction/remediation phases minimized damage to the wetlands and were key elements to the success of this project. The savings associated with minimizing the damage of surrounding wetlands allowed optimization of clean up activities.

At Site 1, a former landfill, SVOCs were found in groundwater. Natural attenuation is being used to remediate the contamination and based on LTO efforts it will be complete in early FY01.

REGULATORY ISSUES

LEGAL AGREEMENTS - NRS is not on the NPL. There are no cleanup efforts required under RCRA.

PARTNERING - While there is no formal partnering agreement, the BRAC Cleanup Team (BCT) uses partnering principles.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in FY88. The TRC was converted to a Restoration Advisory Board (RAB) in August 1994. The eight member RAB meets quarterly and includes representatives from the Navy, Virginia Department of Environmental Quality, EPA Region III, and the community .

COMMUNITY RELATIONS PLAN - The Community Relations Plan (CRP) was completed in FY92.

INFORMATION REPOSITORY - An Administrative Record (the official file) was established in FY92. A copy of the Administrative Record documents are contained in the Information Repository. The Information Repository is located in the Morgan Memorial Library on 443 W. Washington St., Suffolk Va.

BASE REALIGNMENT AND CLOSURE

BRAC - In 1993, the Base Realignment and Closure (BRAC) Commission recommended complete closure of Driver NRS. The facility was closed in March 1994. It's mission of radio transmitting was ended and not moved to another location. When operations ceased, the Naval Facilities Engineering Command Atlantic Division assumed caretaker status.

BRAC CLEANUP TEAM - The BRAC Cleanup Team (BCT) was formed in January 1994 and consists of members from the State of Virginia, EPA Region III, and Navy. The BCT meets monthly and has empowered working level managers to improve the decision making process. The BCT also implemented cost saving sampling programs. One of many examples of these programs included common contaminant field screening of other sites during the remediation process so that these sites could be added as modifications to an on-going remediation. These pre-remedial risk assessment based removal actions reduced risks and resulted in NFRAP decisions without the execution of an RI/FS, design, and contract development.

DOCUMENTS - An Environmental Baseline Survey (EBS) was completed in January 1994. Additional information was discovered to cause the EBS to be amended with an additional survey in February 1995. The 1994 EBS identified 557 acres of the 597 acres as CERFA clean. The property was divided into five parcels. Miscellaneous sampling and building sampling were done in November 1994. A final "close-out" BRAC Cleanup Plan is being prepared, and the Final EBS was completed in November 1996.

DRIVER NAVRADSTA RELEVANT ISSUES

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
557 acres	19 acres	11 acres	10 acres	0 acres	0 acres	0 acres

LEASE/TRANSFER - A Finding of Suitability to Transfer (FOST) document is being prepared will be forwarded to the Naval Facilities Engineering Command Atlantic Division in anticipation of property transfer in January 1997.

REUSE - Funding for the Reuse Plan was received by the City of Suffolk from the Office of Economic Adjustment in December 1994. The plan, completed in March 1996, includes details for recreational use, with a small portion being used by the U.S. Fish and Wildlife Service and a local university.

FAST TRACK INITIATIVES - Some fast track initiatives in use at NRS include boilerplate RODs, concurrent reviews, presumptive remedies, removal actions, and field screening techniques. Use of new field screening equipment improved site characterization at Sites 2 and 5. Fast track initiatives center around sampling to confirm limits of contamination, then proceeding directly to removal actions, using Remedial Action Contracts. This minimizes design time and cost.

HISTORICAL PROGRESS

FY84

Sites 1-8 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA) identified eight potentially contaminated sites. Sites 1, 5 and 8 were recommended for further study. Sites 2-4 and 6-7 were not recommended for further study.

FY85 - FY86

A Confirmation Study was in the developmental and implementation stage during this time period.

FY87

Sites 1, 5 and 8 - A Confirmation Study, equivalent to a Site Inspection (SI) was completed.

FY88

Review of the IAS and CS were in process.

FY89 - FY91

The RI/FS investigation and study for Sites 1, 5 and 8 were being developed and implemented during this time period.

FY92

Sites 1, 5 and 8 - Draft RI/FS reports were completed.

FY93

Site 5 - Completed an Interim Removal Action to remove PCB contaminated soil.

FY94

Site 5 - Completed RI/FS. Signed ROD and initiated RD.
Site 8 - Completed a Removal Action to remove contaminated soil.
Site 9 - This disposal area was discovered from the historical aerial photographs.
Sites 10 and 11 - Site 10, a disposal area, and Site 11, a landfill, were discovered from historical aerial photographs and interviews of previous employed workers.

FY95

Sites 2, 3, 5 and 8 - The SI was completed; no further response action planned.
Site 5 - The RD was completed and the RA was initiated. PCB-contaminated soil was removed and disposed of in a RCRA-approved landfill.
Site 7 - Completed an Interim Removal Action. Action consisted of a soil cover of creosote-contaminated soil.

PROGRESS DURING FISCAL YEAR 1996

FY96

Site 1 - The RI/FS was completed . A minor RD was initiated and then canceled for this site in FY96 since the remedial action is based on natural attenuation of groundwater contamination. RD is complete. LTM was initiated.

Site 1 - The ROD was completed.
Sites 5 and 7 - Completed Remedial Actions. The Multi-site LTEMP for hydraulic and ecological monitoring commenced.
Sites 5 and 7 - IRAs were completed to remove contaminated soils at Site 5 and install a soil cover at Site 7.
Sites 4, 6, 7, 9, 10 and 11 - Completed PA/SI.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Complete Environmental Baseline Survey (November 1996).
Site 1 - Long term monitoring will continue.
The "close-out" BCP and FOST documents will be complete.

FY98

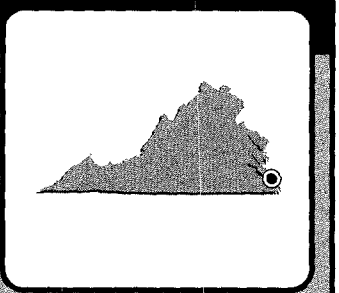
Site 1 - Long term monitoring will continue.

DRIVER NAVRADSTA
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	5	6						
RI / FS	2	1						
RD	2	1						
RAC	1	2						
RAO							1	
IRA	2(2)	2(2)						
RC	3	7					1	
Cumulative % RC	27%	91%	91%	91%	91%	91%	100%	100%

LITTLE CREEK NAVAL AMPHIBIOUS BASE

LITTLE CREEK, VIRGINIA



Engineering Field Division/Activity: LANTDIV
Major Claimant: CINCLANTFLT
Size: 2,147 Acres
Funding to Date: $9,936,000
Estimated Funding to Complete: $20,807,000

Base Mission: Provides amphibious warfare support, on-base logistics facilities and related support facilities

Contaminants: Heavy metals, PCBs, pesticides, POLs, volatile organic compounds

Number of Sites:
- CERCLA: 23
- RCRA Corrective Action: 0
- RCRA UST: 13
- Total Sites: 36

Relative Risk Ranking of Sites:
- High: 13
- Medium: 3
- Low: 0
- Not Evaluated: 0
- Not Required: 20

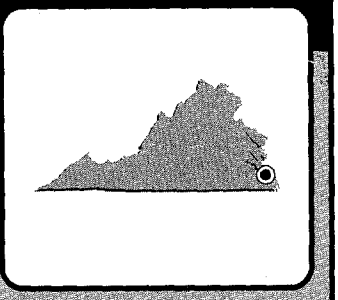
Sites Response Complete: 19

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	16				4	2		1
RI / FS		5	1			4	2	1
RD	1		1	3		4	2	1
RAC	1	1		1	3		2	5
RAO								9
IRA	1(1)	2(2)						
RC	9	3		1				10
Cumulative % RC	39%	52%	52%	57%	57%	57%	57%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	13							
CAP	6	2						
DES		5	1					
IMP	1	1	3	2				
IMO				1			1	3
IRA	1(1)	1(1)		1(1)				4(4)
RC	7			2				4
Cumulative % RC	54%	54%	54%	69%	69%	69%	69%	100%

NORFOLK NAVAL BASE
NORFOLK, VIRGINIA



Engineering Field Division/Activity: LANTDIV
Major Claimant: CINCLANTFLT
Size: 4,631 Acres
Funding to Date: $60,295,000
Estimated Funding to Complete: $39,156,000

Base Mission: Principal operating base of U.S. Atlantic fleet; headquarters; docks; Fleet and Industrial Supply Center; Naval Aviation Depot; Naval Air Station; Naval Station and Public Works Center

Contaminants: Acids, asbestos, ash, low-level radiation, paint, pesticides, POLs, PCBs, propellant, solvents, heavy metals

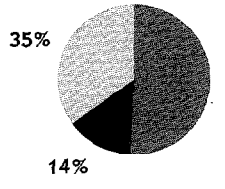
Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	25	High:	10	Not Evaluated:	1
RCRA Corrective Action:	11	Medium:	15	Not Required:	23
RCRA UST:	21	Low:	8		
Total Sites:	57				

Sites Response Complete: 20

EXECUTIVE SUMMARY

Norfolk Naval Base, also known as the Sewells Point Naval Complex (SPNC), is located in the city of Norfolk, Virginia. The northern boundary of the base is Willoughby Bay. The western boundary of the base is the Elizabeth River. The City of Norfolk borders the installation to the south and east, with a portion of the eastern boundary formed by Mason Creek. Typical operations undertaken to support the mission of Norfolk Naval Base are aircraft maintenance and repair, vehicle maintenance, grounds maintenance, training, fuel operations, storage of ordnance, waste disposal, paint stripping, sand blasting, and port operations. Industrial and maintenance facilities, storage and refurbishing yards, drydocks, piers, administrative areas, and housing areas cover most of the installation. Wastes generated at the facility include petroleum products, the chemical additive PCB, solvents, metals, sludges, acids, paints, asbestos, and pesticides. Site types included in the Installation Restoration Program include landfills, storage areas, shops, disposal areas, training areas, fuel spill areas, and Underground Storage Tanks (USTs). The facility was listed on the National Priorities List (NPL) in late 1996 based on a Hazard Ranking System (HRS) score of 50.00. The potential threat to humans, wetlands, and the ecosystem through surface water migration of contaminants caused the facility to be listed on the NPL. A Federal Facilities Agreement will be negotiated between the Navy and EPA Region III and is expected to be signed in FY 97.

Norfolk Naval Base lies on a low peninsula in the Hampton Roads Region of Virginia. Much of what is now Norfolk Naval Base was once tidal marsh or shallow waterway which has been filled with dredge spoil. Land use surrounding the area is diverse. Areas to the south along the waterfront are predominantly industrial and commercial. The areas to the south and east are residential. There is a heavy concentration of military installations within a 25-mile radius of Norfolk Naval Base. The maritime climate affords long temperate summers and mild winters. The base is underlain with sandy sediments. A thin, shallow water table aquifer flows slowly due to level topography and low to moderate permeability of sediments. This water is used for lawn watering in nearby residential areas with the City of Norfolk water system as the primary drinking water source for businesses and residents alike. A lower, confined aquifer, the Yorktown Formation, is used in the area near the base for an industrial water supply. Stormwater runoff from the highly developed portion of base is collected by a network of inlets to underground culverts including the very large Bousch Creek Culvert located beneath the base which discharges to Willoughby Bay. Other surface waters are conveyed to Mason Creek and then Willoughby Bay. Some portions of runoff of the western pier areas flows to the Elizabeth River. The habitat which originally covered the base has been disturbed by development. The majority of the coastline has been altered by dredge and fill operations and the construction of seawalls and docking facilities.



Current Status Of Sites

Studies Underway	29
Cleanups Underway	8
Response Complete	20
TOTAL	57

The potential for contaminant migration by both surface and subsurface pathways exists at Norfolk. Potential receptors for migrating contaminants would be primarily through surface water contact. Any contaminants present at the surface could also migrate off the facility to the Elizabeth River and Willoughby Bay via surface pathways such as the storm sewer system, drainage ditches, and Mason Creek. Past discharge of industrial wastewaters from the base may have contributed to metals contamination of Willoughby Bay. It is virtually impossible to determine the extent to which the base activities contributed to the degradation of surface waters in the area because of the numerous other sources of contamination that exist.

A Technical Review Committee (TRC) was formed in November 1988 and was converted to a Restoration Advisory Board in September 1994. A Community Relations Plan was published in FY93. Several Information Repositories have been established at local libraries. Two of the Information Repositories are local City of Norfolk libraries just outside the base and one is the base library located within the base. The Administrative Record File was re-established in December 1992 at the City of Norfolk Main Library and at the base environmental office.
At the end of FY96, 29 sites were in the study phase, 8 sites were in the cleanup phase, and 20 sites were Response Complete.
Using the DoD Relative Risk Site Evaluation Model 12 High Risk sites were identified. Several of these sites will be re-evaluated when data from additional studies is final completed

NORFOLK COMNAVBASE RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - The soils at Norfolk Naval Base consist of fine sands and silts underlain by relatively impermeable sediments consisting of silt, clay, and sandy clay. Depth to groundwater is generally less than six feet. The upper layer comprises a shallow water table aquifer. The lower layer of sediments overlies a deep confined aquifer known as the Yorktown Formation. This aquifer is generally isolated from the water table aquifer. Public drinking water for the city of Norfolk is provided by the city's municipal surface water supplies. Naval Base surface waters are Mason Creek and the remnants of Boush Creek. Boush Creek was a channel that was completely filled and replaced by a network of drainage ditches during the development of the base. Stormwater runoff eventually drains to Mason Creek, Willoughby Bay, or the Elizabeth River. Water quality in the area reflects the stressed environmental conditions caused by numerous industries, local sewage, commercial run-off, and agriculture.

NATURAL RESOURCES - There are small, undeveloped wooded areas located throughout the base. These areas provide some habitat for small animals such as rabbits, rodents, squirrels, and stray dogs and cats. Cormorants, gulls, and terns are present along the shore. Important commercial and recreational species of fish are present all year round in the waters surrounding NAVBASE. Wetland areas have been virtually eliminated by past dredge and fill operations. What little wetland area is left supports blackbirds, marshwrens, and sparrows. There are no threatened or endangered species expected on Norfolk Naval Base. Several fisheries within 15 miles of Norfolk Naval Base have been closed to shellfishing because of high levels of shipping activities, nonpoint source pollution, and high fecal coliform levels.

RISK - A Baseline/Ecological Risk Assessment using EPA guidelines was performed for the Camp Allen Landfill in FY 94, for the CD Landfill in 1995, and for the Q Area Drum Storage Yard in 1996. The results of the Camp Allen Landfill assessment indicated that there were no unacceptable risks due to any media for the current usage of the facility. The future usage of the facility were also analyzed including conservative assumptions such as building houses upon the landfill itself and the residents drinking the water out of the landfill. The future scenario indicated that some risk related to drinking the groundwater by residents. This assumption has lead to the construction of a treatment plant to begin operations in the near future.

The CD Landfill risk assessment indicates that there is no unacceptable risk for exposures to surface soils or groundwater. However, contamination found in the sediments will be remediated in the coming fiscal year.

The Q Area Drum Storage Yard assessment indicates that the surface soils pose no unacceptable risk to human health or the environment. The future scenario of groundwater usage indicates a potential threat to human health. This potential health threat will be addressed by the air sparging and vapor extraction of the groundwater upon completion of the treatment facility to begin construction this calendar year.

An ATSDR Public Health Assessment has not yet been scheduled.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - Naval Base was officially listed on the National Priorities List (NPL) in late 1996 with a Hazard Ranking System (HRS) score of 50.00. EPA did not evaluate the groundwater, soil exposure or air pathways, but rather concentrated on the surface water pathway and the potential for contamination migration due to overland flow and flooding. Results of sampling and analysis from around the base are limited but it is likely that the waters and sediments surrounding the base have been degraded by discharge of industrial, commercial and domestic waste. Additional sampling of sediments and surface water is underway. However, because of the large number of discharges and the complexity of mixing and flow patterns, it is not possible to quantify what portion of the degradation is attributable to past or current base operations and what portion is attributable to other sources.

LEGAL AGREEMENTS - Naval Base, Norfolk has begun preliminary negotiations of a Federal Facilities Agreement (FFA). The work completed to date has been the technical evaluation of potential sites to be included in the FFA. On site evaluations and data review have included personnel from EPA Region III, Virginia Department of Environmental Quality (VDEQ), and Navy personnel.

PARTNERING - In November 1996, Naval Base, Norfolk, Atlantic Division of the Naval Facilities Engineering Command (LANTDIV), EPA Region III, VDEQ began a Variable Oversight Team Process. This Variable Oversight Process (Streamlined Oversight) while unique is consistent with partnering efforts at other Navy Installations. The time required for investigation, decision making, and clean-up actions has already been reduced for several known sites. The initial organizational meetings included the Community Co-Chair for the Restoration Advisory board.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in November 1988 which met once or twice annually. There were 9 members including the Navy, Virginia Department of Environmental Quality, United States Environmental Protection Agency, City of Norfolk Environmental Division, City of Norfolk Health Department, National Oceanic and Atmospheric Administration, United States Fish and Wildlife Service, and a single community member. The TRC was converted to a Restoration Advisory Board (RAB) in September 1994. The RAB has 8 community members and meets quarterly.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was published in May 1993. The Navy is planning an update to the CRP following the base being listed on the NPL. The update should include more recent community interviews to insure stakeholder concerns are being addressed.

INFORMATION REPOSITORY - Information Repositories were established in March 1992. The Information Repositories contain copies of current relevant information. The three information Repositories are located at the City of Norfolk Larchmont Public Library on Hampton Blvd. (across from LANTDIV environmental offices), City of Norfolk Mary Pretlow Public Library on Gramby St., and the Naval Station Library in bldg. C-9 on Naval Base, Norfolk. The Administrative Record (now available on CD ROM), the official file of documents is located at the Kirn Library, City of Norfolk's Main library and the Environmental Office of the Naval Base and the Environmental Office of the Naval Facility Engineering Command in Norfolk Virginia. Additional copies of the Administrative Record have been provided to EPA Region III and VDEQ.

NORFOLK COMNAVBASE HISTORICAL PROGRESS

FY83

Sites 1-18 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA) identified 18 potentially contaminated sites. Sites 1-6 were recommended for further study.

FY84

Sites 1-5 - A Confirmation Study of five sites of the IAS was begun.
Site 1 - A Suitability Assessment of the Camp Allen Landfill for a Naval Brig Expansion was completed.

FY87

Site 6 - An Expanded Site Investigation of the CD Landfill was begun.

FY88

Sites - 1-5 - Interim Remedial Investigation Report published.
Site 20 - An Interim RI investigation was begun.

FY89

Site 4 - The RI/FS was begun.
Site 19 - The building V-60/V-90 complex was demolished and the debris was appropriately disposed of. This was an aircraft rework facility contaminated with asbestos, PCBs, petroleum products, and other mixed waste.

FY91

Site 1 - The RI/FS (under CLEAN) for the Camp Allen Landfill was begun.
Site 4 - The RD was completed.
Site 4 - The RA was begun.
Site 6 - The Expanded Site Investigation Report completed.
Site 20 - An Interim RI/FS Report was published.

FY92

Site 4 - The RA was completed.
Site 3 - The RD was completed.
Site 22 - A PA/SI for this site was begun.

FY93

Site 1 - The EE/CA for a Removal Action at area B of Camp Allen Landfill was begun.
Site 6 - The RI/FS (CLEAN) was begun.

FY94

Site 1 - The Final RI/FS was completed. The Decision Document was signed for the RA.
Site 1 - The RD was begun.
Site 1 - The RA was begun.
Site 1 - The Removal Action for area B was completed.
Site 3 - The RD was begun.
Site 20 - An RI/FS was begun.

FY95

Site 1 - The RD was completed.
Site 3 - Pilot Testing of selected remedy.

PROGRESS DURING FISCAL YEAR 1996

FY96

Site 1 - The RA (treatment facility) construction is still in progress.
Site 1 - Post RA Ecological monitoring initiated.
Sites 2, 5 and 22 - The RI/FS started.
Site 17 - The PA/SI was completed
Site 3 - The RD has been completed and the RA begun.
Sites 6 and 20 - The RI/FS was completed and the RD begun.
Site 21 - The PA and SI began.
SWMUs 1, 2 and 4 - The PA/SI was completed.
SWMUs 1, 4, 6 and 8 - The RI was begun.
USTs 35 and 64 - The CAP and IMP was completed for these two sites. They are considered Response Complete.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 1 and 3 - The RA will be completed.
Site 3 - LTO/LTM will begin.
Sites 6 and 20 - The RD will be completed and the RA will begin.
Site 21 - The PA/SI will be completed.
Sites 1, 3 and 21 - The RI/FS will be completed.
SWMUs 1, 4 and 6 - The RD will be completed.
SWMUs 2 and 6 - The RI/FS will be completed.
USTs 2, 22 and 314 - The IMP will be completed.

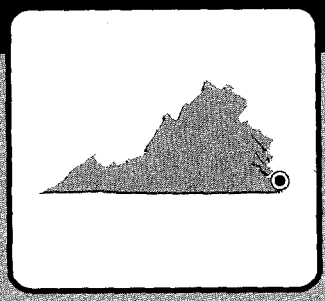
FY98

SWMU 5 - The PA/SI will be completed.
Site 1 - LTO/LTM will begin.
Sites 2, 5, 13, 16, 18 and 22 - The RI/FS will be completed.
SWMU 4 - The RI/FS will be completed.
Site 22 - The RD will be completed.
Site 6 - The RA will be completed.
SWMUs 1, 4 and 6 - The RA will be completed.
Site 20 - LTO/LTM will begin.
Site 22 - The RI/FS and the RD will be complete.
Site 20 - The IRA will be completed.
SWMUs 1, 2, 4 and 6 - The IRA will be completed.
Sites 6 and 13 - Estimated to be Response Complete.
SWMU 1, 2, 4 and 6 - Estimated to be Response Complete.
UST 37 - The CAP will be completed. Site is estimated to be Response Complete.
USTs 413 and 200025 - The IMP phase will be completed.

NORFOLK COMNAVBASE
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	18	4	1	1				1
RI / FS	2	2	5	7	2			2
RD	3	1	5	1	1	1	1	2
RAC	3		2	4	1	2		4
RAO								2
IRA	4(4)			5(5)		2(2)	1(1)	4(5)
RC	6			6	1	2		10
Cumulative % RC	24%	24%	24%	48%	52%	60%	60%	100%
RCRA CA	**FY95 and before**	**FY96**	**FY97**	**FY98**	**FY99**	**FY00**	**FY01**	**FY02 and After**
RFA					1			9
RFI / CMS			2			1		5
DES			2				1	6
CMI				2				7
CMO								3
IRA				1(1)				8(8)
RC								11
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%
UST	**FY95 and before**	**FY96**	**FY97**	**FY98**	**FY99**	**FY00**	**FY01**	**FY02 and After**
SA	20							
CAP	14	2		1				
DES	3							
IMP	2	2	3	2				
IMO	1					1		5
IRA	6(7)							5(9)
RC	12	2		1		1		5
Cumulative % RC	57%	67%	67%	71%	71%	76%	76%	100%

NORFOLK NAVAL SHIPYARD
PORTSMOUTH, VIRGINIA



Engineering Field Division/Activity: LANTDIV
Major Claimant: COMNAVSEASYSCOM
Size: 1,293 Acres
Funding to Date: $4,329,000
Estimated Funding to Complete: $33,197,000

Base Mission: Provides logistics support for ships and service craft, overhauls, repairs and outfits service craft and Navy vehicles; research, development, testing and evaluation of shipboard systems

Contaminants: Acetylene, acids, alkalines, cyanide, paint, POLs, sludge, solvents, volatile organic compounds

Number of Sites:

CERCLA:	19
RCRA Corrective Action:	0
RCRA UST:	7
Total Sites:	26

Relative Risk Ranking of Sites:

High:	7	Not Evaluated:	0
Medium:	1	Not Required:	18
Low:	0		

Sites Response Complete: 18

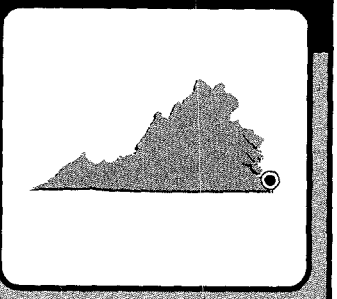
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	19							
RI / FS			2	5				
RD				1	5	1		
RAC						1	2	4
RAO								7
IRA				1(1)		1(1)		
RC	11						1	7
Cumulative % RC	58%	58%	58%	58%	58%	58%	63%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	6							
CAP	7							
DES								
IMP								
IMO								
IRA								
RC	7							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

OCEANA NAVAL AIR STATION

VIRGINIA BEACH, VIRGINIA



Engineering Field Division/Activity: LANTDIV

Major Claimant: CINCLANTFLT

Size: 6,000 Acres

Funding to Date: $12,754,000

Estimated Funding to Complete: $25,717,000

Base Mission: Maintains and operates facilities and provides services and materials to support Naval aviation as a master jet base

Contaminants: Asbestos, heavy metals, PCBs, pesticides, POLs, solvents, volatile organic compounds

Number of Sites:

CERCLA:	2
RCRA Corrective Action:	21
RCRA UST:	16
Total Sites:	39

Relative Risk Ranking of Sites:

High:	9	Not Evaluated:	0
Medium:	2	Not Required:	26
Low:	2		

Sites Response Complete: 22

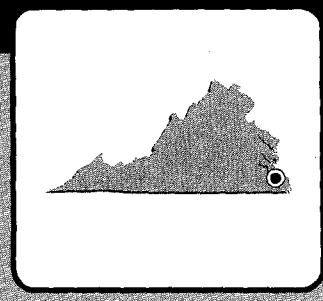
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	2							
RI / FS	2							
RD	1							
RAC	1							
RAO								1
IRA	1(1)							
RC	1							1
Cumulative % RC	50%	50%	50%	50%	50%	50%	50%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	21							
RFI / CMS	12	4	1	3				
DES	4	2	3					
CMI	4							
CMO								4
IRA	5(5)		1(1)					
RC	13		2	2				4
Cumulative % RC	62%	62%	71%	81%	81%	81%	81%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	15							
CAP	15							
DES	6	3						
IMP		4	4					
IMO			1					7
IRA								7(8)
RC	8							8
Cumulative % RC	50%	50%	50%	50%	50%	50%	50%	100%

PORTSMOUTH NAVAL MEDICAL COMMAND
PORTSMOUTH, VIRGINIA



Engineering Field Division/Activity: LANTDIV
Major Claimant: BUMED
Size: 109 Acres
Funding to Date: $100,000
Estimated Funding to Complete: $70,000

Base Mission: Provides general and clinical hospitalization services for active duty Navy and Marine Corps personnel.

Contaminants: PCBs, ash, asbestos

Number of Sites:

CERCLA:	2
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	2

Relative Risk Ranking of Sites:

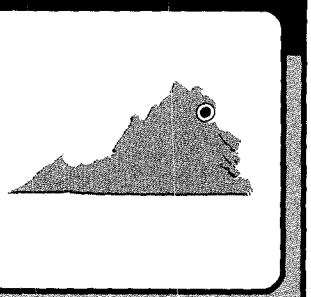
High:	0	Not Evaluated:	0
Medium:	0	Not Required:	0
Low:	2		

Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	2							
RI / FS								
RD								
RAC						1		
RAO								
IRA	1(2)		1(2)					
RC			1			1		
Cumulative % RC	0%	0%	50%	50%	50%	100%	100%	100%

QUANTICO MARINE CORPS BASE
QUANTICO, VIRGINIA



Engineering Field Division/Activity: EFACHES
Major Claimant: CMC
Size: 60,647 Acres
Funding to Date: $27,979,000
Estimated Funding to Complete: $88,939,000

Base Mission: Supports research, development, testing and evaluation of military hardware and military training

Contaminants: PCBs, pesticides, chlorinated solvents, phenols, heavy metals (chromium, lead), POLs

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	94	High:	22	Not Evaluated:	0
RCRA Corrective Action:	4	Medium:	73	Not Required:	5
RCRA UST:	2	Low:	0		
Total Sites:	100				

NPL

Sites Response Complete: 3

EXECUTIVE SUMMARY

The Quantico Marine Corps Combat Development Command (MCCDC) is located approximately 35 miles south of Washington, DC. Its east boundary is the Potomac River, its south boundary is Tank and Aquia Creeks. Past operations included aviation maintenance, fire fighter training pit, battery salvage, painting, transformer salvage, vehicle maintenance, pest control, small arms firing ranges, underground storage tanks, and general public works functions.

MCCDC was listed on the National Priorities List (NPL) on 30 June 1994 with a Hazard Ranking System score of 50.00. The primary reason was Site 4, an old landfill used to burn chemicals and the chemical additive PCB and dispose of the burned remnants. Additionally, numerous sites are contaminated with heavy metals and pesticides.

In general, the immediate groundwater and soil present an environmental risk, with the possibility of subsequent migration to wetlands, surface water and waterways. The greatest potential for contaminant migration is via surface water runoff or shallow groundwater flow, since part of the base sits on top of thin soil underlain by shallow, impermeable bedrock. The source of drinking water on the base and in the local communities is surface water. Any migration of contaminant into surface waters is of concern. The aquatic and wetland ecosystems could also be receptors of contaminants. Contamination of the Maryland aquifers is considered to be negligible because a large amount of dilution occurs between recharge and withdrawal zones.

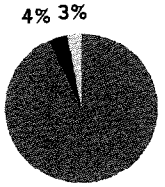
A Technical Review Committee (TRC) was formed in 1989 and meets quarterly on the base. A Restoration Advisory Board (RAB) has not been created because Marine Corps very unlikely because there has been minimal community interest in establishing one. MCCDC is currently performing additional community interviews to gauge community interest to determine whether a RAB is warranted. A Community Relations Plan (CRP) was completed in FY94. Two information repositories were established in FY92. A copy of the Administrative Record documents is contained in the Information Repository.

There are one hundred IR sites, 94 are CERCLA sites, 4 RCRA CA sites and 2 UST sites. Ninety-three sites are in a study phase. Four sites have cleanup underway, two in a removal action (site 4 and 18), two in CMI phase (SWMU 26 and 29). Three sites are considered Response Complete (RC) as of FY95.

Interim Remedial Actions (IRAs) are underway at Site 4 (landfill capping) with expected completion in FY97. Final Remedial Actions (FRAs) are underway at SWMU 26 (landfill capping), with an expected completion in FY97.

Major improvements on the base are underway due to use of the Navy's CLEAN and RAC contracts. SWMU 26, the Russell Road landfill, is being capped using ClayMax, a clay/fabric matting. By using ClayMax instead of a thicker clay layer, the landfill can be capped quicker and cheaper. A permeable barrier is being used as an interim measure at Site 4, the Old Landfill, to reduce risk and reduce costs.

MCCDC has 2 UST sites, UST 2 was RC'd in FY95 at the CAP phase. Since the site was RC's at the CAP phase, initiated design was terminated since it was not needed. UST 1 design was completed FY96. An IRA for UST 1 is scheduled for completion in FY97, as well as Response Complete.



Current Status Of Sites

Studies Underway	93
Cleanups Underway	4
Response Complete	3
TOTAL	100

QUANTICO MCCDC RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - MCCDC is bounded on the east by the Potomac River and on the south by the Tank and Aquia Creeks. The annual average rainfall is 39 inches; August has the highest monthly average of 4.8 inches. Surface runoff is greatest in the spring. MCCDC has an abundant supply of surface waters (four major ponds and four reservoirs) with numerous associated drainage systems that eventually empty into the Potomac River. The base is situated astride two geomorphic provinces. One formation favors contaminant migration along surface water pathways. The other favors percolation of contaminants into the groundwater flow system. This path can impact groundwater users just east of the Potomac River. However, because of an exceptional amount of dilution between the recharge and withdraw zones, contaminants originating at MCCDC are expected to have negligible impact on the Maryland aquifers. Shallow groundwater flow adjacent to major drainage streams can discharge into the marshlands and estuaries along the Potomac.

NATURAL RESOURCES - About 80% of MCCDC are woodlands and these areas are used for training, recreation and timber production. Diverse wildlife can be found, including deer, turkeys, quail, fox, beaver, otter, mink and muskrat. Eight ponds and lakes create over 800 acres of aquatic ecosystems. The base includes over 500 acres of wetlands along the Chopawamsic Creek and Potomac River. In addition, there are four miles of managed trout streams, 12 miles of tidal shoreline and 445 acres of tidal water. Fresh water surface bodies support bass, trout, blue gill and catfish. Bald eagles have nested on the base and are the only endangered or threatened species listed.

RISK - Twenty-two sites are ranked "High" relative risk in the DOD Relative Risk Ranking system. Two CERCLA sites are ranked high based on groundwater concerns. Surface runoff and groundwater contamination, including pesticides, can migrate into nearby wells, surface water and streams. Five CERCLA sites are ranked high based on soil contamination. Soil contamination includes the chemical additive PCBs, solvents, herbicides, petroleum products and lead. Contaminants can migrate into nearby wells and streams. Two of four RCRA sites are ranked "High," based on groundwater and soil impacts. Ecological receptors include the water migration pathway for both surface water and groundwater. Two of two RCRA UST sites have been categorized as "High," based on groundwater concerns. Workers at six CERCLA sites could be exposed to the contaminants. Potential receptors include wells, streams and wetlands. The primary threat from the RCRA and RCRA UST sites are the wetlands and groundwater. No sites are ranked "Low" and 73 sites are ranked "Medium" relative risk.

RESTORATION PROJECTS - A removal action at Site 4 is implementing a barrier layer on the landfill to reduce infiltration and prevent direct exposure.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - MCCDC was proposed for the National Priorities list (NPL) on 10 May 1993 with a Hazard Ranking System (HRS) score of 50.00 and was listed on 31 May 1994. The NPL listing was primarily based on Site 4, Old Landfill used from 1920 - 1971. During this time, open burning was practiced. Estimates of deposited material include 10,000 gallons of paint, 6,000 gallons of paint thinner and industrial and residential wastes. The Defense Reutilization and Marketing Office deposited 120 gallons of the chemical additive PCB at the landfill from electrical transformer scrap operations. In addition, a rail tank car derailment in 1988 resulted in a release of 40,000 gallons of fuel oil #2; only 5,000 to 10,000 gallons were recovered. The landfill is located on the Potomac River.

LEGAL AGREEMENTS - A Federal Facilities Compliance Agreement was signed 8 November 1991. Negotiations for a Federal Facilities Agreement have been on hold because of disagreements between the Navy and EPA on the wording of model language to be incorporated into the agreement.

PARTNERING - Engineering Field Activity Chesapeake and MCCDC are planning a partnership session with EPA Region III and the State of Virginia.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in FY89. The TRC meets quarterly on the base. Attendee backgrounds include professional, technical and business aspects. Four EPA and two State of Virginia representatives are members of the TRC Community members have been invited. Typically, meetings cover document reviews and discussions of alternative actions. Minutes of the meeting are available at three local libraries for public viewing. Fact sheets have been distributed. A Restoration Advisory Board (RAB) has not been established for MCCDC because there has been minimal community concern. MCCDC is currently re-evaluating whether or not to establish a RAB. Community Interviews are being conducted to determine whether sufficient community interest exists for support of a RAB.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was completed in FY94.

INFORMATION REPOSITORY - Two information repositories were established in FY92. A copy of the Administrative Record documents is contained in the Information Repository.

HISTORICAL PROGRESS

FY81

Site 18 - Completed Preliminary Assessment (PA).

FY82

Site 19 - Completed PA.

FY84

Sites 1-5, 8-12 and 14-17 - Completed PA.
Site 16 and Site 3 - Listed Response Complete (RC).
UST 1 - Completed Initial Site Characterization (ISC).
SWMUs 26-28 - Completed RCRA Facility Assessment (RFA).

FY85

Site 1 - The Remedial Investigation/Feasibility Study (RI/FS) is underway. Expected completion FY97.

FY88

Sites 1, 4, 5 and 17-19 - Completed Site Inspection (SI).
Sites 4, 5 and 17-19 - RI/FS started. Estimated completion date FY98.
SWMUs 2-25 - Completed PA.
SWMUs 26 and 28 - Completed RCRA Facility Investigation (RFI).
SWMU 28 - Started and completed IRA (in-situ soil treatment). Activity performed Long Term Monitoring (LTM).

QUANTICO MCCDC
HISTORICAL PROGRESS

FY89

SWMU 29 - Completed RFA.

FY90

Site 4 - Completed IRA.
SWMU 29 - Completed RFI. The Corrective Measures Study (CMS) is underway. Expected completion FY97.

FY91

Site 5 - IRA (waste removal - soil with the chemical additive PCBs) completed.
Site 20 - Completed PA.
SWMU 27 - Completed RFI.

FY93

Site 20 - Completed SI.
UST 1 - Completed Investigation (INV) phase. Started IRA (groundwater treatment - petroleum products). Expected completion FY97.

FY94

Sites 1 - Completed IRA (Incineration).
Site 20 - Completed IRA (Site access control measures and drainage controls).
UST 2 - Completed ISC and IRA (waste removal - drums, tanks, bulk containers, contaminated w/ petroleum products).
SWMU 26 - Completed CMS.

FY95

UST 1 - Completed Corrective Action Plan (CAP) and the Design (DES) of the corrective measure is underway. Expected completion FY96.
UST 2 - CAP underway and completion expected.
SWMU 26 - Started FRA (capping of landfill with inert material, paint, solvent, unknown). Expected completion FY97. CMI underway. Completion expected FY96.
SWMUs 26-28 - Completed Design (DES).
SWMUs 27-28 - Completed Corrective Measures Inspection (CMI). Started and completed the Final Remedial Action (FRA) (waste removal - soil w/ acid and blasting grit). Remedy is in place, and Operation and Maintenance (O&M) is underway. Activity is performing LTO.

PROGRESS DURING FISCAL YEAR 1996

FY96

Sites 5, 17, 18, 19 and 20 - Prepared work plans for RI/FS at these sites.
SWMU 1 - Completed Corrective Measures Design.
Site 4 - Start IRA at Old Landfill along the Potomac (Capping - paint, petroleum products, the chemical additive PCBs, solvent). Completion expected FY97.
Site 18 - Start IRA at AERO Club.
SWMU 26 - Continued FRA (Capping) for Russell Road Landfill.
UST 1 - Design completed.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 1 and 4 - Complete RI/FS.
Site 4 - Complete IRA (Capping - paint, petroleum products, the chemical additive PCBs, solvent).
SWMU 26 - Complete FRA (Capping).
Site 18 - Start and complete IRA (waste removal - soils, w/ petroleum products and heavy metals).
SWMU 29 - Complete RFI and Initiate and complete Corrective Action at Charlie Demo.
Complete LTO for site 27
SWMU 27 and 29 - Response Complete planned
UST 1 - IRA planned for completion
UST 1 - Response Complete planned.

FY98

Sites 1, 4 and 5 - Complete PA/SI at these sites.
Sites 5, 17, 18, 19, 20 - Complete RI/FS at these sites.
Site 4 - Complete design and implement Remedial Action for final remediation of the site. Action will be primarily to address groundwater contamination at the site.
Site 18 - Response Complete planned.
SWMU 26 - Begin Long-Term Operations.
SWMUs 3, 7, 19 and 59 - Conduct screening investigations at sites.
SWMU 28 - CMO completion and Response Complete planned.

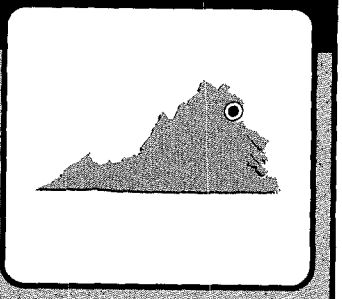
QUANTICO MCCDC
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	9			3	4	1	3	73
RI / FS			2	5				61
RD				1	4	1		44
RAC					1	3	1	45
RAO								3
IRA	4(6)		2(2)		1(1)			
RC	2			1		3	1	87
Cumulative % RC	2%	2%	2%	3%	3%	6%	7%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	4							
RFI / CMS	1		1					
DES	2	1						
CMI	2		2					
CMO			1	1				1
IRA	2(3)		1(1)					
RC			2	1				1
Cumulative % RC	0%	0%	50%	75%	75%	75%	75%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	2							
CAP	2							
DES		1						
IMP								
IMO								
IRA	1(1)		1(1)					
RC	1		1					
Cumulative % RC	50%	50%	100%	100%	100%	100%	100%	100%

ST. JULIENS CREEK ANNEX
ST. JULIENS CREEK, VIRGINIA



Engineering Field Division/Activity: LANTDIV
Major Claimant: CINCLANTFLT
Size: 490 Acres
Funding to Date: $974,000
Estimated Funding to Complete: $9,628,000

Base Mission: Provides supplies, equipment and support services to fleet activities

Contaminants: Volatile And Semi-volatile Organic Compounds, pesticides, PCBs, metals

Number of Sites:
- CERCLA: 5
- RCRA Corrective Action: 0
- RCRA UST: 0
- Total Sites: 5

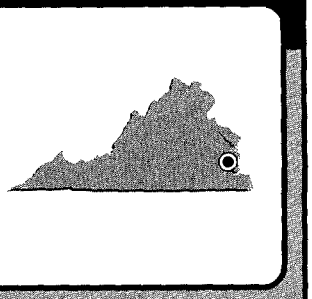
Relative Risk Ranking of Sites:
- High: 3
- Medium: 2
- Low: 0
- Not Evaluated: 0
- Not Required: 0

Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI			1	3	1			
RI / FS					2		1	1
RD							3	1
RAC								4
RAO								4
IRA								4(4)
RC				1				4
Cumulative % RC	0%	0%	0%	20%	20%	20%	20%	100%

WILLIAMSBURG FLEET AND INDUSTRIAL SUPPLY CENTER, CHEATHAM ANNEX
WILLIAMSBURG, VIRGINIA



Engineering Field Division/Activity: LANTDIV

Major Claimant: COMNAVSUPSYSCOM

Size: 1,579 Acres

Funding to Date: $844,000

Estimated Funding to Complete: $7,079,000

Base Mission: Receiving, storing, packaging and shipping of materials to federal facilities on the East Coast and major distribution centers in Europe

Contaminants: Scrap metal, paint, POLs, PCBs, solvents, refuse

Number of Sites:

CERCLA:	12
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	12

Relative Risk Ranking of Sites:

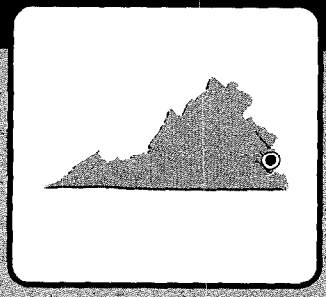
High:	0	Not Evaluated:	0
Medium:	1	Not Required:	9
Low:	2		

Sites Response Complete: 9

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	10		2					
RI / FS	1					1		2
RD							1	2
RAC	1							3
RAO								3
IRA	1(1)							
RC	9							3
Cumulative % RC	75%	75%	75%	75%	75%	75%	75%	100%

YORKTOWN FLEET AND INDUSTRIAL SUPPLY CENTER FUELS DIVISION
YORKTOWN, VIRGINIA



Engineering Field Division/Activity: LANTDIV
Major Claimant: COMNAVSUPSYSCOM
Size: 110 Acres
Funding to Date: $8,077,000
Estimated Funding to Complete: $19,463,000

Base Mission: Transfers and stores fuel oils

Contaminants: POLs, POL sludge, refuse

Number of Sites:

CERCLA:	19
RCRA Corrective Action:	0
RCRA UST:	2
Total Sites:	21

Relative Risk Ranking of Sites:

High:	1	Not Evaluated:	0
Medium:	0	Not Required:	20
Low:	0		

Sites Response Complete: 20

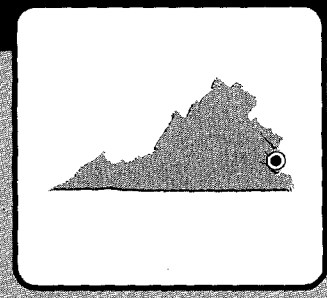
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	19							
RI / FS	1							
RD	1							
RAC	1							
RAO								
IRA	1(1)							
RC	19							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	2							
CAP	1		1					
DES			1					
IMP				1				
IMO								1
IRA								1(1)
RC	1							1
Cumulative % RC	50%	50%	50%	50%	50%	50%	50%	100%

YORKTOWN NAVAL WEAPONS STATION

YORKTOWN, VIRGINIA



Engineering Field Division/Activity: LANTDIV

Major Claimant: COMNAVSEASYSCOM

Size: 10,624 Acres

Funding to Date: $19,279,000

Estimated Funding to Complete: $54,421,000

Base Mission: Provides ordnance maintenance, modifications, production, loading/off-loading and storage for Atlantic fleet

Contaminants: Acids, asbestos, batteries, degreasers, explosives, heavy metals (cadium, lead, mercury, nickel), solvents, paint thinners, PCBs, varnishes, waste oil

Number of Sites:	
CERCLA:	44
RCRA Corrective Action:	0
RCRA UST:	4
Total Sites:	48

Relative Risk Ranking of Sites:			
High:	28	Not Evaluated:	4
Medium:	4	Not Required:	10
Low:	2		

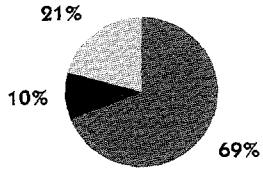
NPL

Sites Response Complete: 10

EXECUTIVE SUMMARY

Yorktown Naval Weapons Station (NWS) is a 10,624 acre facility located on the Virginia Peninsula. It is near the historic village of Williamsburg, Virginia and is 30 miles northwest of Norfolk, Virginia. The NWS lies within two drainage basins. The York River Basin to the north, and the James River Basin to the south. The primary mission of the NWS is to provide ordnance, technical support and related services to sustain the war fighting capabilities of the armed forces in support of national military strategies. This site was originally named the US Mine Depot, and was commissioned on July 1, 1918 to support the laying of mines in the North Sea during World War I. In 1992, this facility was placed on the National Priority List (NPL) because 19 sites were identified as past disposal or storage areas for materials that may contain hazardous substances. These contaminants include acids, asbestos, explosives, cadmium, lead, mercury, nickel, paint thinners, solvents, varnishes, waste oil and the chemical additive PCB. There is a possibility of groundwater contamination. Surface water runoff is also a concern because of drainage into surrounding wetlands. The NWS is under a Federal Facility Agreement (FFA) with the EPA which was signed in September 1994.

The proximity of the NWS to two major tidal tributaries of Chesapeake Bay is an important influence on the natural environment of the activity. The Virginia Peninsula enjoys a moderate continental climate with mild winters and long, warm summers. Rain is well distributed throughout the year, with the heaviest rains occurring in July and August. The NWS is characterized by gently rolling terrain dissected by ravines and stream valleys. Most of the area slopes toward the York River to the north, with a few southern sections draining toward the James River. Because of the proximity of the rivers, this area contains a significant amount of wetlands and the accompanying ecosystems. Contaminant migration to both rivers, which are used for recreation, fishing and wildlife habitat, is a concern to the community. Contaminants may migrate from disposal sites by means of surface runoff to the creeks and rivers, or by infiltration to the groundwater aquifers.



Current Status Of Sites

Studies Underway	33
Cleanups Underway	5
Response Complete	10
TOTAL	48

A Restoration Advisory Board (RAB) was initiated in October 1994. This board has representatives from the NWS, federal and state regulating agencies, National Oceanic and Atmospheric Administration, US Fish and Wildlife Service, US National Park Service, the Chesapeake Bay Foundation, the Virginia Institute of Marine Science, the County of York, various officials from surrounding communities, and nine community members. A Community Relations Plan was completed, and a number of educational materials were made available to the community.

Currently, remedial actions that include free product recovery are ongoing at two Underground Storage Tank (UST) sites. Completion of a Remedial Investigation/Feasibility Study (RI/FS) at Site 16 and Solid Waste Management Unit (SWMU) 16 led to the signing of a No Further Action (NFA) Record of Decision (ROD). The NWS also completed eight removal actions at the following eight sites: Site 2, Site 9, SWMU 1, SWMU 2, SWMU 4, SWMU 5, SWMU 17 and SWMU 18. These Remedial Actions (RA's) provided erosion and sediment controls which included silt fencing, water discharge channels, geotextile fabric for road base and temporary waste storage areas.

In the future, Site Inspections (SIs) which are underway at 12 SWMU's will be completed by FY98. Twelve RI/FS activities, which are currently underway, will be completed by FY00. The NWS plans to begin SIs at eight sites by FY00, and begin RI/FS activities at ten sites by FY01. There are also plans to begin Remedial Designs (RDs) for 23 sites proceeding to the RA phase between FY98 and FY05.

The NWS used an innovative process to determine if samples of composite carbon zinc battery waste was hazardous. The test results reviewed by the Virginia Department of Environmental Quality determined the waste was not hazardous, thus saving over one million in disposal costs. In FY94, the installation completed a comprehensive Site Management Plan (SMP). This plan, together with frequent teleconferences between the installation and regulatory agencies have facilitated decision making and helped to accelerate the cleanup schedule.

YORKTOWN NWS
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - The NWS is located on the Virginia Peninsula. It is bounded by the York River to the north, and the James River to the south. Essentially, this area is a large drainage basin. Surface and groundwater of the NWS and its surroundings constitute an important resource. Surface waters from the station flow through many wetlands to the York and James Rivers. Drainage of the facility is accomplished by means of storm sewers and natural drainage systems. Extensive wetlands are found on all of the creeks which drain the station, and also in some shoreline areas of the York River. The creeks are hydraulically connected to the uppermost groundwater system. The tidal reaches of the York River, including the vicinity of the NWS are classified as shellfish waters. The mouth of the York River off the NWS is also an important shipping channel. The York River poses the major flooding threat to the facility during hurricanes or severe northeast storms.

In the shallow aquifer system of York County, the Columbia aquifer and the Cornwallis Cave aquifer can be differentiated based on the presence of absence of artesian conditions. The shallow lithology at Yorktown consists of upper sand, a claysilt unit, basal gravel/shell, and sediment of the Pleistocene and Pliocane ages. Deposits range in thickness from 20 feet at the western end of the peninsula to approximately 150 feet at the seaward and in the vicinity of WPNSTA Yorktown. The sand and gravel/shell units are both water-bearing and are commonly separated by the clay-silt layer, which may function as a confining or semiconfining unit. Collectively, these units form the shallow aquifer system at WPNSTA Yorktown, and correspond to the Columbia aquifer, Cornwallis Cave aquifer, and the Cornwallis Cave confining unit, respectively.

In many locations, the Columbia unit is not saturated. This is because either the Cornwallis Cave confining unit is "leaky" (e.g., transmits water readily) or the confining unit is missing, where creeks and tributaries have eroded through the unit. This occurs at many locations throughout the vicinity of WPNSTA Yorktown.

The Columbia aquifer is recharged directly by precipitation. The Cornwallis Cave aquifer is recharged by infiltration from leakage through the clay-silt unit. Some exchange also takes place between surface water in the creeks and ponds and in the east-northeast toward the York River, but locally trends toward groundwater discharge zones and appears to coincide with surface streams. The top of the water table generally reflects the topography.

Data from monitoring wells installed throughout WPNSTA Yorktown as part of the Confirmation and RI Studies were used to assess the depth to groundwater within the York County shallow aquifer system. The groundwater levels for the summer of 1994 indicated depths generally less than 30 feet below ground surface (bgs) throughout the upland areas of WPNSTA Yorktown. At areas of WPNSTA Yorktown that are located close to surface water bodies, the depth to the groundwater was frequently less than five feet bgs. The groundwater flow direction within the shallow system is generally toward groundwater discharge zones coincident with surface drainage's and streams. Therefore, the water level elevations roughly reflect the surface topography. Groundwater levels have been measured at WPNSTA Yorktown during various time of the year. The general flow direction at the various sites has remained consistent during this time period.

The dominant source of domestic water supply for WPNSTA Yorktown and the surrounding community is from surface water reservoirs by the City of Newport News. However, individual homes also may obtain water from the shallow aquifer system (mainly the Yorktown-Eastover Aquifer) in portions of Charles City, New Kent, James City, and York Counties. The shallow aquifer system is comprised of the Columbia, Cornwallis Cave and Yorktown-Eastover Aquifers and associated confining units. Potable water sources from the Shallow-Aquifer System are drawn from the Columbia and Yorktown-Eastover Aquifers. The Cornwallis Cave Aquifer is not used as a potable water source due to its limited yields.

There are no drinking water wells at WPNSTA Yorktown; the coastal plain aquifer and other shallower aquifers are not used as a drinking water source. There are, however, five supply wells at WPNSTA Yorktown, located at Buildings 120, 352, 304, 28 and Gate 13. Due to the poor water quality, three wells, at Buildings 120, 352 and 304, have been decommissioned and capped; a fourth well at Building 28 was abandoned and filled with cement. The remaining well at Gate 13 is a newer well that supplies water to the toilet facilities which are part of the weigh station. Gate 13 is located at the western boundary of the Station, approximately 3.8 miles from Site 16. Bottled drinking water is supplied to the weigh station.

NATURAL RESOURCES - About 78% of the NWS is undeveloped, and predominantly wooded. Marshes comprise approximately 400 acres, while lakes account for 150 acres. The diversity of ecosystems within the station and its surroundings provide habitat for a wide variety of plants and animals. Vegetation includes loblolly and Virginia pines, Virginia creeper, briars and honeysuckle. Ferns are also found in many moist, shaded areas. Since the entire facility is fenced in, the wildlife exists in a carefully managed environment. The white-tail deer population, as well as wild turkey, quail, squirrel, rabbit, raccoon and possum populations are managed by the facility's natural resource personnel to prevent overpopulation and food shortages. The creeks and their associated wetlands are important as fish nursery areas. Oysters, blue crabs and hard and soft shell clams are found in the York River off-shore the NWS. This area is designated as a crab pot fishery. No Federal or State designated plant or animal species on the endangered or threatened list exist on the facility or nearby.

RISK - The NWS has 48 total sites for cleanup. Out of those, 28 are classified as High Relative Risk. These sites are classified this way primarily due to soil contamination which has migrated to the groundwater.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - Six sites identified in 1992 led to the placement of the NWS on the National Priority List (NPL) on 14 October 1992. All six of these sites are hydrologically connected to Chesapeake Bay.

LEGAL AGREEMENTS - The NWS is under a Federal Facility Agreement (FFA) with the EPA which was signed in September 1994. A Site Management Plan (SMP) was completed in 1994 and has helped to accelerate the cleanup schedule. The SMP is revised each year to reflect current schedules.

PARTNERING - The NWS initiated a joint program with the US Army Corps of Engineers Waterways Experiment Station in Vicksburg, Mississippi. Under this program, the Navy and the Waterways Experiment Station are conducting a treatability study for explosive-contaminated soils using two different bioremediation technologies.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Restoration Advisory Board (RAB) was initiated in October 1994. This board has representatives from the NWS, federal and state regulating agencies, National Oceanic and Atmospheric Administration, US Fish and Wildlife Service, US National Park Service, the Chesapeake Bay Foundation, the Virginia Institute of Marine Science, the County of York, various officials from surrounding communities and nine community members. The board meets on a quarterly basis.

YORKTOWN NWS
RELEVANT ISSUES

COMMUNITY RELATIONS PLAN - A Community Relations Plan was completed, and a number of educational materials were made available to the community.

INFORMATION REPOSITORY - The NWS maintains four repositories. One is located at the facility and the other three are at local libraries. A copy of the Administrative Record (the official file) is included in the Repository.

HISTORICAL PROGRESS

FY84

Sites 1-19 - An Initial Assessment Study (IAS), similar to a Preliminary Assessment (PA), was completed in July. A total of 19 potentially contaminated sites were identified. The IAS recommended 15 of the sites proceed to the Confirmation Study (CS).

FY86

Sites 1-9, 11, 12 and 16-19 - Field work for a CS, similar to a Site Inspection (SI), was started. Round 1 of sampling was completed in June 1986. Recommendations were made for a second round of sampling.

FY88

Sites 1-9, 11, 12 and 16-19 - Field work for the second round of CS sampling was completed in June 1988.

FY89

Sites 1-9, 11, 12 and 16-19 - The CS was completed for these sites. The CS was conducted in two rounds of sampling. Round 1 was completed in June 1986 and a second round of sampling was completed in June 1988. A draft report was prepared in February 1989.
Sites 10, 13, 14 and 15 - These sites were determined to require no further study and are considered Response Complete (RC).

FY91

Sites 1-9, 11, 12 and 16-19 - The Final CS report was released for these sites. This report summarized the findings of all previous studies for these sites and recommended that additional studies be conducted in a Remedial Investigation/Feasibility Study (RI/FS) phase.
Site 21 - This site was discovered in November 1990. It was a disposal area for batteries and drums. An SI was initiated to investigate the site.

FY92

Site 21 - The SI was completed and the site was recommended to proceed to the RI/FS phase.
Sites 1-9, 11, 12, 16-19 and 21 - Remedial Investigation (RI) Work Plans were completed for these sites and sent to the Technical Review Committee (TRC) for review in December 1991. The Work Plans were finalized in May 1992. RI field work started in April 1992. The RI included marine sampling of shellfish and fish in surface waters on the base.
SWMUs 1-21 - The EPA conducted two searches for potentially contaminated sites. First, the EPA Photographic Interpretation Center (EPIC) searched aerial photographs and found several potential sites. Second, the EPA conducted a RCRA Facility Assessment (RFA) as part of a RCRA Part B permit application evaluation, and identified 19 SWMUs. The SWMUs were recommended for further investigation in an SI.

FY93

Sites 1-9, 11, 12, 16-19 and 21 - The RI Report for the first round of RI sampling was completed in July. The majority of these sites moved into the Feasibility Study (FS) phase. Sites 6, 7 and 12 were recommended for a second round of RI sampling. Site 5 was recommended for no further study or action.
USTs 1-4 - The Initial Site Characterization (ISC) was completed.
USTs 1 and 2 - The Corrective Action Plan (CAP) was completed.

FY94

Site 2 - A removal action to remove debris and containers was started.
Site 4 - A removal action to remove old containers and other debris was completed.
Site 5 - The RI/FS was considered done and the site was considered RC.
Sites 16 and 21 - Removal actions were conducted to remove wastes and containers from the site.
SWMU 16 - The SI phase was completed.
USTs 3 and 4 - The CAP was completed and these two UST sites were recommended for no further study or action and were marked RC.

FY95

Sites 1-4, 6-9, 11, 12, 16-19, 21 and 22 - The RI/FS was still underway. Site 16 and SWMU 16 required No Further Action (NFA) after the removal action in 1994 and was marked RC.
Site 2 - The removal action started in FY94 was completed.
Site 9 - A removal action was completed to remove old containers and other debris from the site.
Site 16/SSA16 - The RI and Removal Action were completed. The ROD was signed September 1995 and specified no further action was required.
SWMUs 1, 6 and 7 - The SI phase was completed.
SWMUs 1, 2, 4, 5, 17 and 18 - Removal Actions were completed.
USTs 1 and 2 - The Implementation of Corrective Measures began and was completed for both sites. The Corrective Measures included free product removal and groundwater treatment.

PROGRESS DURING FISCAL YEAR 1996

FY96

Site 12 - RI/FS was completed.
Site 12 - Remedial design was initiated.
Site 7 - Treatability study initiated to treat explosive contaminated soil.
Sites 2, 4, 8, 11, 17, 18, 21, 22 and SSA 14 - RI/FS studies initiated.
SWMUs 1, 2, 6, 7, 15 and 17-19 - The SI phase was completed. The final SSP reports were signed by all parties and recommended no further action for SWMUs 2,15,17, and 19. SWMUs 15 and 19 are now considered Response Complete. SWMUs 1,6,7,and 18 were recommended for an RI.
SWMU 7 - A Removal Action was completed to remove three fire training pits and associated soil contamination, an UST and associated piping, and numerous underwater ordnance items.
USTs 1 and 2 - The IMO was completed.

YORKTOWN NWS
PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 6, 7, 9 and 19 - RI/FS planned for completion.
Sites 23-26 - RI/FS phase planned to be initiated.
Sites 9, 12 and 19 - RA planned to be initiated.
Sites 6, 7, 9, 12 and 19 - The RD will be completed
Site 7 - Field Scale Treatability Study for treating explosive contaminated soil planned to be completed.
Sites 7 and 19 - An IRA is planned for soil removal.
Bench Scale Treatability Study for the treatment of explosive contaminated soil will be completed.
SWMUs 8 and 11-14 - Complete the PA/SI
SWMUs 20 and 21 - Initiate the Site Screening Process Report.

FY98

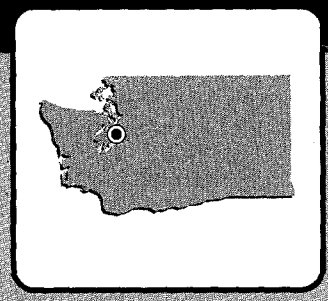
SWMUs 3, 9, 20, 21, 22, 23 - The PA/SI will be completed
Sites 1, 2, 3, 4, 8, 11, 17, 18, 21 and 22 - The RI/FS will be completed. It is expected that Site 18 will require no further action and become Response Complete.
SWMU 14 - The RI/FS will be completed.
Site 4 - The RD will be completed.
Sites 9, 12 and 19 - The RA will be completed. Sites will be considered Response Complete.
Sites 19 and 19 - An Interim RA will be completed for bioremediation.
Sites 1, 2 and 3 - The RD will be initiated
Sites 6 and 7 - The RA will be initiated.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	20	8	5	6	3			1
RI / FS	3	1	4	11	4	4	4	6
RD	1		5	1	8	4	2	13
RAC	1			3	2	4	3	21
RAO								12
IRA	9(9)	1(1)	2(2)	2(2)	2(2)	4(4)	2(2)	16(23)
RC	6	2		4	1	4	2	25
Cumulative % RC	14%	18%	18%	27%	30%	39%	43%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	4							
CAP	4							
DES								
IMP	2							
IMO		2						
IRA								
RC	2							2
Cumulative % RC	50%	50%	50%	50%	50%	50%	50%	100%

BANGOR NAVAL SUBMARINE BASE
SILVERDALE, WASHINGTON



Engineering Field Division/Activity: EFANW
Major Claimant: CINCPACFLT
Size: 6,692 Acres
Funding to Date: $65,970,000
Estimated Funding to Complete: $110,794,000

Base Mission: Provides support base for Trident submarines
Contaminants: Otto fuel, picric acid, RDX, TNT

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	38	High:	14	Not Evaluated:	1
RCRA Corrective Action:	0	Medium:	0	Not Required:	27
RCRA UST:	4	Low:	0		
Total Sites:	42				

NPL

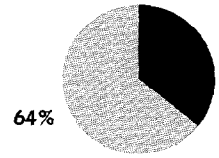
Sites Response Complete: 27

EXECUTIVE SUMMARY

Bangor Naval Submarine Base (NSB) is located on Hood Canal, which is ten miles north of Bremerton, Washington. Prior to its commissioning as a submarine base in 1977, the Navy facility at Bangor was primarily a transshipment and storage point for ordnance. Ordnance arrived by train and was shipped by boat to support the US military efforts in the Pacific Ocean during World War II and the Korean and Vietnam Wars.

As a storage facility, out-of-date and surplus ordnance was dismantled and steam cleaned, burned, or detonated on the base. The water from the steam cleaning demil operation, Site 204 (former Site F), drained into an unlined lagoon into the water table aquifer. The wastewater contained the ordnance compounds cyclonite (RDX) and trinitrotoluene (TNT) which washed through the ground and into the shallow aquifer. Over the years the RDX migrated with the flow of the groundwater. RDX is currently being detected approximately 3,000 feet northwest of the lagoon area. During this time, industrial wastes from supporting activities were also disposed of on base. These were common disposal practices from the 1940's through the early 1970's. Contaminants found include otto fuel residues, electroplating wastes, ammonium picrate, the ordnance compound DNT, the gasoline component benzene, the organic solvent DCA, the chemical additive PCB, pesticides and herbicides. The Navy has changed its operational processes to prevent further contamination. The Bangor Ordnance Disposal Area was placed on the National Priorities List (NPL) in 1987 due to concerns about ordnance-contaminated soil and groundwater, and the remainder of the base was placed on the NPL in 1990. On 29 January 1990, a Federal Facility Agreement (FFA) was signed by the Navy, EPA, and the State of Washington. Sites were grouped into eight Operable Units (OUs) for the Remedial Investigation and Feasibility Study (RI/FS) phase.

Community relations for NSB Bangor is an ongoing active effort. The Community Relations Plan (CRP) was finalized in FY93. A local citizen's group obtained a grant from EPA and funds from the State of Washington Department of Ecology to oversee operations at NSB Bangor. A Restoration Advisory Board (RAB) was formed in FY95 and has been holding meetings about twice a month since January of 1996.



Current Status Of Sites

Studies Underway	0
Cleanups Underway	15
Response Complete	27
TOTAL	42

Early removal actions include Underground Storage Tank (UST) removals in FY92 and FY94. Cleanup actions will continue for USTs 1 and 4 in FY97 and FY98. The final removal action for UST 4 should begin in FY97.

In FY93, the excavation and disposal of buried drums was completed at OU 7 and a bermed area was reconstructed. A Record of Decision (ROD) was signed in April 1996. Remedial Action (RA) for soils will be completed in late FY 96. RA for groundwater will begin in FY97.

The Navy performed a time critical removal action in FY95 at OU 8 to protect human health. Volatile organic compounds (VOCs) above acceptable levels for drinking water were detected in a newly drilled community well. The well was never used by residents or certified by use by the health district. The Navy and health officials sampled nearby monitoring and residential wells. Since the compounds were only detected in the newly drilled well, the Navy drilled additional monitoring wells, found more VOC contamination, and then connected nearby residents to a public water supply in a second time critical removal action. The Navy has drilled additional monitoring wells to identify the nature and extent of the compounds in the aquifer. Based on the information, the Navy will install a groundwater treatment system to contain the flow of chemicals from migrating off base. The Pump and Treat Containment System under design uses an air-stripper to clean up the aquifer and is expected to be operational in February of 1997. Concurrent with the removal action is an RI/FS phase that began in June of 1996 to focus on any data gaps in the nature and extent of contamination, perform a baseline risk assessment along with recommendations for future actions at the site and modification of the containment system. The viability of in situ bioremediation will also be evaluated as part of the RI/FS.

An RA for soils will began in December 1995 at OUs 2 and 6 using composting to degrade ordnance compounds (primarily TNT). The RA is expected to be completed in FY97. The estimated cost to compost the soils at both sites is less than half the cost of incineration. The treatment time is expected to be eight months for 1600 cubic yards of soil. Groundwater treatment design for OU 2 was completed in FY96. This system was installed at the end of FY96 and will begin operating in FY97.

BANGOR NSB
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Drainage from Bangor NSB empties into Hood Canal and Dyes Inlet. Trident Lake is located south of Site 2 which has a high relative risk ranking. There are a series of aquifers beneath the submarine base. Contaminants have been found in a seasonal aquifer and the water table aquifer. The submarine base receives its water from a deeper aquifer layer; the sea level aquifer. No contaminants have been detected in the deeper aquifer.

One of the sites, Site 204 (Site F) is a former unlined lagoon that received wastewater from ordnance dismantling operations during the 1960's and 1970's. The wastewater also migrates into an overflow channel. Ordnance compounds were detected in the water table aquifer at Site 204. Off-base residents may receive water from this aquifer.

Most residents living around the base obtain their drinking water from nearby wells. The Navy performed a response action in FY95 to connect a neighborhood near Bangor NSB with public drinking water. This was a precautionary measure to protect human health. Volatile organic compounds (VOCs) above drinking water levels were detected in a newly drilled community well. The well was never used by residents or certified by use by the health district. The Navy and health officials sampled nearby monitoring and residential wells. Since the compounds were only detected in the newly drilled well, the Navy drilled additional monitoring wells, found more VOC contamination, and hence connected nearby residents to a public water supply. The Navy has drilled additional monitoring wells to identify the extent of the compounds in the aquifer. Based on the information, the Navy is installing a groundwater treatment system to contain the flow of chemicals from the base. Pump and treat containment using an air-stripper to clean up the aquifer is expected to be operational in February of 1997.

NATURAL RESOURCES - NSB is in the second stage of reforestation. Most of the base is covered with Douglas Fir. Many other tree species are also present, such as western red cedar, grand fir, and western hemlock. There are chaparral areas and wetlands on the base. There are two boggy areas (swamps) at the northern boundary of Camp Wesley Harris, and another near the center of the property on the eastern boundary. Some areas on NSB support an abundance of species and are ecologically significant. Wilkes Marsh provides nesting areas for waterfowl. Duck hunting is allowed at NSB during a prescribed season. The marine waters along the NSB shoreline contain an abundant marine fauna including shellfish, salmon and herring. The warbled marrelot is the only endangered species at NSB Bangor.

RISK - Using the Department of Defense (DOD) Relative Risk Ranking System, high risk Site 2, located very close to Trident Lakes, a recreational area, was a disposal area for small caliber projectiles and is contaminated with paint sludge, waste oil, and drums. Site 201 is a 5-acre vegetated shoreline on Hood Canal which was used for pyrotechnic testing, dumping of solid and liquid wastes, and landfilling. Groundwater and soil in this recreational area is contaminated..

Site 28 was a former paint shop where paints and solvents were discharged into a waste ditch. Groundwater and private wells have been affected by these contaminants. A time critical removal action to stop VOC contamination migration from leaving the base will be implemented in FY97. A pump and treat system will utilize an air stripper. Soils contaminated with lead can be found at Site 100, a rifle, pistol and handgun range.

Site 200 is a former explosive ordnance detonation and disposal area actively used from 1962-1975. Groundwater in this area is migrating towards an off-base residential area. Soil samples indicated the presence of TNT and dinitrotoluene (DNT) at levels that may be harmful to human health.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - In 1987, Site 200 (former Site A) was placed on the National Priorities List (NPL) with a Hazard Ranking System (HRS) score of 30.42. On 30 August 1990, the rest of the base was listed on the NPL with a HRS score of 55.91 using information from the Initial Assessment Study (IAS). On 29 January 1990, the Department of the Navy (DON), EPA Region X, and the Washington State Department of Ecology signed a Federal Facility Agreement (FFA) for NSB Bangor. The EPA did not have sufficient information to delist any sites and requested additional studies at 22 sites. The FFA designated Sites B, 2, 4, 7, 10 and 18 for reentry into the Installation Restoration Program (IRP) process, added Site 26, identified Sites 27-30, and split Site C into Site 205 (East) and Site 206 (West). The FFA grouped the sites into the Operable Units (OUs) below. These OUs have been adjusted since the FFA was signed.

OU 1 - Site 200 (Site A)
OU 2 - Site 204 (Site F)
OU 3 - Sites 16, 24 and 25
OU 4 - Sites 205 (C-East) and Site 206 (C-West)
OU 5 - Site 5
OU 6 - Site 202 (Site D)
OU 7 - Sites 201 (Site B), Site 203 (Site E), 2, 4, 7, 10, 11, 18, 26 and 30
OU 8 - Sites 27-29

PARTNERING - Partnering sessions with the regulatory agencies expedited the cleanup of contaminated areas in FY94. The meetings streamlined the decision-making process by reducing the number of deliverables. Issues were resolved in person rather than through formal review comments, responses, and revisions.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - The Technical Review Committee (TRC) was formed in FY87 and met on a regular basis. The TRC was converted to a Restoration Advisory Board (RAB) in FY95 and met for the first time in January of 1996. The RAB now meets about twice each month and is provided with copies of all project submittals.

COMMUNITY RELATIONS PLAN - The Community Relations Plan (CRP) was finalized in 1993.

INFORMATION REPOSITORY - Information Repositories were established in 1990 and are located at NSB Bangor Branch Library in Silverdale, Washington and the Central Kitsap Library in Bremerton, Washington. A copy of the Administrative Record (the official file) is contained in the Information Repositories.

BANGOR NSB
HISTORICAL PROGRESS

FY83

An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA) was completed and identified 37 potentially contaminated sites: 29 sites at NSB Bangor and eight sites at Jackson Park Housing. Jackson Park Housing has been transferred to Naval Shipyard (NSY) Puget Sound.
Sites 200, 202, 203, 204, 205, 206, 5, 6, 11, 12 and 19 - These sites were recommended for further investigation due to suspected contamination of groundwater and soil.
Sites 201, 1-4, 7-10, 13-18 and 20-23 - These sites were recommended for No Further Action (NFA) due to a lack of significant contamination or to the natural degradation of contaminants.
UST 4 - Consisted of eight tanks at the Public Works Industrial Area. Three tanks were removed prior to FY83. Two tanks were abandoned in place.

FY88

Sites 24 and 25 - These two sites were identified and recommended for a Site Inspection (SI).
Site 200 - This site was proposed for listing on the National Priorities List (NPL) due to concerns about ordnance-contaminated soil and groundwater.
Sites 200, 202, 203, 204, 205, 206, 5, 6, 11 and 12 - These sites were recommended for an SI.

FY89

Sites 202, 203, 204, 205, 206, 5, 6, 12, 24 and 25 - A Current Situation Report (equivalent to an SI) was conducted. All sites except Site 203 were recommended to continue to the Remedial Investigation/Feasibility Study (RI/FS) phase.
Site 6 - Nonhazardous waste was removed using station funds.
UST 2 - This site consisted of 16 abandoned tanks that were discovered under the Installation Restoration Program (IRP). A PA was completed.

FY91

OU 1 (Site 200) - An RI/FS was completed.
OU 2 (Site 204) - An Interim Record of Decision (ROD) was signed in September 1991 to contain the contaminants migrating into groundwater.

FY92

OU 1 (Site 200) - A ROD was signed for groundwater.
UST 1 - An inlet pipe leak was repaired.
UST 2 - Tanks were removed.
UST 3 - Two tanks at the Keyport/Bangor Docks, were removed.
Site 16 and OU 7 (Sites 4, 7, 10, 11, 18, 26, 30, 201 and 203) - A Site Characterization Report (equivalent to an SI) was completed. Further study was recommended for Operable Unit (OU) 7.

FY93

OU 1 (Site 200) - The passive soil washing design was completed.
OU 2 (Site 204) - The RI/FS phase was completed.
OU 3 - The RI/FS phase was completed. A ROD was completed with "limited action" for groundwater monitoring at Site 25 and a Remedial Action (RA) consisting of land deed restrictions at Sites 16 and 24.
OU 4 (Sites 205 and 206) - An RI/FS was completed. A Revision to the Final RI/FS changed the "limited action" preferred alternative to "no-action" and the ROD was signed.
OU 5 (Site 5) - An RI/FS was completed. A no-action ROD was completed.
OU 7 - A removal action was completed that involved the excavation and disposal of buried drums at three sites and the reconstruction of a bermed area at Site 2.

FY94

OU 1 (Site 200) - Changes were made to the FY92 ROD for groundwater. Granular Activated Carbon (GAC) has replaced passive soil washing as the treatment selected. There will be no excavation of soil on steep embankments as originally planned.
OU 2 (Site 204) - Changes were made to the FY91 ROD for groundwater. The treatment technology selected was GAC.
OU 6 (Site 202) - An RI/FS was completed at OU 6. The ROD was completed for OU 6 and the contaminated soil was planned to be remediated using composting.
UST 2 - This site consisted of eight tanks and their tank lines. Six operational tanks were determined to have leaked and two tanks were removed.

FY95

OU 1 (Site 200) - A Remedial Action (Soil Washing) began in November 1994.
OU 2 (Site 204) - An Interim Remedial Action (IRA) began in October 1994.
OU 7 (Sites 4, 7, 10, 11, 18, 26, 30, 201 and 203) - The RI/FS was completed in October 1994.
OU 8 (Sites 27, 28 and 29) - This OU was created when volatile organic compounds were found in the water table aquifer. The remedy included providing residential connections to the Silverdale Water District line. Pump and treat containment of groundwater containing possible volatile organic compounds is on the fast-track to avoid contamination of nearby residential wells. This action began in February.

PROGRESS DURING FISCAL YEAR 1996

FY96

Formal Restoration Advisory Board (RAB) meetings were started and held twice a month.
Sites 10 and 26 of OU 7 - Initiate Long Term Monitoring (LTM), complete RA.
Sites 4, 7 and 30 of OU 7 - No Action as documented in the ROD.
OU 1 (Site 200) - The Remedial Action(Soil Washing) continued along with groundwater monitoring.
OU 2 (Site 202) - IRA completed.
OU 2 (Site 204) - A Remedial Design for groundwater only was completed, and Interim Remedial Action was started on soil bioremediation(composting). IRA completed.
OU3 (Site 25) - Complete RA and continue 5 year monitoring.
OU 6 (Site 202) - A Remedial Design was completed for soil only bioremediation(composting) and Remedial Action was started.
OU 7 - A ROD was signed in April. No action is planned for Sites 4, 7, 18 and 30. RD is under development for Site 201. Removal of stockpiled soils at Sites 2 and 203/11 is planned and contracts awarded. Complete RD at site 203 and 11, and complete RI/FS at site 11.
OU 8 (Sites 27, 28 and 29) - Implementation of a non-time critical removal action to stop volatile organic compound contamination migration from leaving the base is planned, contracted and underway. A pump and treatment system utilize an air stripper for removal of VOCs is under design. Anticipate operating by Feb 1997. Complete RI/FS.
UST 1 - An RA was begun.
UST 2 - Complete RA action and response complete.
UST 4 - Complete corrective action plan.

BANGOR NSB
PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

OU 1 (Site 200) - Confirmation Sampling on the Soil Washing with continued Soil Washing of the Hot Zone Cell and start RA on the groundwater. IRA expected to be completed.
OU 2 (Site 204) - A RA for groundwater is expected to begin. Start O&M on Soil Liner.
OUs 2 (Site 204) and (Site 202) - A RA for soils(Bioremediation/ composting) will be continued Composting will be used to degrade ordnance compounds from the soils at Site 202 (formerly Site D) and Site 204 (formerly Site F). It will primarily be used to remove TNT. The treatment time is expected to be eight months for 1,600 cubic yards of soil.
OU 3 (Site 25) - Continue 5 year monitoring.
OU 7 (Sites 2, 11 and 203) - RAs will be underway and planned for completion for groundwater and off-site disposal of contaminated soils. Off-site disposal of contaminated stockpiled soils at Site 2 and IRA complete. Expected response complete for Site 203.
Site 201 - Installation of vegetated soil cover and beach nourishment erosion protection. Complete RA and IRA.
Site 26 - Continue monitoring of sediments. Develop O&M and long-term monitoring (LTM) for Sites 201, 10 and 26.
OU 8 (Sites 27, 28 and 29) - Construct pump and treat containment system.
Site 100 - Camp Wesley Harris, expected to complete two IRAs.
UST 1 - RA (Bioventing) will continue.
UST 4 - Final RA is expected to be underway.

FY98

OU 1 (Site 200) - Completion of Soil Washing in the Hot Zone Cell and completion of Groundwater Remedial Action.(Pump and Treat with GAC). Plan to complete IRA.
OU 2 (Site 204) - Continuation of the RA(Pump and Treat with GAC). Continue O&M on Soil Liner. Plan to complete RAO.
OU 3 (Site 25) - Continue 5 year monitoring plan.
OU 6 (Site 202) - Groundwater Compliance Monitoring.
OU 7 - Implement O&M and LTM for Sites 201, 10, and 26, and complete RA for site 2. Plan to complete two IRAs at site 11 and one IRA at site 2.
OU 8 (Sites 27, 28 and 29) - Operate pump and treat containment system. Sign ROD. Complete RD for Site 27 and begin Remedial Action.
Site 100 - Camp Wesley Harris, expected to complete RA and IRA. Response complete is planned.
UST 4 - IRA (Bioventing) is expected to be completed.

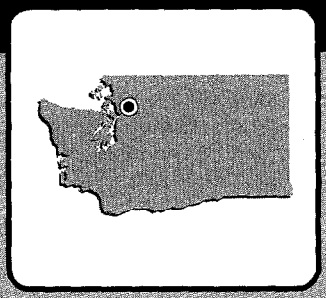
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	37							
RI / FS	18	4						
RD	2	2		1	1			
RAC		3	3	2	1			5
RAO				1	1			5
IRA	7(7)	2(2)	4(5)	5(6)	1(1)	1(1)	1(1)	3(6)
RC	24		1	4	2	1		6
Cumulative % RC	63%	63%	66%	76%	82%	84%	84%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	3							
CAP		1						
DES	1							
IMP	1	1				1		
IMO						1		
IRA	1(1)			1(2)				
RC	2	1				1		
Cumulative % RC	50%	75%	75%	75%	75%	100%	100%	100%

JIM CREEK NAVAL RADIO STATION

JIM CREEK, WASHINGTON



Engineering Field Division/Activity: EFANW

Major Claimant: COMNAVCOMTELCOM

Size: 5,234 Acres

Funding to Date: $709,000

Estimated Funding to Complete: $1,492,000

Base Mission: Manages, operates and maintains a very low frequency (VLF) radio transmitting system, an electronic courier circuit for the receipt and delivery of messages and maintains the associated control circuits

Contaminants: Solvents, POLs, heavy metals

Number of Sites:

CERCLA:	10
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	10

Relative Risk Ranking of Sites:

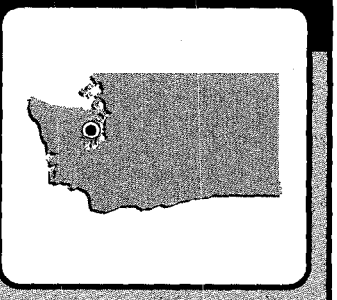
High:	1	Not Evaluated:	0
Medium:	0	Not Required:	8
Low:	1		

Sites Response Complete: 8

PROGRESS AND PLANS

CERCLA	FY95 and *before*	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and *After*
PA / SI	8							
RI / FS			1					
RD								
RAC			2					
RAO								
IRA			1(1)					
RC	8		2					
Cumulative % RC	80%	80%	100%	100%	100%	100%	100%	100%

KEYPORT NAVAL UNDERSEA WARFARE CENTER
KEYPORT, WASHINGTON



Engineering Field Division/Activity: EFANW
Major Claimant: COMNAVSEASYSCOM
Size: 340 Acres
Funding to Date: $17,681,000
Estimated Funding to Complete: $43,763,000

Base Mission: Originally tested torpedoes; expanded to include proving, overhaul and issue of torpedoes

Contaminants: Chlorinated solvents, heavy metals, pesticides/herbicides, Otto fuel, POLs

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	11	High:	2	Not Evaluated:	1
RCRA Corrective Action:	0	Medium:	1	Not Required:	9
RCRA UST:	2	Low:	0		
Total Sites:	13				

NPL

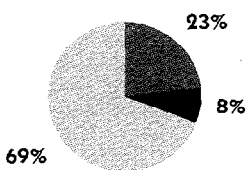
Sites Response Complete: 9

EXECUTIVE SUMMARY

Keyport Naval Undersea Warfare Center (NUWC), Washington is located on the Kitsap Peninsula in Puget Sound and is 25 miles west of Seattle, Washington. The NUWC is adjacent to a rural community, Keyport, Washington and close to another rural community, Poulsbo, Washington. The nearest urban area is Bremerton, Washington, which is eight miles to the southeast.

Operations that included plating, torpedo refurbishing and disposal practices contributed to contamination found at the NUWC. Environmental investigations since FY84 have identified several site types. Industrial and hazardous wastes were disposed of at the Keyport Landfill between the 1930's and 1970's. Hazardous materials included solvents, paints, sludge and otto fuel. Between the 1940's and 1960's at the drum spill site, contaminants including solvents, petroleum products, otto fuel, and pesticides were spilled so that drums could be reused. Sewer sludge containing inorganic compounds was disposed of from the 1940's to the 1970's at the Keyport Sludge Disposal Area. The shoreline around the station has been contaminated with wastes discharged through the sewers from 1915 until 1980. These wastes include plating wastes, paints, solvents, petroleum products, and otto fuels. Keyport NUWC was placed on the NPL in October 1989. The Navy has changed is operational processes to prevent further contamination. The sites ranked as high relative risk were so ranked primarily because of known contamination and identified migration pathways to both human and ecological receptors. Keyport NUWC is being cleaned up under a Federal Facility Agreement (FFA) which was signed in 1990 by the Department of the Navy and the State of Washington, Department of Ecology and the US Environmental Protection Agency.

Since Keyport NUWC is located on a peninsula. A shallow sea level aquifer and a deep artisan aquifer underlie the base. The deep aquifer is a source of water for the station and the Public Utility District. The shallow aquifer is not known to be used as a drinking water source. Groundwater discharges into Liberty Bay, into a shallow lagoon on the north and east side of the peninsula, and into Dogfish Bay on the west side. Native Americans have traditionally harvested shellfish in Liberty Bay. However, the Department of Health closed shellfish harvesting in Liberty Bay in 1991 due to fecal coliform.



Current Status Of Sites

Studies Underway	3
Cleanups Underway	1
Response Complete	9
TOTAL	13

Site 1 - Recent sampling of sediments, surface water, and shellfish has shown concentrations of some contaminants in Dogfish Bay above normal ranges. This indicates that contaminants are migrating to the marsh area, the tide flats, and Dogfish Bay. Chemical concentrations of contaminants observed in the marsh, tide flats, and Dogfish Bay may have potentially adverse ecological impacts, although recent bioassay results indicate no significant ecological impacts. Human ingestion impacts are currently being studied.

In addition to the upper and deep aquifers at Site 1, an intermediate aquifer exists. Contaminants above decision criteria have been measured below the landfill in this aquifer, and are currently showing migration off-site. This aquifer may potentially be a drinking water source.

The Remedial Investigation (RI) found low concentrations of metals in soil and sediment of the stream and lagoon adjacent to Site 2. The ROD was signed in September 1994. Groundwater monitoring started at Site 2 in October 1996.

Groundwater, tissue and sediment sampling began at Site 8 in October 1996. Soil removal will be complete at Site 8 in FY98.

A Community Relations Plan (CRP) was completed in late FY90 and is currently being updated. Fact sheets are prepared on a quarterly basis, and six open houses and workshops have been held. A door-to-door community survey was conducted in 1994 to gauge public concern and improve communication with Keyport neighbors. A Technical Review Committee (TRC) was formed in FY89 and converted to a Restoration Advisory Board (RAB) in FY95. RAB members have reviewed and commented on work plans. RAB members have attended a RAB work group in San Francisco, and participated in regional workshops for Puget Sound RABs.

KEYPORT NUWC
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - The area at Keyport is composed of sand, gravel, silt, and clay layers that overlie bedrock. Groundwater flows through the sand and gravel layers; these aquifers supply drinking water to Kitsap County, including Keyport. The silt and clay layers retard the vertical passage of groundwater and separate the various aquifers. These fine-grained layers are called aquitards. The shallow aquifer system is separated from the next lower aquifer (the deep aquifer) by a thick aquitard which prevents the downward migration of contamination. Beneath the Area 1 landfill, the shallow aquifer system is divided into two aquifers (the upper and intermediate aquifers) by a thin aquitard. Studies of groundwater flow direction and chemical sampling from wells indicate that contaminated groundwater in the shallow and intermediate aquifers discharges to the marsh, tide flats and Liberty Bay.

NATURAL RESOURCES - Native Americans have traditionally harvested shellfish in Liberty Bay. However, the Department of Health closed shellfish harvesting in Liberty Bay in 1991 due to fecal coliform.

RISK - Using the Department of Defense (DOD) Relative Risk Ranking System, primary contaminants at Keyport sites are solvents, otto fuels, petroleum products, paints and plating wastes. Four of the sites have contaminants that are affecting groundwater. The landfill has wastes located below the water table. Surface aquifer discharges to an adjacent marsh which in turn drains to Liberty Bay, an arm of Puget Sound. This potentially impacts shallow drinking water wells, surface water, and marine sediments as well as humans, flora and fauna exposed to the water or sediments. To reduce risk at the Plating Area, Site 8, an underground trench and several sumps were excavated and chromium-contaminated soil was removed and replaced with clean fill.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - Keyport NUWC was included on the NPL on 4 October 1989 based on a Hazard Ranking System score of 32.6.

LEGAL AGREEMENTS - A Federal Facilities Agreement (FFA) was signed in April 1990 by the Department of the Navy and the State of Washington, Department of Ecology and the US Environmental Protection Agency.

PARTNERING - To improve site management, regulatory agencies are involved in developing the scope of work, and during document planning phases, technical memoranda are prepared to convey issues before document finalization. Concurrent document reviews are also conducted.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A TRC was formed in FY89 and converted to a RAB in January 1995. The first formal RAB meeting was held in March 1995. The 20 RAB members have reviewed, commented and approved work plans. By-laws have been finalized. RAB members have attended a RAB work group in San Francisco, and participated in regional workshops for Puget Sound RABs.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was completed in September 1990 and is currently being updated. Fact sheets are prepared on a quarterly basis, a door-to-door community survey has been conducted, and six open houses and workshops have been held.

INFORMATION REPOSITORY - In FY89, an Administrative Record was established at the Naval Facilities Engineering Command (NAVFAC) Engineering Field Activity, Northwest (EFANW). Information Repositories are located at the Public Utilities District No. 1 in Poulsbo, the Central and Poulsbo branches of the Kitsap County Library. Copies of the Administrative Record documents (the official file) are available for public access in the Information Repositories.

HISTORICAL PROGRESS

FY84

Sites 1-9 - An Initial Assessment Study (IAS) identified nine potentially contaminated sites. Sites 3-8 were determined not to pose a threat to human health or the environment. Sites 1, 2 and 9 were recommended for further investigation.

FY87

Sites 1, 2, 3, 5 and 9 - A Current Situation Report was completed for these sites. Sites 3 and 5, which were not recommended for further investigation in the IAS, were added at the Department of the Navy's (DONs) request, based on information obtained after the IAS was completed. The SI recommended further investigation of Sites 1, 2 and 9. In addition, the SI recommended a field survey to monitor for combustible gas and other organic vapors in soil and buildings at Site 1.

FY88

Site 1 - A landfill Gas Investigation was completed. Significant concentrations of methane were found in subsurface soil in the vicinity of Site 1. Concentrations of volatile organic compounds in the buildings were found to be well below the Occupational Safety and Health Act (OSHA) standards.

Sites 3 and 5 - Sampling was not conducted during the SI. Findings for these sites were based on existing reports and information which indicated the presence of Otto Fuel in subsurface soil and groundwater at Site 3 and metals in soil at Site 5. The SI recommended installing monitoring wells at Site 3 and conducting subsurface soil sampling at Site 5.

FY90

Site 8 - This site was added to the RI under the FFA that was signed by the Department of the Navy and the State of Washington, Department of Ecology and EPA.

FY91

A RCRA Facility Assessment (RFA) field investigation was conducted by the State of Washington Department of Ecology. Keyport NUWC has not received an RFA final report.

Site 22 - This site was delineated as a result of a utility duct trench being excavated. Fill materials, including metal piping and shavings, plastic battery casings, bricks, municipal trash and a torpedo, were found and removed during a construction project. Site 22 is immediately adjacent to Site 1 (Keyport Landfill) and it was suspected that the landfill extended further than originally anticipated. No additional debris was found during the SI; therefore, No Further Action (NFA) was determined at Site 22.

FY92

Sites 10-21 - These sites are located at Naval Ordnance Center (NOC) Port Hadlock and are no longer a part of Keyport NUWC.

Site 8 - A removal action was completed. An underground trench and several sumps were excavated and chromium-contaminated soil was removed and replaced with clean fill.

KEYPORT NUWC
HISTORICAL PROGRESS

FY93

Sites 7 and 22 - An SI was completed at these two sites. Site 7 was addressed in the IAS, but was determined not to pose a threat to human health or the environment and was not recommended for further investigation. Soil and groundwater contaminated with chlorinated solvents were discovered during military construction projects that were conducted in the area. The SI showed contamination below background levels, therefore, NFA is recommended.
Sites 2, 3, 5, 8 and 9 - An RI/FS was completed.

FY94

Sites 2, 3, 5, 8 and 9 - A Record of Decision (ROD) was signed for OU 2. NFA was determined for Site 3.. The ROD specifies confirmational sampling to be conducted at Sites 5 and 9, and long-term monitoring for Sites 2 and 8. In addition, the ROD requires a soil removal to occur in two phases at Site 8.
Site 23 - Interim Corrective Measures (tanks filled with concrete) was completed for eight tanks.

FY95

Site 1 - Some temporary buildings located above the landfill at Site 1 were vacated and removed as a precautionary measure.
Sites 2, 5, 8 and 9 - Confirmational sampling and monitoring workplans were finalized.
Site 8 - Phase I of Area 8 a RA was conducted.
Site 23 - A Corrective Action consisting of removal and closure, began. Site 23 consists of hazardous waste storage tanks and sumps. Probable contaminants include solvents and petroleum products.

PROGRESS DURING FISCAL YEAR 1996

FY96

Site 1 - Pre-ROD sampling and additional GW analysis was conducted.
Site 8 - Work plans for the Phase II soil removal were started. Completed two IRAs.
Sites 2 and 8 - Groundwater monitoring and evaluation began.
Site 2 - Complete RI/FS. Response complete.
Sites 5 and 9 - Response complete. Completed one-time confirmational sampling required by ROD for NFA. Completed RA.
Site 23 - Corrective Measures were completed at several tanks. The Corrective Measures consisted of tank and soil removal (RA), and in-situ remediation of contaminated soil.
Site 100 - Conducted a site visit and records search.
UST 1 - Completed removal phase and response complete.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Site 1 - Draft proposed workplan will be complete.
Site 2 - Continue monitoring and evaluating groundwater.
Site 8 - Continue monitoring and evaluating groundwater. Finalize workplan for Phase II at plating shop. Complete RD.
Site 23 - Complete Corrective Action Plan for additional tanks.

FY98

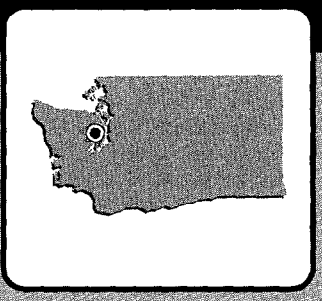
Site 1 - Sign ROD. Complete RI/FS and RD.
Site 2 - Continue monitoring and evaluating groundwater.
Site 8 - Continue monitoring and evaluating groundwater. Conduct RA Phase II at the plating shop.
Site 23 - Achieve Response Complete.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	10				1			
RI / FS	4	1		1				
RD			1	1				
RAC		2				2		1
RAO								2
IRA	1(1)	1(2)						
RC	5	3						3
Cumulative % RC	45%	73%	73%	73%	73%	73%	73%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	1							
CAP	1		1					
DES	1							
IMP		1						
IMO								
IRA								
RC		1		1				
Cumulative % RC	0%	50%	50%	100%	100%	100%	100%	100%

PORT HADLOCK NAVAL ORDNANCE CENTER, PACIFIC DIVISION DETACHMENT
KEYPORT, WASHINGTON



Engineering Field Division/Activity: EFANW
Major Claimant: COMNAVSEASYSCOM
Size: 2,716 Acres
Funding to Date: $6,232,000
Estimated Funding to Complete: $35,413,000

Base Mission: Receives, stores, maintains and issues ordnance

Contaminants: TNT, heavy metals (arsenic, cadium), volatile organic compounds

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	17	High:	4	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	1	Not Required:	11
RCRA UST:	0	Low:	1		
Total Sites:	17				

NPL

Sites Response Complete: 10

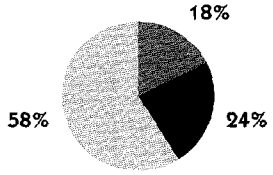
EXECUTIVE SUMMARY

Port Hadlock NOC is located on Indian Island in northeastern Jefferson County, Washington, at the northern end of Puget Sound, near the town of Port Townsend. The primary source of contamination has been from landfills and ordnance disposal. Port Hadlock has served as an ammunition storage and submarine net depot since 1939. Primary contaminants at Port Hadlock NOC are TNT, heavy metals, the chemical additive PCBs, other ordnance compounds such as RDX and volatile organic compounds. The media affected by these contaminants has been groundwater, surface water/sediments, and soil. The Navy has changed its operational processes to prevent further contamination.

Environmental investigations since 1984 have focused on cleaning up and preventing future contamination of shellfish beds which are located near the installation. Contaminants can migrate via groundwater and overland flow into the bays or can migrate by soil to the sea-level aquifer. The bays are used for both recreational and commercial fishing. A Current Situation Report, completed in FY88, found trace metals (including lead), organics, and petroleum hydrocarbons in shellfish near the north end landfill. A study completed in 1993 found similar results. Sediments have shown no contamination.

Certain areas of Port Hadlock are on the National Register for Historic Places. Sites 10, 11 and 12 have Native American archeological concerns because these areas were actively used by Native American tribes. Site 10 has large shell deposits called middens that were used for ceremonies. The midden at Site 10 was tested and shown to be over 2,000 years old. Site 11 includes burial grounds. Native American Tribes have been consulted on cleanup issues at Port Hadlock.

Indian Island is in a rural setting surrounded by Puget Sound and is connected to the main land by two bridges. There are threatened and endangered species in the vicinity. Nine active bald eagle nests are on the Island. Site 21 sits between the only two drinking water wells. These wells are no longer used, as water is piped in from Port Townsend. Sites 10, 11 and 12 are adjacent to wetlands. The local community is mostly concerned about the shellfish beds, and groundwater, as many local wells have been impacted by saltwater intrusion.



Current Status Of Sites

Studies Underway	3
Cleanups Underway	4
Response Complete	10
TOTAL	17

Community relations are an ongoing effort. The Community Relations Plan (CRP) was finalized in FY92 and revised in May 1996. A series of fact sheets for the installation cover topics such as state involvement and oversight, the Site Hazard Assessment program, and the results of shellfish and sediment sampling. The TRC was converted to a Restoration Advisory Board (RAB) in FY95. There are 30 RAB members from regulatory agencies, local Native American Tribes, and the community. The Navy had an open house for the RAB in July 1995.

In FY87, a removal action was conducted at Site 17. A tank was removed and gas was vented to complete Remedial Action (RA) at this site. An RA has been completed at Sites 13 and 16. Underground Storage Tanks (USTs) were removed at Site 16 in FY91 and tanks and soil were removed at Site 13 in FY91 and FY94. In FY95, soils contaminated with ordnance were removed from Sites 11 and 12 and petroleum contaminated soils were removed from Site 18. A ROD was signed for sites 10, 11, 12, 15, 18, 20, 21 and 22 in August 1996.

In FY96, an RD at Site 10 was completed and an RA was begun. This RA involves construction of a landfill cap and a shoreline protection system. The RA will be completed in FY97. Long term groundwater monitoring and shellfish monitoring will follow the RA. At Site 10, a Memorandum of Agreement between the Navy and the National Council of Historic Places was signed for archeological protection during construction.

An innovative technology, bio-geo-engineering, has been applied to protect the shoreline at Site 10. The bank was eroding and spilling landfill contents onto the beach. Working with Native Tribes and State Agencies such as Department of Wildlife, Department of Natural Resources, and Department of Ecology, this problem has been solved by planting selected vegetation on the bank.

Partnering with regulators and the public allowed the Navy to complete a cleanup at Site 11. After the cleanup, it was agreed no further study would be required, saving over two million dollars. The site has been taken off the Washington State Hazardous Sites List.

Groundwater compliance monitoring at Sites 10, 12 and 21 will be continued in FY97.

PORT HADLOCK NOC PAC DIV DET RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - The aquifer at Site 21 is very deep and flat. It is over 150 feet deep. The groundwater at Site 34 has been found to be perched aquifer about 20 feet deep. Surface runoff goes to the bay, which supports commercial shellfish beds. Sites 10, 11, 12 and 18 are near shoreline. The landfill sits partially below sea level. It has been shown that contaminants transport via groundwater to the shellfish beds off Site 10. Two drinking water wells near Site 21 are not used and have not been sampled for many years. Contaminants can migrate via surface and groundwater on Indian Island. Surface runoff does not follow defined channels but flows overland into the bays surrounding the island. These bays are used for recreational and commercial fishing. Contaminants can also migrate to the sea level aquifer. The primary water supply for Indian Island is imported via a pipeline from Port Townsend, however, two backup wells are maintained that tap the sea level aquifer. Because of the tides, some of the Port Hadlock sites can only have cleanup activities scheduled for certain times of the year.

NATURAL RESOURCES - Several beaches around Port Hadlock are productive shellfish propagation areas. A Current Situation Report, completed in FY88, found trace metals, including lead, organics, and petroleum hydrocarbons in shellfish near Site 10 (North End Landfill). Threatened or endangered bird species in the Port Hadlock area include the bald eagle, the American Peregrine Falcon, and the Aleutian Canadian Goose. Site 11 (Walan Point) is adjacent to a bird sanctuary and a wetland that provide habitats for threatened and endangered species.

RISK - Four sites at Port Hadlock received a high relative risk ranking using the DOD Relative Risk Ranking System. All sites have groundwater contamination. The landfill site, Site 10, also has contaminants in sediments. Receptors are human and ecological, threatened and endangered species. There is evidence of unacceptable risk from eating shellfish harvested from the wetlands and shoreline areas which are adjacent to the landfill. Sites 11 and 12 are former ordnance disposal areas. Site 11 is also adjacent to wetlands and shoreline areas. Site 21 was used as a disposal site in the 1940's. Soils contaminated with ordnance were removed from Sites 11 and 12 in FY94. Soil containing metallic refuse and other debris was removed from Sites 11 and 12 in FY95. Remedial action involving a landfill cap at Site 10 will be completed in FY97. Site 10 will also have a shoreline protection system and groundwater and shellfish monitoring. The Agency for Toxic Substances and Disease Registry (ATSDR) completed a Public Health Assessment in 1995. Recommendations were made for further shellfish monitoring. No immediate concerns were found.

RESTORATION PROJECTS - Removal actions at Site 11 (Walan Point) included salvaging and transplanting selected native plants to twelve capillary beds. The beds were maintained and watered on a regular basis throughout the removal actions. In addition, seeds of selected native species (shrubs and herbs) from areas within and adjacent to the construction zone at Site 11 were collected, cleaned, and dried. After all removal actions were completed at Site 11 and Site 12 (Griffin Street), a successful vegetative restoration program was conducted. An innovative technology, bio-geo-engineering, has been applied to protect the shoreline at Site 10. The bank was eroding and spilling landfill contents onto the beach. Working with Native Tribes and State Agencies such as Department of Wildlife, Department of Natural Resources, and Department of Ecology, this problem has been solved by planting selected vegetation on the bank.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - Port Hadlock was listed on the National Priorities List (NPL) in June 1994 based on a Hazard Ranking System (HRS) score of 50.00. The landfill at Site 10 has contributed to contamination of the surrounding beaches through erosion and groundwater. It is a critical site and contributed heavily to the NPL scoring.

LEGAL AGREEMENTS - An Interagency Agreement (IAG) was negotiated and signed in August 1996 between the Navy, State of Washington and EPA Region X.

PARTNERING - Partnering with regulators and the public allowed a fast cleanup at Site 11, precluding the need for an RI/FS. This saved the Navy over two million dollars. The site was listed as no further action in the ROD signed in August 1995. Also, the State of Washington removed Site 11 from the Washington State Hazardous Sites List.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in 1988. The TRC was converted to a Restoration Advisory Board (RAB) in July 1995. There are 30 RAB members from regulatory agencies, local Native American tribes, and the community. The RAB meets quarterly.

COMMUNITY RELATIONS PLAN - The Community Relations Plan (CRP) was finalized in FY92 and was revised in May 1996. A series of fact sheets for the installation cover topics such as state involvement and oversight, the Site Hazard Assessment program, and the results of shellfish and sediment sampling.

INFORMATION REPOSITORY - The Administrative Record was established in the 1980's. An Information Repository, containing copies of the Administrative Record documents, is available to the public at the Jefferson County Library in Port Hadlock.

HISTORICAL PROGRESS

FY79 - FY90

Site 10 - The SI was completed. Trace metals (including lead), organics, and petroleum hydrocarbons were found in soil, sediment, and shellfish. An RI/FS was recommended.
Site 17 - A tank was removed and field monitoring of explosive gas concentrations was completed. The RA was completed and involved the installation of piping and fans to vent the methane gas in the tank, which reduced methane gas levels to below explosive level.
Site 21 - An SI was completed. Halogenated hydrocarbons and polynuclear aromatic hydrocarbon were found in the soil. An RI/FS was recommended.

FY91

Sites 10, 11, 12, 15, 18-20, 21 and 22 - The State of Washington Department of Ecology issued an Enforcement Order for NOC Port Hadlock. The state's primary concerns involved ordnance contamination at sites that were not recommended for further action in the PA. As a result of negotiations between the Department of the Navy and the State of Washington, a Site Hazard Assessment (equivalent to an SI) was conducted for these sites.
Site 13 - One 3,000 gallon tank leaked; less than 500 gallons were lost and the tank was repaired. Later that year, the same tank failed a precision tightness test. The RA consisted of tank removal and removal of petroleum contaminated soils. The soils were landfarmed on site to reduce levels to below regulatory limits.

PORT HADLOCK NOC PAC DIV DET HISTORICAL PROGRESS

Site 15, 19, 20 and 22 - These sites were recommended for no further action.
Site 16 - Removal action of the underground storage tanks was completed.
Sites 18 and 20 - It was determined that more extensive sampling and analysis needed to be conducted to further characterize the nature and extent of the contamination before the site would be recommended for an RI/FS.

FY93

Site 11 - The SI was completed and recommended for a removal action and RI/FS.
Site 12 - The SI was completed and recommended for a removal action and RI/FS.
Site 18 - The SI was completed and a removal action was recommended.
Site 20 - The SI was completed and recommended for NFA.
Site 30 - The SI was completed at this sites that was identified during construction of a vehicle wash area. Contamination consisting of diesel and heavy oils in soils was verified.

FY94

Site 13 - Steps were taken to prepare the landfarm for closure.
Site 30 - A removal action consisting of removing petroleum contaminated soil and landfilling of the site was completed. No further action is anticipated.
Site 33 - This site was added to the program. An SI is planned.

FY95

Sites 11, 12 and 18 - Interim Removal Action (IRA) was completed. Sites 11 and 12 have Native American archeological concerns. Soil containing metallic refuse and other debris was removed from Sites 11 and 12 and placed at an approved disposal facility. Site 18 was a catch basin for drain pipes and contained sediments contaminated with Polynuclear Aromatic Hydrocarbons (PAHs). These sediments were removed. Compliance monitoring at these three sites began to determine if the removal action was effective. A ROD was signed in August listing these sites as No Further Action (NFA). Monitoring was completed for Sites 11 and 18. An RI/FS was not required for Site 11.
Sites 10 and 21 - A Record of Decision (ROD) was signed in August 1995. This ROD presents the selected remedial action for Sites 10 and 21. The landfill at Site 10 has contributed to contamination of the surrounding beaches through erosion and groundwater. It is a critical site and contributed heavily to the NPL scoring. The site is eligible for the National Register for Historical Places. Remedial action will include capping the landfill and installing a shoreline protection system along the perimeter of the landfill to keep landfill contents from eroding onto the beach. This shoreline protection system will incorporate bio-geo-engineering techniques. The ROD specifies groundwater monitoring for two years at Site 21, and old fill area, to determine whether the detections of certain chemicals in the groundwater during the RI were anomalous.
Site 34 - A new site was identified. Site 34 is an Open Burn/Open Detonation Area. A Site Inspection (SI) began to determine the extent of contamination at this new site.
Sites 11, 12, 15, 18, 20 and 22 - An NFA ROD was signed in August 1995.

PROGRESS DURING FISCAL YEAR 1996

FY96

Site 10 - RD was completed. RA will begin of landfill cap and shoreline protection system. An innovative technology, bio-geo-engineering, has been designed to protect the shoreline. The bank was eroding and spilling landfill contents onto the beach. This problem has been solved by planting selected vegetation on the bank. A Memorandum of Agreement between the Navy and the National Council of Historic Places was signed for archeological protection during construction.
Site 12 - Compliance monitoring continued at this site.
Site 21 - Two years of groundwater monitoring began, as specified in the ROD.
Sites 10, 11, 12, 15, 18, 20, 21 and 22 - An Interagency Agreement was signed in August 1996 between the Navy, EPA Region X and Washington State.
Sites 11, 12, 18 and 21 - RD completed.
Site 18 - RA, LTO (RAO), and RC complete.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Site 10 - Long term groundwater monitoring and shellfish monitoring will begin following construction of cap and shoreline protection system.
Site 21 - Groundwater monitoring, as specified in the ROD signed in 1995.
Site 34 - IRA planned to be started and completed.
Sites 33 and 35 - Complete SI. Site 33 is an abandoned rifle range. Site 35 is an old paint storage area.
Site 33 - Complete RI/FS, RD, AND RAC.

FY98

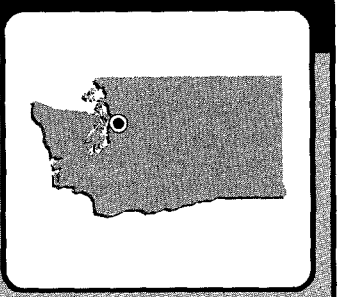
Site 10 - Groundwater and shellfish performance sampling will continue.
Site 21 - Anticipated NFA. Complete RA and IRA.
Site 34 - Anticipated RA completed with NFA agreement.
Site 35 - Complete SI.
Site 35 - Complete SI and RA.

PORT HADLOCK NOC PAC DIV DET PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	14		2	1				
RI / FS	5		1		1			
RD		5	1		1			
RAC	3	1	1	1	2	2		
RAO		1		1		2		1
IRA	7(8)		1(1)	1(1)		2(2)		
RC	9	1			2	4		1
Cumulative % RC	53%	59%	59%	59%	71%	94%	94%	100%

PUGET SOUND FLEET AND INDUSTRIAL SUPPLY CENTER BREMERTON

PUGET SOUND, WASHINGTON



Engineering Field Division/Activity: EFANW

Major Claimant: COMNAVSUPSYSCOM

Size: 29 Acres

Funding to Date: $17,861,000

Estimated Funding to Complete: $5,327,000

Base Mission: Procures equipment and services for naval activities

Contaminants: Heavy metals, scrap metal, PCBs

Number of Sites:

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

Relative Risk Ranking of Sites:

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

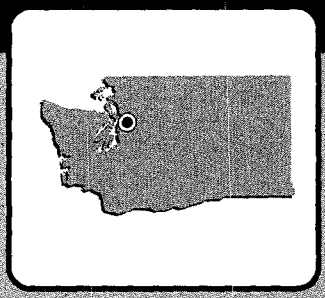
Sites Response Complete: 0

PROGRESS AND PLANS

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

PUGET SOUND FLEET AND INDUSTRIAL SUPPLY CENTER MANCHESTER

PUGET SOUND, WASHINGTON



Engineering Field Division/Activity: EFANW

Major Claimant: COMNAVSUPSYSCOM

Size: 234 Acres

Funding to Date: $176,000

Estimated Funding to Complete: $2,244,000

Base Mission: Supplies fuels and lubrication oils to fleet and shore activities

Contaminants: PCBs, heavy metals, POLs

Number of Sites:

CERCLA:	2
RCRA Corrective Action:	0
RCRA UST:	2
Total Sites:	4

Relative Risk Ranking of Sites:

High:	0	Not Evaluated:	0
Medium:	0	Not Required:	3
Low:	1		

Sites Response Complete: 3

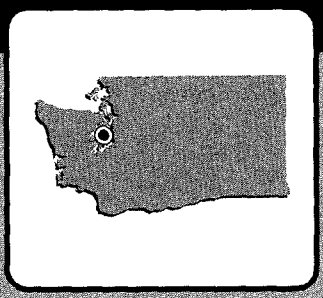
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	2							
RI / FS	1							
RD	1							
RAC		1						
RAO								
IRA	1(1)							
RC	1	1						
Cumulative % RC	50%	100%	100%	100%	100%	100%	100%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	1	1						
CAP								
DES								
IMP					1			
IMO								
IRA								
RC		1			1			
Cumulative % RC	0%	50%	50%	50%	100%	100%	100%	100%

PUGET SOUND NAVAL HOSPITAL BREMERTON

BREMERTON, WASHINGTON



Engineering Field Division/Activity: EFANW

Major Claimant: BUMED

Size: 48 Acres

Funding to Date: $0

Estimated Funding to Complete: $0

Base Mission: Provides clinic and hospital services; originally used for ammunition storage and ordnance demilitarization

Contaminants: Solvents, heavy metals, POLs

Number of Sites:

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

Relative Risk Ranking of Sites:

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

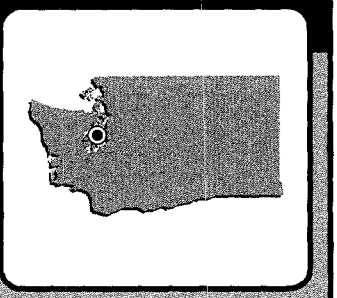
Sites Response Complete: 0

PROGRESS AND PLANS

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP								
DES								
IMP								1
IMO								
IRA			1(1)					
RC								1
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

PUGET SOUND NAVAL SHIPYARD

BREMERTON, WASHINGTON



Engineering Field Division/Activity: EFANW

Major Claimant: COMNAVSEASYSCOM

Size: 1,392 Acres

Funding to Date: $44,872,000

Estimated Funding to Complete: $43,784,000

Base Mission: Provides logistic support for assigned ships and service craft; performs authorized work in connection with construction, overhaul, etc.

Contaminants: Heavy metals, grit, paint, solvents, construction debris, acids, silver nitrate

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	17	High:	18	Not Evaluated:	2
RCRA Corrective Action:	0	Medium:	1	Not Required:	12
RCRA UST:	16	Low:	0		
Total Sites:	33				

NPL

Sites Response Complete: 12

EXECUTIVE SUMMARY

The Puget Sound Naval Shipyard (PSNSY) is located across the Sound, west of Seattle, Washington. The shipyard sits on a peninsula that is bordered on the south, east, and north by various bays and inlets of Puget Sound. PSNSY is bordered to the north by the City of Bremerton. The majority of the PSNSY is built on contaminated fill material. This fill material acts as a continuing source of contaminants.

Jackson Park Housing was originally included in the Naval Submarine Base Bangor Initial Assessment Study (IAS) but has since been moved into the PSNSY Installation Restoration Program (IRP) due to a change in ownership. The entire eastern edge of Jackson Park and Naval Hospital consists of shoreline (tide flats). The base is located directly on Ostrich Bay, which is part of Dyes Inlet. The main sources of contamination at Jackson Park are related to past operations. Ammunition and fuel oil were stored and handled, dry waste powders were collected and burned along the northern shore, liquid ammunition wastes were collected into an ammunition recovery system and were also washed into floor drains during daily cleaning of the industrial buildings. The wastewater drained directly to Ostrich Bay. The Navy has changed its operational processes to prevent further contamination. All sites at PSNSY and Jackson Park were evaluated in scoring the sites for inclusion on the National Priorities List (NPL). Both PSNSY and Jackson Park Housing were listed on the NPL in May 1994.

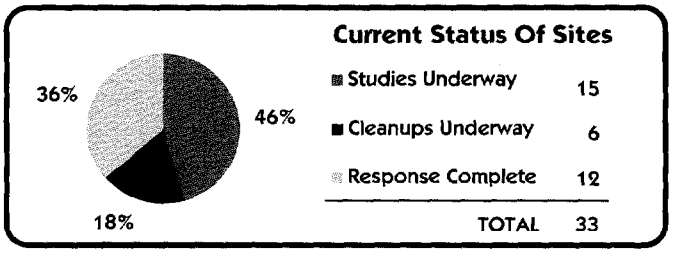
PSNSY and Jackson Park had Technical Review Committees (TRCs) that were converted to Restoration Advisory Boards (RABs) in September 1994. The RABs held their first meetings in October 1994. The RABs meet monthly and membership includes Native American Tribes in the local area, community representatives, regulatory agencies, and the Navy. Both RABs were actively involved in an Environmental Cleanup Information Fair in May 1995 at the Kitsap Regional Library. Visual and hands on displays described the cleanup work at PSNSY and Jackson Park. RAB members and regulators, including the Agency for Toxic Substances and Disease Registry (ATSDR), answered questions and distributed handouts.

Sampling and analysis of soils was conducted at Sites 104, 105, and 106 (OU B) to gain further understanding of the cleanup required in the industrial area of PSNSY. Also, 200 sea cucumbers were collected from Sinclair Inlet and Rich Passage for physical and chemical analysis. The sea cucumbers collected from Rich Passage were used as a baseline for reference. Rich Passage is open to harvesting and 45 tons are harvested annually. The information collected will be used during the Remedial Investigation/Feasibility Study (RI/FS).

A small landfill was discovered during construction at Site 110. A time critical removal action was initiated to protect the health and safety of the residents and workers.

PSNSY and Jackson Park have taken steps to accelerate cleanups and facilitate discussions with the regulators and other agencies. Both installations have a Memorandum of Understanding with the U.S. Geological Survey (USGS). USGS provides technical support and has conducted a detailed study of the Puget Sound drydock system to determine the effect the docks may have on groundwater flow.

An innovative technology in use at PSNSY is steam sparging. Two 4.9 million gallon concrete Underground Storage Tanks (USTs) leaked large amounts of Bunker C oil into the subsurface environment. Steam sparging, which entails the injection of steam into the ground to lower the viscosity of the contaminant, allows the product to be drawn to extraction wells for removal and recycling. This technology will eliminate an extensive RI/FS at the site. Community members are very appreciative of this simple yet cost-effective measure to reduce hazardous wastes in Puget Sound.



PUGET SOUND NSY
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Direct recharge from precipitation is the major source of water to the aquifer groundwater system in the PSNSY area. Because there are no major streams in the area, all water from precipitation must either run-off to storm sewers, return to the atmosphere, or percolate to the water table. All groundwater must either discharge directly to Sinclair Inlet, to springs along the shoreline, or to the drydock at the Shipyard. The shipyard and the entire area surrounding it are served by public water systems. There are few wells in the area other than the monitoring wells at PSNSY. Similarly, Jackson Park Housing Complex and Naval Hospital are served by public water. Direct recharge from precipitation is the major source of water to the aquifer. There is a small stream that passes through the base during the winter, but dries up in the summer. All storm water discharges into Ostrich Bay via surface water runoff, as groundwater that seeps along the beach, or through the storm water system.

NATURAL RESOURCES - Water is the predominant natural resource in the area. Sinclair Inlet and Ostrich Bay are rated as Class A (Excellent) bodies of water according to the State of Washington. Under this classification, water uses to be protected include anadromous salmon migration and rearing, commercial fish and shellfish reproduction and harvesting, boating, fishing, aesthetics and water contact recreation, industrial water supply and navigation.

The only known federal endangered species in Kitsap County are the bald eagle and spotted owl.

RISK - Baseline Human Health Risk Assessments have been completed for Sites 2 and 3 at PSNSY. Marginal risk exists from exposure to soils but that risk has been reduced since the recent paving of the sites. A risk exists for eating fish and shellfish collected from Sinclair Inlet. The State currently recommends not collecting shellfish from Sinclair Inlet. Fishing is not restricted at this time.

Eighteen sites at PSNSY have received a high relative risk ranking in the DOD Relative Risk Ranking System. Many of these sites are in close proximity to the Sinclair Inlet. Groundwater contaminated with heavy metals, the chemical additive PCB, and battery acids, discharges into Sinclair Inlet. Receptors include marine fauna, shellfish, and sediment burrowing organisms that may then result in uptake through the food chain. Native Americans have fishing rights to the Sinclair Inlet.

Currently at PSNSY, terrestrial risk has been reduced by paving all sites and establishing a protocol for excavations within sites when necessary for utility work and repairs.

The risks from Jackson Park and Naval Hospital are primarily attributed to shellfish consumption. There is an additional risk from soil intake in a lifetime exposure. Four sites at Jackson Park have a high relative risk ranking. Previous to becoming a military residence, operations in the Jackson Park area, along the shoreline of Ostrich Bay, included ordnance production and demilitarization. Liquid wastes were generated when ordnance production areas were washed down. Wastewater was discharged directly into Ostrich Bay. Ecological receptors are shellfish. Analytical results for surface water showed concentration of metals. Analytical results for marine sediments showed detectable concentrations of Semi-volatile Organic Compounds (VOCs), ordnance and metals. The close proximity of the groundwater to the shoreline provides an additional potential pathway to sediments.

The Agency for Toxic Substance and Disease Registry (ATSDR) conducted site visits in February 1993 at PSNSY and in November 1993 at Jackson Park for the purpose of gathering information used in the preparation of a Public Health Assessment. Site summaries and site rankings were provided by ATSDR in June 1994. PSNSY received a "D" ranking and Jackson Park received a "C" ranking. Both rankings indicate a low priority for a full health assessment.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - All sites at PSNSY and Jackson Park were evaluated in scoring the sites for inclusion on the National Priorities List (NPL). Both PSNSY and Jackson Park Housing were listed on the NPL in May 1994. The Hazard Ranking System (HRS) score for both activities was 50.00.

LEGAL AGREEMENTS - A Federal Facilities Agreement (FFA) is not planned for PSNSY or Jackson Park at this time. The shipyard applied for a RCRA Part B permit. As a result, a RCRA Facility Assessment (RFA) for PSNSY was finalized by EPA Region X, and received by the Department of the Navy in December 1992. The facility is still in Interim Status and in August 1995 filed an updated Part B permit application with the state. No corrective actions have been initiated at this time and it is anticipated that CERCLA actions will accomplish any corrective actions necessary. All Jackson Park sites are being handled under CERCLA. Jackson Park is a housing area and does not have a RCRA permit or any RCRA associated activities ongoing.

The following sites have been associated with the following Operable Units:

OUA-SITE 3
OUB-SITES 1,2,6,7,8,9,104,105,106.
OUC-SITE 11
OU1-SITES 101,102,103 JACKSON PARK
OU2-SITES 101,102,103 JACKSON PARK (MARINE PORTION)

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - Jackson Park formed its Technical Review Committee (TRC) in FY91. PSNSY formed its TRC in FY92 and the group met quarterly. Both TRCs enabled the Navy to involve the regulatory agencies in scoping phases of studies and decision-making. The TRCs were converted to Restoration Advisory Boards (RABs) in September 1994. The RABs held their first meetings in October 1994. The RABs meet monthly and membership includes Native American Tribes in the local area, community representatives, regulatory agencies, and base personnel. Board members include a fishing specialist for the Tribes, a representative from the National Oceanic and Atmospheric Administration and a health specialist.

Both RABs were actively involved in an Environmental Cleanup Information Fair in May 1995 at the Kitsap Regional Library. Visual and hands on displays described the cleanup work at the Shipyard and Jackson Park. RAB members and regulators, including the Agency for Toxic Substances and Disease Registry (ATSDR), answered questions and distributed handouts.

COMMUNITY RELATIONS PLAN - In FY92, a Community Relations Plan (CRP) for Jackson Park was completed. A CRP was completed for PSNSY in early FY93. Both CRP were updated in FY95 to include the NPL status of the facilities and reflect the formation of the RABs.

INFORMATION REPOSITORY - The Administrative Record for PSNSY and Jackson Park is maintained at EFA Northwest in Poulsbo, Washington. Information Repositories for PSNSY were established in 1992 at the three branches of the Kitsap Public Library (Downtown and Central Branches) and the Port Orchard Library. Four Information Repositories were established in 1992 for Jackson Park, one at each of the three branches of the Kitsap Public Library and one at the Jackson Park Community Center.

PUGET SOUND NSY
HISTORICAL PROGRESS

FY83

Sites 1-11 - An Initial Assessment Study(IAS), equivalent to a Preliminary Assessment (PA), identified six potentially contaminated sites at Naval Shipyard (NSY) Puget Sound. A supplemental PA in FY90 identified an additional five potentially contaminated sites. Of these sites, nine were recommended for further investigation.
Sites 101-108 - A draft IAS was completed at Jackson Park Housing and identified eight sites. Two sites (Sites 101 and 103) were recommended for further investigation, six sites (Sites 102, 104-108) were recommended for No Further Action (NFA).

FY88

Sites 101, 102 and 104-108 - A PA was completed for these sites.
Sites 101 and 103 - A Current Situation Report, equivalent to a Site Inspection (SI) for Jackson Park Housing was completed. The SI found low concentrations of picramic acid, and the following volatile and semi-volatile organic compounds: phthalate, methylene chloride, and trichloro-ethylene in surface water. Also found were elevated levels of picramic acid and phthalates in shellfish and fish tissue. Elevated levels of heavy metals (copper, lead, and zinc) were detected in surface water, but these levels may be related to existing residential storm water contributions and not to previous installation activities. The SI recommended further investigation of Sites 101 and 103. After completion of the SI, Site 101 was divided into two sites: Ordnance and Wastewater Discharges (Site 101) and South Jackson Park Beach (Site 101A).

FY90

Site 6 - The SI was completed.
Sites 1-6 - A supplemental PA was completed for these sites.
Sites 7-11 - The supplemental PA identified these five new sites.
Sites 1, 3 and 6-11 - These eight sites were recommended for an SI due to suspected soil, sediment, and groundwater contamination
Sites 4 and 5 - Recommended for No Further Action (NFA). The sites pose no threat to human health or the environment.

FY92

UST 1 - An Underground Storage Tank (UST) Validation Report was prepared. The study identified 26 tanks that are currently abandoned. Nine of the abandoned tanks were removed. Of these tanks, three had leaked extensively.
Sites 1-3 and 7-10 - The SI was completed.
Sites 1-10 - Recommended for an RI/FS.
Sites 1-3 and 6-11 - The State of Washington Department of Ecology issued an Enforcement Order for PSNSY. The Enforcement Order required the Department of the Navy (DON) to complete a Remedial Investigation/ Feasibility Study (RI/FS) and cleanup action plan and to submit proposals for Interim Remedial Action (IRA) alternatives to reduce exposure of on-site workers to contaminated surface soil.

FY93

Site 110 (Jackson Park Uplands) - An SI was completed. Site 110 consists of a consolidation of Sites 102, 104, 105, 106, 107 and 108. The sites comprising Site 110 were reinvestigated as a result of a February 1992 Enforcement Order issued by the State of Washington, Department of Ecology.
Sites 101, 101A, 103 and 115 - The Enforcement Order also required that an RI/FS be conducted at Sites 101, 101A, 103 and 115. Site 115 consisted of the marine waters, sediment, and biota that have been contaminated with hazardous substances as a result of past site activities; this site has since been incorporated into Sites 101, 101A and 103.

FY94

Site 2 - A removal action was completed to remove soil contaminated with lead, the chemical additive PCB, mercury, and TPH. The soil was excavated and disposed of off-site at an approved disposal facility.
Site 102 (South Jackson Park) - A 100,000 gallon tank, a smaller tank, and the surrounding soil were removed to mitigate visible oil seepage along South Jackson Park Beach, which may have resulted from leaks from the tank or its associated piping.
Site 110 - Two soil removal actions have been completed. During the removal, additional contamination was found. Soil excavated from Site 110 has been thermally treated.
UST 1 - Five tanks were removed. There was no evidence of leakage and no further action is required. Remaining abandoned tanks were removed or closed. All of the 26 tanks identified were included in the 16 sites.

FY95

OU A, Site 3 - RI/FS was completed.
Site 6 - In the waters of the Puget Sound, divers from PSNSY removed a considerable amount of hazardous debris, compressed cylinders, paint cans, and other assorted wastes.
Sites 104, 105 and 106 (OU B) - Sampling and analysis of soils was conducted to gain further understanding of the cleanup required in the industrial area of PSNSY. The presence of the chemical additive PCB and arsenic was evaluated. Also, 200 sea cucumbers were collected from Sinclair Inlet and Rich Passage for physical and chemical analysis. The sea cucumbers collected from Rich Passage were used as a baseline for reference. Rich Passage is open to harvesting and an average of 45 tons are harvested annually. The information collected will be used to complete the Remedial Investigation/Feasibility Study (RI/FS).
Sites 101, 102, 103 (Jackson Park Housing) - Soil and groundwater sampling and analysis was conducted. Remedial Investigation (RI) was completed.
Site 11 - An Innovative Technology Demonstration Program involving steam sparging was used to heat the Bunker C fuel that has contaminated soils and groundwater and then mobilize the fuel to points where it can be pumped and removed. The SI for Site 11 was completed.
Site 110 - Soil excavated was thermally treated.
UST TANKS - Negotiations with State regulators identified additional action on 5 tanks.

PROGRESS DURING FISCAL YEAR 1996

FY96

Sites 101-103 (Jackson Park Housing) - Feasibility Study is in review for OU1 and OU2.
OU A, Site 3 - Ongoing RI/FS. Initiated RA work plans and preparing decision documents.
OU B - Ongoing RI/FS at OU-B, Sites 1, 2, 6, 7, 8, 9, 104, 105, 106. The primary objective is to determine impacts on Sinclair Inlet from upland sources.

OU C, Site 11, - RA is on-going. Recovery of free-product (Bunker C and diesel fuel) using steam sparging demonstration has been successful. RA initiated on 5 tanks.

The three RI/FSs were to be completed at Sites 101, 102, and 103. The document was forwarded to EPA Region X and The Washington State Department of Ecology. The review required additional study which caused a slippage in completed the three RI/FSs This also delayed the RD at Site 103.

PUGET SOUND NSY
PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

OU A, Site 3 - On-going RI/FS.
OU B - RA work plan for OU-B to be completed.
OU C - Validation of steam sparging demonstration will be completed.
Site 11 - Steam sparging demonstration of subsurface water contaminated with Bunker C oil will be completed (IRA).
Sites 101, 102 and 103 - (Jackson Park Housing) complete RI/FS.
Site 110 - Complete RI/FS.
Site 106 - Complete RD.
Site 103 - Complete IRA.
UST Tanks - RA to be completed for six tanks. Plan to be RC.

FY 98

Sites 1, 2, 3, 6, 7, 8, 9, 11, 104, 105 and 106 - Complete RI/FS.
Sites 1, 3, 8, 101, 102, 103, 104, 105 and 110 - Complete RD.
OU 1 and OU 2 - Plan to award RA.
OU A, Site 3 - On-going RA.
OU B - RA at OU-B will be initiated.
OU C - RA ongoing. Expansion of steam sparging facility to encompass full area of contamination.

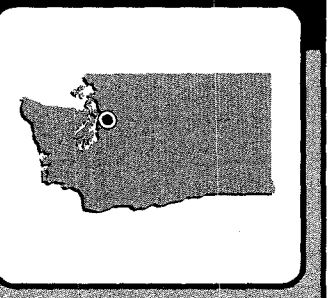
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	17							
RI / FS			4	11				
RD			1	9			1	
RAC					1	9	1	4
RAO						1		6
IRA	9(9)		2(2)		4(4)	2(2)		2(2)
RC	2					4		11
Cumulative % RC	12%	12%	12%	12%	12%	35%	35%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP	2							
DES								
IMP	10		6					
IMO								
IRA	16(18)		6(6)					
RC	10		6					
Cumulative % RC	63%	63%	100%	100%	100%	100%	100%	100%

PUGET SOUND NAVAL STATION

PUGET SOUND, WASHINGTON



Engineering Field Division/Activity: EFANW
Major Claimant: COMNAVFACENGCOM
Size: 151 Acres
Funding to Date: $1,459,000
Estimated Funding to Complete: $0

Base Mission: Maintains and operates facilities and provides services and materials support for Navy operations forces and tenant shore activities

Contaminants: PCBs, pesticides, volatile and semi-volatile organic compounds

Number of Sites:

CERCLA:	8
RCRA Corrective Action:	0
RCRA UST:	3
Total Sites:	11

Relative Risk Ranking of Sites:

High:	0	Not Evaluated:	0
Medium:	0	Not Required:	11
Low:	0		

BRAC II

Sites Response Complete: 11

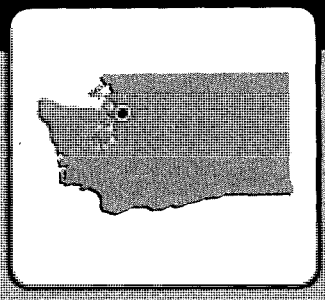
PROGRESS AND PLANS

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

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	3							
CAP								
DES	1							
IMP	1							
IMO								
IRA	1(1)							
RC	3							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

PUGET SOUND NAVAL STATION EVERETT

EVERETT, WASHINGTON



Engineering Field Division/Activity:
Major Claimant:
Size:
Funding to Date:
Estimated Funding to Complete:

Base Mission:
Contaminants:

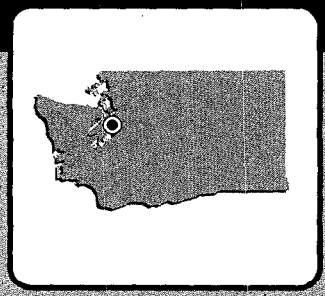
Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	0	High:	0	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	0	Not Required:	0
RCRA UST:	1	Low:	1		
Total Sites:	1				

Sites Response Complete: 0

PROGRESS AND PLANS

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA				1				
CAP				1				
DES								
IMP				1				
IMO								
IRA								
RC								1
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

SEATTLE NAVAL RESERVE READINESS CENTER
SEATTLE, WASHINGTON



Engineering Field Division/Activity: EFANW
Major Claimant: COMNAVRESFOR
Size: 5 Acres
Funding to Date: $0
Estimated Funding to Complete: $772,000

Base Mission: Reserve Center
Contaminants: TPH

Number of Sites:

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

Relative Risk Ranking of Sites:

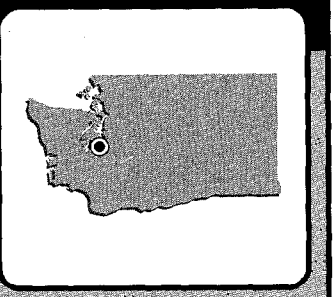
High:	0	Not Evaluated:	0
Medium:	0	Not Required:	0
Low:	1		

Sites Response Complete: 0

PROGRESS AND PLANS

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP			1					
DES								
IMP				1				
IMO								
IRA								
RC				1				
Cumulative % RC	0%	0%	0%	100%	100%	100%	100%	100%

TACOMA NAVAL AND MARINE CORPS RESERVE CENTER
TACOMA, WASHINGTON



Engineering Field Division/Activity: EFANW
Major Claimant: COMNAVRESFOR
Size: 14 Acres
Funding to Date: $251,000
Estimated Funding to Complete: $0

Base Mission: Educates, administers, trains, and mobilizes Naval Reservists

Contaminants: POLs

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

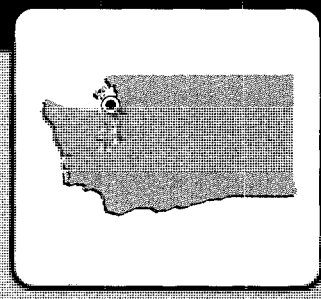
Relative Risk Ranking of Sites:			
High:	0	Not Evaluated:	0
Medium:	0	Not Required:	1
Low:	0		

Sites Response Complete: 1

PROGRESS AND PLANS

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA								
CAP								
DES								
IMP	1							
IMO								
IRA	1(1)							
RC	1							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

WHIDBEY ISLAND NAVAL AIR STATION
OAK HARBOR, WASHINGTON



Engineering Field Division/Activity: [illegible]
Major Claimant: CINCPACFLT
Size: [illegible]
Funding to Date: [illegible]
Estimated Funding to Complete: [illegible]

Base Mission: Serves as training and operations center for the A-6 and A-6E Bomber Squadrons; serves as center for U.S. Navy and Marine Corps reserve training in the Pacific Northwest.

Contaminants: Chlorinated solvents, PCBs, polynuclear aromatic hydrocarbons

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	53	High:	6	Not Evaluated:	10
RCRA Corrective Action:	0	Medium:	2	Not Required:	71
RCRA UST:	36	Low:	0		
Total Sites:	89				

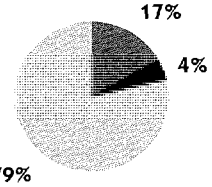
NPL

Sites Response Complete: 70

EXECUTIVE SUMMARY

Naval Air Station (NAS) Whidbey Island is located north of Oak Harbor in Island County, Washington. NAS Whidbey occupies four separate areas on Whidbey Island: the Ault Field north of Oak Harbor; the Seaplane Base east of Oak Harbor; the Outlying Field near Coupeville; and the Lake Hancock Target Range. Whidbey Island NAS serves as training and operations center for the A-6 and A-6 E bomber squadrons and as a center for U.S. Navy and Marine Corps reserve training in the Pacific Northwest. Past disposal practices have resulted in contamination at several sites, including six former landfill areas. Other operations that contributed to contaminated sites on the base include aircraft maintenance, vehicle maintenance, public work shops and fire fighting training. Contaminants were found in groundwater, surface water, sediments, and soil. In February 1990, Ault Field and the Seaplane Base were put on the National Priorities List (NPL) due to the number of waste disposal and spill sites. There was also the potential for wastes originating from Ault field and the Seaplane Base to affect domestic drinking water wells and local shellfish beds. The Federal Facilities Agreement among the Navy, EPA, and the State of Washington Department of Ecology was signed in September 1990. It required the Navy to further investigate Ault Field and the Seaplane Base and evaluate methods for cleanup. Soil excavation activities at the Seaplane Base have sufficiently reduced the threat to human and health and the environment. The EPA removed the Seaplane Base from the National Priorities List on 21 September 1995. The State of Washington removed the Seaplane Base from their Hazardous Sites List on 22 August 1995. This was the first such delisting for the Navy.

Surface runoff from NAS Whidbey Island discharges directly into the Straits of Juan de Fuca, Dugualla Bay at Ault Field, and into Crescent Harbor and Oak Harbor at the Seaplane Base. The beaches and bays around the island are popular fishing and shellfish gathering areas. A drinking water aquifer for the island underlies the installation and is the primary and sole source of water for most of rural Whidbey Island.



Current Status Of Sites

Studies Underway	15
Cleanups Underway	4
Response Complete	70
TOTAL	89

The Community Relations Plan (CRP) was finalized in FY91 and revised in FY95. The Technical Review Committee (TRC) was converted to a Restoration Advisory Board (RAB) in FY94. This was one of the first five RABs within the Navy and Marine Corps. Comments have been solicited from the community at an Open House. Information Repositories have been established at three local libraries.

A Hazardous Waste Evaluation Study (HWES) performed in 1994, recommended 17 sites for No Further Action (NFA). In FY94, a tank was removed at Site 11 and contaminated soil was removed at Site 37. Corrective Actions were completed for 16 UST sites. USTs were removed from Whidbey Island in FY95. In FY95, Site 6 of OU 1 - Groundwater contamination from a former Navy landfill was migrating off-base and threatening private landowners. A pump and treat system was installed and began full scale operations. The landfill is currently being capped. OU 3 - A ROD was signed in April 1995 and Remedial Design (RD) completed. OU 2 - Remedial Action was completed and soils contaminated with PCB, organic compounds and pesticides were removed. OU 4 - The final Remedial Action was completed on soils contaminated with arsenic, chromium, lead, organic compounds and pesticides. OU 5 - An RI/FS was completed. Initiated proposed RA plan. At sites 15, 20 and 45, tanks were removed.

The Seaplane Base was delisted from the National Priority List (NPL) and the State of Washington's Hazardous Sites List. LTM is not required.

In FY97, at Site 6, the landfill cap is planned to be completed in November 1996. Also at Site 6, the RA to pump and treat groundwater will continue to operate. Technological upgrade was to add bacteriological controls to the air stripper. Improved cap design to reduce risk to human health contaminants. Site 36, UST 237 was closed in place. Site 51, Initialed Washington State Hazard assessment at Lake Hancock.

The Navy has used various innovative concepts on OU 5. They include a qualitative (vs. quantitative) risk assessment, a focused Feasibility Study (FS) a combined RI/FS document, and a Reader's guide to the RI/FS document for the RAB and the community. All four of these innovative concepts expedited the cleanup process in FY95 by streamlining the Navy's efforts and facilitating an efficient RAB review of the RI/FS.

NAS Whidbey Island was recognized for its outstanding environmental cleanup program through the Secretary of Defense (SECDEF) Environmental Cleanup Award. This award represents a major accomplishment and environmental success for NAS Whidbey Island.

WHIDBEY ISLAND NAS
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - Surface runoff from NAS Whidbey Island discharges directly into the Straits of Juan de Fuca, Dugualla Bay at Ault Field, and into Crescent Harbor and Oak Harbor at the Seaplane Base. An important drinking water aquifer for the island underlies the installation. This aquifer is the primary and sole source of water for most of rural Whidbey Island. Groundwater contamination from a former Navy landfill at Site 6 (OU 1) was migrating off-base and threatening the drinking waterwells of private landowners. An Interim Remedial Action (IRA) addressed the primary risk posed to the public from groundwater contamination by controlling the spread of the contaminated plume of groundwater. The major components of the IRA included extracting groundwater to minimize the plume; treating extracted groundwater using metal precipitation and air stripping; reinjecting treated groundwater into the aquifer from which it was drawn; and monitoring groundwater to measure the effectiveness of the remedy. During pump and treat, residents were connected to public water supplies and their wells were closed. The IRA was completed in January 1994.

NATURAL RESOURCES - The beaches and bays around Whidbey Island are popular fishing and shellfish gathering areas. The bald eagle, a threatened species, and the peregrine falcon, an endangered species, may occasionally hunt at NAS Whidbey Island.

RISK - Six sites at NAS Whidbey Island have been ranked high relative risk. Discussion follows on what has been done at these high risk sites. Three high risk sites are old landfills. Two of the landfills, Sites 5 and 6, are contributing to groundwater contamination which is migrating from beneath the landfills to off-site residences. Site 6 had three million gallons of liquid wastes deposited at the site. A cap is being placed on the landfill to prevent rainwater from infiltrating through the landfill and into the groundwater with additional contaminants. The capping should be completed in FY97. The Pump and treat system became operational in June 1995.

OU 2 contains three high risk sites: Sites 4, 14 and 29. Site 4 is a former transformer storage area. Contaminated surface soils were threatening nearby wetlands, recreational areas and residential wells. Site 14 was a former pesticide disposal area. Contaminated groundwater at this site could have spread and threaten the sole source aquifer. Site 29 is a former fire training school. Contaminated soils and groundwater posed an ecological risk to humans and small mammals. In FY95, Remedial Action (RA) was completed at OU 2 and soils contaminated with PCBs, organic compounds and pesticides were removed.

OU 3 contains sites 16 and 31. Site 16 includes runway ditches. Contaminated soils and groundwater posed an ecological risk to humans and marine life. Site 31 is a former fire training area. Possible exposure pathways include contaminated surface and subsurface soil, and contaminated groundwater. Receptors include humans and small mammals. Remedial Action is underway to remove sediments contaminated with petroleum products, inorganics and organic compounds by dredging 7,000 linear feet of runway ditches.

RESTORATION PROJECTS - An RA provided an additional wildlife area at OU 4 by creating a pond. Removal of backfill material was done intentionally to create a pit with gradually sloping sides in order to form a pond at the borrow area.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - In February 1990, NAS Whidbey Island was listed on the National Priorities List (NPL) with Hazard Ranking System scores of 39.64 for Seaplane Base and 48.48 for Ault Field. Placement on the NPL was due to the number of waste disposal and spill sites discovered. Contaminants at these sites included large quantities of petroleum products, solvents, paints, thinners, jet fuel, pesticides, and other wastes. There was also the potential for wastes originating from Ault field and the Seaplane Base to affect domestic drinking water wells and local shellfish beds.

Soil excavation activities at the Seaplane Base have sufficiently reduced the threat to human and health and the environment. The EPA removed the Seaplane Base from the National Priorities List on 21 September 1995. The State of Washington removed the Seaplane Base from their Hazardous Sites List on 22 August 1995. This was the first such delisting for the Navy.

LEGAL AGREEMENTS - In September 1990, the Navy signed a Federal Facility Agreement (FFA) for Ault Field and the Seaplane Base. Individual sites within the two areas were grouped into Operable Units (OUs) to facilitate cleanup efforts.

The FFA specified that 26 sites undergo more intensive sampling programs, such as a Hazardous Waste Evaluation Study (HWES) for potential inclusion in an RI/FS. The HWES was completed. Sites 1 and 52 were recommended for an RI/FS as OU 5 due to soil and groundwater contamination. Sites 7-10, 19, 22-25, 27, 28, 32, 34, 40 and 53 were recommended for No further Action (NFA). The other sites included in the HWES will undergo removal actions followed by confirmatory sampling.

PARTNERING - To improve working relationships and expedite the cleanup program, the Navy includes regulators and contractors in scoping meetings. The decision-making process has improved by providing technical information to the regulators prior to the submission of primary deliverables. Prior to beginning the RI/FS for OU 5, the Navy conducted extensive scoping discussions with the EPA and the State of Washington. Working together, an investigation and remediation strategy was developed. Consequently there were minimal regulator comments on the RI/FS work plan, and the Navy was able to quickly complete the field sampling and the RI/FS document. The ROD for Operable Unit (OU) 3 was signed in April 1995 and the cleanup of OU 3 was also completed during FY95. Mutual trust between the Navy and the EPA helped expedite the cleanup process and saved significant environmental dollars.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - The Technical Review Committee (TRC) was formed in 1988 and met quarterly. The TRC was converted to a Restoration Advisory Board (RAB) in FY94. This was one of the first five RABs within the Navy and Marine Corps. The twenty-five RAB members meet bi-monthly and have reviewed numerous technical documents. The Navy prepared a Reader's Guide for the OU 5 RI/FS document. The Reader's Guide is an expanded executive summary which provides a technical synopsis of the RI/FS and includes figures and data tables. The Reader's Guide was well received by the RAB and the community.

COMMUNITY RELATIONS PLAN - The Community Relations Plan (CRP) was finalized in February 1991 and revised in FY95. A RAB brainstorming session was conducted to develop the list of community members to be interviewed as well as the interview questions. The Navy interviewed community members individually, and the entire community was invited to an open house to learn about the cleanup program and provide comments on the CRP update.

INFORMATION REPOSITORY - The Administrative Record is maintained at EFA Northwest, Poulsbo, Washington. Information Repositories have been established at the Oak Harbor Library, Oak Harbor Washington, at the Coupeville Library in Coupeville, Washington, and at the NAS Whidbey Library, Oak Harbor Washington.

WHIDBEY ISLAND NAS
HISTORICAL PROGRESS

FY84

An Initial Assessment Study (equivalent to a PA) identified 52 past spill and/or disposal sites. 34 sites were recommended for further study or mitigating actions and potentially involve soil, groundwater, sediment, and shellfish contamination.
Sites 1, 7-12, 15, 30, 33, 34 and 46-51 - Recommended for No Further Action (NFA) based on lack of information concerning migration or exposure pathways and contaminant concentrations.
Site 52 - Described in the IAS but not identified as a site until later.

FY88

Sites 2-6, 13-14, 16-29, 31-32 and 35-45 - A Current Situation Report (CSR) (equivalent to an SI) was completed. Sites 2 and 3 had groundwater contamination and discoloration of a few water samples. Site 4 had low levels of PCBs found in the soil. Oily seeps were found downgradient of Site 5. At Site 6, elevated levels of iron and chromium were found, and specific conductivity suggesting potential downgradient groundwater contamination. The CSR found no detectable pesticide or herbicide contamination of soil or groundwater at Site 14, although inhibited vegetation growth was observed in this area. At Site 16, significant concentrations of petroleum hydrocarbons, trace metals, and polynuclear aromatic hydrocarbons (PAHs) were found in soil and groundwater. At Site 29, significant concentrations of lead, organic halogens, and PAHs were found in soil. At Site 31, the CSR found surface soil contaminated with lead, organic halogens, PCBs, and PAHs. The Ault Field Sites were found to have groundwater contaminated with petroleum hydrocarbons, organic carbon, and organic halogens. Sites 35-45 had slightly elevated levels of trace metals detected in sediment and shellfish. All sites except for Sites 32 and 38 were recommended for an RI/FS. Sites 32 and 38 were recommended for no further action.
Sites 21, 26, 37 and 42-43 - These sites were moved to the UST Program.

FY90

Sites 12, 21, 26, 30, 33, 37, 38, 42-43, 46-47 and 50-51 - No further action recommended, although Site 42 did have further study.

FY91

Site 43 - Two removal actions were completed to remove tanks and petroleum contaminated soil.
Sites 12, 113 and 138 - Interim Removal Actions were completed.
USTs 12, 117, 212 and 420 - The Remedial Investigation was completed.

FY92

An FFA required additional sampling. Extended SIs were completed.
OU 1 - In April 1992, the Department of the Navy signed an Interim Record of Decision (IROD) with EPA Region X and the State of Washington for an Interim Remedial Action (IRA).
Site 42 - The Remedial Investigation was completed.
Sites 420 and 212 - The Remedial Action was completed.

FY93

OU 1 - The RI/FS was completed. The final RI/FS recommended capping of the landfill.
OU 2 - An RI/FS was completed. The final RI/FS recommended removal and off-site disposal of soils containing PCBs, pesticides and PAHs.
OU 4 - An RI/FS was completed. Small scale removals and off-site disposal of contaminated soils were recommended.

FY94

Site 11 - A removal action was completed, residual contamination remained.
Site 37 - Abandoned Seaplane Based Oil tanks. AN RA was completed, residual contamination remained.
Site 16 of OU 3 - An RI/FS was completed.
OU 1 - Sites 5 and 6 are landfills. LTM at Area 5. RD completed at Area 6.
OU 2 - ROD signed and RD completed. (Sites 2, 3, 4, 14 and 29)
OU 3 - Site 16, Site 42, Seaplane gas tank corrective action plan was completed, residual contamination remained.
OU 4 - RD completed (Sites 39, 41, 44, 48 and 49) RA was initiated.
OU 5 - Started RI/FS (Sites 1, 31 and 52.)
USTs 53 and 60 - Remedial Investigation was completed.
USTs 12, 121, 116, 60, 53, 977, 137, 214, 313, 386, 415, 500, 510, 599, 889 and 2708 - Remedial Action was completed.
Site 42 - A Corrective Action Plan was completed.

FY95

Updated Community Relations Plan.
Site 6 of OU 1 - Groundwater contamination from a former Navy landfill was migrating off-base and threatening private landowners. A pump and treat system was installed and began full scale operations. During pump and treat, residents were connected to public water supplies and their wells were closed. The landfill is currently being capped.
OU 3 - A ROD was signed in April 1995 and Remedial Design (RD) completed. A Remedial Action (RA) is underway to remove sediments contaminated with organic compounds, inorganics, and PAHs, by dredging 7,000 linear feet of runway ditches. Additional cleanup actions include: testing the dredged sediments and comparing the test results to federal and state regulations to determine if the sediments are hazardous; disposing of non-hazardous sediments in the base landfill.
OU 2 - Remedial Action was completed and soils contaminated with PCB, organic compounds and pesticides were removed. Initiated LTM.
OU 4 - The final Remedial Action was completed on soils contaminated with arsenic, chromium, lead, organic compounds and pesticides. An on-site borrow soil area provided a backfill material source. Analysis of a composite sample from the borrow soil area confirmed that the soil was free of contamination. Removal of backfill material was done intentionally to create a pit with gradually sloping sides in order to form a pond. Thus, the remedial action program provided an additional wildlife area by creating a pond at the borrow area. LTM not required. The Seaplane Base was delisted from the National Priority List (NPL) and the State of Washington's Hazardous Sites List. LTM not required.
OU 5 - An RI/FS was completed. Initiated proposed RA plan.
Sites 15, 20 and 45 - Tanks removed.

PROGRESS DURING FISCAL YEAR 1996

FY96

Site 6 - The RA to pump and treat groundwater will continue to operate. Added Bacteriological controls to air stripper. Improved cap design to reduce risk to human health contaminants. Upgrades to pump and treat systems were initiated and completed.
Site 51 - Initialed Washington State Hazard assessment at Lake Hancock, RD complete.
OU 2 - Continue LTM.
OU 3 - RA completed at Site 16.
Sites 1, 31 and 52 - RI/FS completed.
OU 5 - Signed and completed ROD for Site 31. RD complete at Site 31. Monitoring will continue at Site 1.
Sites 1, 4, 14, 15, 16, 20, 29 and 52 - RA completed.
Sites 1(2), 2(2), 3(2), 4(3), 5(2), 6(6), 14(3), 15(1), 16(1), 20(1), 29(3), 31(2), 42(1) and 52(2) - IRA completed.
Sites 1, 2, 3, 4, 5, 14, 15, 16, 20, 29 and 49 - Response Complete.
UST 2 - Completed removal action and closed in place.

WHIDBEY ISLAND NAS
PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Site 51 - Complete PA/SI and RI/FS at Lake Hancock.
OU 1 - Continue LTM at Site 5. LTO and LTM of upgraded pumps and treatment system at Site 6, landfill cap at Site 6 will be completed.
OU 2 - Continue LTM.
OU 3 - Begin delisting process of Ault Field. Begin process to close monitoring well.
OU 5 - Complete RA at Site 31 and begin LTO and LTM. Continue LTM at Site 1.
Sites 11, 13, 35, 36 and 45 - IRAs will be completed.

FY98

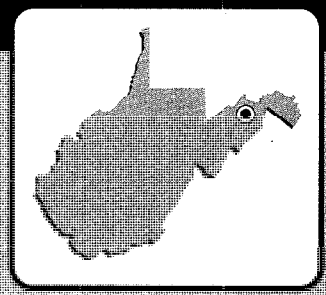
USTs 60, 95, 214, 268, 420, 500 and 599 - Expected to complete corrective action plan.
Sites 11, 13, 21, 35, 36, 42 and 45 - expected to complete RI/FS.
Sites 13, 35 and 42 - RD is planned to be completed.
UST 420 - IMP is planned to be completed and Response Complete.
Sites 1, 31, and 52 of OU 5 - RD complete. RA initiated, continue LTM at Site 5.
OU 2 - Continue LTM.
OU 3 - Continue to close monitoring wells.
OU 5 - Continue LTO and LTM. Continue LTM at Site 1 and continue RA for Site 32.
Sites 35, 42, 6 and 13 - RA is expected to be completed.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	52		1					
RI / FS	32	3	1	7	1			
RD	4	2		3	1	3		
RAC	5	8	1	4	1	2	1	1
RAO								10
IRA	6(6)	14(31)	5(5)				1(1)	2(4)
RC	30	11					1	11
Cumulative % RC	57%	77%	77%	77%	77%	77%	79%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	8							
CAP				7				
DES						3	3	
IMP	25	1		1		2	3	1
IMO							1	5
IRA	32(32)							
RC	28	1		1			1	5
Cumulative % RC	78%	81%	81%	83%	83%	83%	86%	100%

ALLEGANY BALLISTICS LABORATORY
ROCKET CENTER, WEST VIRGINIA



Engineering Field Division/Activity: LANTDIV

Major Claimant: COMNAVSEASYSCOM

Size: 1,628 Acres (1,572 Acres Navy-Owned)

Funding to Date: $5,018,000

Estimated Funding to Complete: $26,400,000

Base Mission: Government-Owned Contractor-Owned (GOCO) research, development and production facility for solid propellant rocket motors for the Department of Defense and NASA.

Contaminants: Volatile and semi-volatile organic compounds, explosive compounds, silver, acetone

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	10				
RCRA Corrective Action:	25	High:	15	Not Evaluated:	5
RCRA UST:	0	Medium:	1	Not Required:	16
Total Sites:	37	Low:	0		

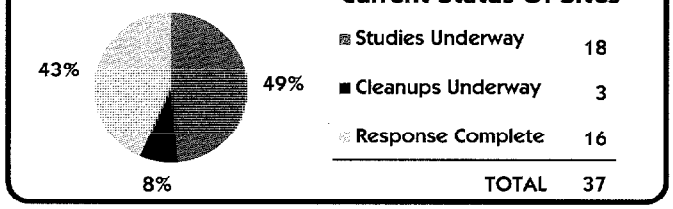
NPL

Sites Response Complete: 16

EXECUTIVE SUMMARY

Allegany Ballistics Laboratory (ABL) is located at Rocket Center, Mineral County, West Virginia, about ten miles southwest of Cumberland, Maryland. ABL is a Government-Owned, Contractor-Operated (GOCO) facility. The contractor, Alliant Techsystems Inc., formerly Hercules Aerospace Corporation, has operated the facility since 1945. ABL has two separate facilities: Plant 1 (1,572 acres), owned by the Navy and operated by Alliant, and Plant 2 (56 acres), owned and operated by Alliant. ABL is primarily a research, development and production facility for solid propellant rocket motors. Chlorinated solvents have been found in the soil and groundwater, with trichloroethene the most prevalent. Lead, zinc, RDX, 2,4,6-TNT, VOCs, methylene chloride, acetone, silver, nickel, DNT, beryllium and mercury were also detected. Current operations include pollution prevention technologies to prevent further contamination. ABL was placed on the National Priorities List (NPL) in May 1994. Remediation efforts are proceeding through cooperative arrangements with the regulatory community and the general public via the Restoration Advisory Board (RAB).

ABL is bordered on the north and west by the North Branch of the Potomac River. The eastern and southern boundaries of ABL lie in mountainous terrain. The property to the west of ABL is primarily bottom land and is used for raising crops. A small residential area and some woodlands lie directly north of ABL and are separated from ABL by the River and a railroad right of way. Additional cropland exists on the bottom land northeast of ABL. The area to the east and south of ABL is primarily mountainous woodland, although some cropland and livestock grazing pastures exist in this area. There are two abandoned limestone quarries east of ABL. Surface waters at ABL consist of several unnamed intermittent streams that discharge directly to the River. Piezometric-surface contour maps indicate the groundwater flow direction in the bottom land area to be toward the River. Any contaminants present at the surface at ABL could migrate off the installation to the River via surface pathways. The developed area of ABL is nearly level bottom land with some portions lying in the flood plain of the River, while the remainder of the installation is characterized by heavily forested steep rocky slopes. There are no active potable water wells located in the bottom land, however there are five active wells located in the undeveloped upland area.



A Technical Review Committee (TRC) was established in FY89 and a Community Relations Plan (CRP) was revised in May, 1994. The installation conducted several meetings with active involvement from community members. In FY94 the RAB was formed.

The Initial Assessment Survey (IAS) identified ten (10) sites in 1983 and recommended further investigation at Sites 1 through 6 with recommendations to monitor numerous potable water wells. Two (2) additional CERCLA sites have been identified since then. The Navy has completed RI/FSs for: Site 1 groundwater; Sites 2, 3 and 40; and Site 5 landfill contents and soil. The Navy will complete a Focused FS for Sites 1 and 10 soils; and for Site 5 groundwater, both in FY97. The Navy will complete a Remedial Investigation for Site 11 in FY97 and issue the Focused Feasibility Report for Site 10 groundwater in early FY97.

One site, Site 7 Beryllium Landfill, is currently in the Cleanup phase. A removal action to remove contaminated soil began and all excavated material, temporarily placed in roll-off bins, has been segregated and characterized awaiting disposal. Sites 6, 8 and 9, recommended for no further action in the IAS, are Response Complete (RC).

A RCRA Facility Investigation, completed August, 1993, identified 50 Solid Waste Management Units (SWMUs) and 12 Areas of Concern (AOCs). By elimination through record review or due to program overlap, 40 SWMUs and AOCs (total) required field verification in FY96 and, of these, 12 will be subject to further investigation scheduled to complete in FY97.

The IRP at ABL continues to benefit from cooperation between the EPA Region III, the States of Maryland and West Virginia, Naval Sea Systems Command and the community. Discussions focus on completed or proposed work in an attempt to streamline the review and comment process. Results are immediately shared with all stakeholders so informed discussions can readily be made.

ALLEGANY BALLISTICS LAB
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - ABL is bordered on the north and west by the North Branch of the Potomac River, which is designated Class I Water by the State of Maryland. The developed area is nearly level bottom land with portions lying in the flood plain of the river, while the remainder of the installation is characterized by heavily forested, steep rocky slopes. ABL is underlain by a thick sequence of sedimentary rocks, predominantly limestone. Bedrock crops out or is covered by a thin veneer of soil over most of the undeveloped, mountainous portion of the installation and alluvial sediments overlie the bedrock in the developed bottom land area. The limestone underlying ABL function as aquifers and depth to groundwater is variable in the undeveloped upland area and is less than ten feet in the bottom land area. Surface waters at ABL consist of several unnamed intermittent streams that discharge directly to the river. Stormwater runoff from the developed area of ABL is collected by a system of ditches and culverts that discharge to the river. Groundwater flow direction in the bottom land area is predominantly toward the river. Any contamination at or near the surface in the developed area would be at a higher elevation than the bottoms of the potable supply wells in the undeveloped area. Any contaminants present at the surface at ABL could migrate off the installation to the River via surface pathways.

NATURAL RESOURCES - There are 11 plant and three animal species considered rare, threatened or endangered in Mineral County; none have been observed to date on ABL property.

RISK - A Baseline Risk Assessment, both ecological and human health, has been completed for Sites 1-5 and 10 following the EPA guidance. For the DOD Relative Risk Ranking System, 15 sites were ranked as "high". The high-ranked sites were so ranked primarily due to high concentrations of contaminants of concern, numerous evident pathways and numerous evident receptors both human and ecological. The Agency for Toxic Substance and Disease Register (ATSDR) completed a Site Summary for ABL in March 1995. The Public Health Assessment was conducted in May 1994.

Site 1 poses the greatest risk to human health and the environment and includes potentially exposed receptor populations of on-site workers, current and future recreational users, potential future residents and potential future construction workers. Contaminants of potential concern are primarily volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCSs), dioxins, explosives and inorganics with the most pertinent potential pathways involving surface and subsurface soil and groundwater. Despite relatively high detection of VOCs in the nearby river sediments, the results of a macroinvertebrate survey performed did not indicate an impaired benthic community compared with the background sample.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - ABL was placed on the National Priorities List (NPL) on 31 May 1994 with a Hazard Ranking System score (HRS) score of 50.00 based on the groundwater pathway only.

LEGAL AGREEMENTS - A draft Federal Facility Agreement (FFA) was submitted to Assistant Secretary of the Navy (ASN) for signature in late FY95. Revised language regarding funding has been incorporated and the revision is currently under review by both the State of West Virginia and EPA R-III. The final version will be submitted for signature in FY97.

PARTNERING - Formal partnering with the regulatory community and facility representatives was initiated in January 1995. While improved, the Project Team continues to develop and refine their skills at resolving differences and arriving at equitable solutions. An aggressive program and demanding schedules necessitates that the Team become more effective and efficient, develop greater trust, establish and endorse common goals and improve communication. Project Managers meetings, at a minimum held every other month in conjunction with Restoration Advisory Board (RAB) meetings, focus on immediate concerns and impending tasks. By identifying and accepting individual responsibilities, priorities are established to attain common goals.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was established in 1989 and was converted to a Restoration Advisory Board (RAB). The RAB was officially formed in June 1995 and has become a valuable asset to the remediation efforts at ABL. Comprised of approximately 25 members, the RAB is involved in the review of technical documents, providing community input and relaying the progress of the Installation Restoration Program (IRP). The community has been very supportive of our efforts and has expressed great interest in future projects.

COMMUNITY RELATIONS PLAN - The Community Relations Plan (CRP) was first drafted in 1993 and finalized in May 1994. The Plan will be revised in FY97 to support the anticipated signing of three RODs.

INFORMATION REPOSITORY - The Administrative Record was established on 27 July 1994 and Information Repositories were established at LaVale Public Library in Maryland and Fort Ashby Public Library on 27 July 1994. Copies of Administrative Record documents are maintained for public access in the Information Repositories.

HISTORICAL PROGRESS

FY83

Sites (1, 2, 3, 4A, 4B, 5, 6, 7, 8 and 9) - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), was completed in January 1983. It identified ten potentially contaminated, Three of the sites (Sites 6, 8 and 9) did not pose a threat to human health or the environment and did not require any further action. The remaining seven sites were recommended for further investigation. The IAS also recommended continued groundwater monitoring at Potable Water Wells A and C (Site 10).

FY86

Sites 1-7 and 10 - The Confirmation Study Report, completed in June 1986, recommended further study. The Confirmation Study was expanded into an Interim Remedial Investigation (IRI).

FY90

Sites 1, 2, 3, 4B, 5, 7 and 10 - The IRI Report, completed October 1989, recommended no further investigation at Sites 4A and 6 because insignificant levels of contaminants were found. The report recommended further investigation. The report also noted that no specific source was identified for the Volatile Organic Compound (VOC) contamination in the groundwater at Sites 2 and 3.

FY92

Sites 1, 2, 3, 5, 7 and 10 - The Draft RI Report was completed in October 1992. Comments were received from the EPA Region III in January 1993. EPA R-III accepted the responses to comments in November 1995, changes were incorporated and the Final RI Report was issued in January 1996.

ALLEGANY BALLISTICS LAB
HISTORICAL PROGRESS

FY93

SWMUs and AOCs - EPA R-III completed the Phase II RCRA Facility Assessment (RFA) for ABL in August 1993. The RFA identified 49 Solid Waste Management Units (SWMUs) and 12 Areas of Concern (AOCs), however, several "SWMUs" were comprised of numerous individual similar sites (e.g., SWMU 22 is actually 22A-22D and is comprised of 4 separate incinerators). The total count is 119 SWMUs and 12 AOCs. Of these, the EPA recommended 61 for further action.

FY94

Site 1 - Initiated the Focused RI for all media.
Sites 2, 3, 4B, 5 and 10 - Initiated the Phase II RI for all media.
Site 7 - Completed the construction investigation by excavating the landfill contents. The Navy determined the best method for disposal would be to segregate the approximately 35 cubic yards of material into separate waste streams and initiated the Soil Segregation Workplan.

FY95

Site 1 - Completed and issued the Final Focused RI Report in August 1995 and the Draft Focused FS Report in September 1995. The focused RI Report included a human health and ecological Risk Assessment. The Focused FS Report addressed contamination in all media.
Sites 2, 3, 5, 10, 40 and 41 - Issued the Draft Phase II RI Report in June, 1995. The Phase II RI Report included a human health and ecological Risk Assessment for all sites.
Site 7 - Issued the draft Soil Segregation Workplan.
Site 11 - During building construction, Potable Water Well "F" was discovered. Further soil and groundwater investigation revealed contamination.
SWMUs and AOCs - After performing a site visit at the SWMUs and AOCs identified in the RFA, the EPA Region III and the State of West Virginia recommended further action at 31 additional, previously identified SWMUs. Through research, literature review and on-site fact finding, the list was reduced to a total of 40 that would require further action. Initiated the RCRA Facility Investigation (RFI) for 40 SWMUs: 21, 22A, 22B, 22C, 22D, 23, 24E, 24J, 24R, 24V, 26, 27A, 34, 36, 37A, 37B, 37C, 37D, 37E, 37F, 37G, 37H, 37I, 37J, 37K, 37L, 37M, 37N, 37O, 37P, 37S, 37T, 37U, 40, 52, 58, AOC B (Site 10002), AOC J (Site 10006), AOC K (Site 10007) and AOC L (Site 10008).

PROGRESS DURING FISCAL YEAR 1996

FY96

Site 1 - In September 1996, completed and issued the Final Focused FS Report for Groundwater, Surface Water and Sediment. To better determine hydrogeologic conditions, conducted Remedial Design efforts including aquifer pump testing, geophysical logging, water sampling, groundwater modeling and three dimensional (3-D) seismic imaging. Initiated the Remedial Design (RD) for groundwater extraction system and treatment plant. Initiated the establishment of soil preliminary remediation goals and background concentrations.
Sites 2, 3 and 40 - Completed and issued the Final Phase II RI Report in August 1996. Sites 2 and 3 do not require additional work and are considered Response Complete.
Site 5 - Issued the Final Focused FS Report for Landfill Contents and Soil in August, 1996. Initiated RD for a presumptive remedy (RCRA Subtitle C Cap).
Site 7 - Issued the Final Engineering Evaluation/Cost Analysis (EE/CA) in May, 1996; issued the Final Soil Segregation and Sampling Workplan in August, 1996; implemented the Workplan and completed soil and material segregation RA. An IRA was conducted to excavate and dispose of contaminated soil. This site is now considered Response Complete.
Site 10 - Issued the Focused FS in November 1996.
Site 11 - An Advanced Site Investigation (SI) Report, and the compilation of information gathered during the investigation, was completed in February 1996. Initiated an RI/FS with an anticipated completion date in FY98.
SWMUs 34, 36 and 1002 - completed the RFI/CMS. SWMUs 36 and 1002 require no further action and are considered Response Complete.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 2, 3, 6, 8, 9, 40 and 41 - initiate no action ROD.
Site 5 - Sign the ROD for Landfill Contents and Soil, complete the RD and award the RA. Site is anticipated to be Response Complete.
Site 7 - Dispose of the segregated material, complete post-removal close-out; resolve the NOV.
SWMU 58 - Complete the RFA.
SWMUs 21-24, 26-27, 37, 40, 10001, 10007 and 10008 - Complete the RFI/CMS. SWMUs 21-23, 26, 37, 58, 10001, 10007 and 10008 are expected to become Response Complete.
Revise Community Relations Plan.

FY98

Site 1 - Initiate RD for soil.
Site 10 - Complete focused FS and sign ROD. Initiate RD for all media.
Site 11 - Issue and finalize the RI Report; initiate and complete the FS Report.

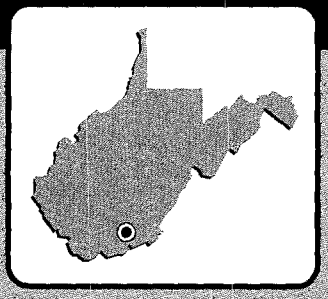
ALLEGANY BALLISTICS LAB
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	11	1						
RI / FS	1	4	2	2				
RD			1	2	1			
RAC		1			2	1		1
RAO								3
IRA		1(1)			1(1)			
RC	3	3	1		2			3
Cumulative % RC	25%	50%	58%	58%	75%	75%	75%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	24		1					
RFI / CMS	5	3	11			1		1
DES							1	
CMI							5	1
CMO								1
IRA						1(1)		
RC	8	2	9				4	2
Cumulative % RC	32%	40%	76%	76%	76%	76%	92%	100%

SUGAR GROVE NAVAL SECURITY GROUP ACTIVITY

SUGAR GROVE, WEST VIRGINIA



Engineering Field Division/Activity: LANTDIV

Major Claimant: COMNAVSECGRU

Size: 645 Acres

Funding to Date: $50,000

Estimated Funding to Complete: $0

Base Mission: Provides communication support for operations in the Atlantic Ocean

Contaminants: Refuse, refuse with hazardous waste

Number of Sites:

CERCLA:	3
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	3

Relative Risk Ranking of Sites:

High:	0	Not Evaluated:	0
Medium:	0	Not Required:	3
Low:	0		

Sites Response Complete: 3

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	3							
RI / FS								
RD								
RAC								
RAO								
IRA								
RC	3							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

APPENDIX A
INSTALLATION TOTALS STATUS

STATE INSTALLATION	TOTAL # OF SITES	ON NPL	PA/SI / RFA /SA				RI/FS / RFI/CMS / CAP				RD / DES			RAC / CMI / IMP				RAO / CMO / IMO				IRA		TOTAL	
			C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
ALASKA																									
ADAK NAS	96	Y	67	2		24	22	17	26		21	1	4	1	12	55			1	9		21(27)	6(8)		24
AMCHITKA FSSC DET 1	11	N	7	4		1			10				5			9				5					1
CAPE PRINCE WALES NCCOSC	3	N	3						2				2	1		2						1(1)	2(2)		
POINT BARROW NARL	13	N	11	2				6	5				4			8				4		3(3)	1(1)		
ST LAWRENCE NCCOSC	4	N	3	1					1				1		1	3									
TIN CITY NCCOSC	1	N	1													1									
TOTAL	128		92	9		25	22	23	44		21	1	16	2	13	78			1	18		25(31)	9(11)		25
ARIZONA																									
CHOCOLATE MOUNTAIN AGR	7	N		7					1				1									1(2)			
FLAGSTAFF NOS	2	N		2												1									
SENTINEL NCCOSC	3	N	2			2								1			1					1(2)			3
YUMA MCAS	25	Y	12	1			3	18	1	1	1		3	1	2	9				4		1(1)	3(3)		1
TOTAL	37		14	10		2	3	18	2	1	1		4	2	2	10	1			4		3(5)	3(3)		4
CALIFORNIA																									
ALAMEDA NAS	30	N	8	6				23	6				26		4	22				21			9(9)		
AZUSA NCCOSC MORRIS DAM FACILITY	2	N	1			1			1				1									1(1)			1
BARSTOW MCLB	42	Y	11	2			6	33	3	5			9		1	10				2		5(5)	2(5)		5
BRIDGEPORT MCMWTC	18	N	7	6		1	1	4	7				7		2	6				1		4(4)			1
CAMP PENDLETON MCB	200	Y	65	102		41	10	43		8	2	5	43	1	2	125			2	23		7(10)	8(9)		49
CENTERVILLE BEACH NAVFAC	10	N	6				2	6	2				8			7				3		1(1)	1(1)		
CHINA LAKE NAWS	88	N	76	2		43	7	16	12	3	1	1	22		4	22				16		1(1)	12(12)		46
CONCORD NWS	52	Y	30	19		14	9	9	6		7		15	7		16	7			8		1(1)	7(7)	7	21
CORONA NOC NWAD	2	N	1			1	1			1															2
CORONADO NAB	7	N	2	5					6				5			2				6			1(2)		
CROWS LANDING NALF	9	N	8			1	1	6				1	5	1		6	1			4		2(2)			2
DIXON NRTF	4	N		4																					
EL CENTRO NAF	21	N	17					1	18		2		13		1	15				5			1(1)		
EL TORO MCAS	43	Y	2	3				24	1			1	31		8	24				16		1(1)	4(4)		
FALLBROOK NOC PAC DIV DET	13	N	3			1	1	1	10				10	1		1	1			1		1(2)			2
IMPERIAL BEACH OLF	5	N		5					2				4			3				1					
LEMOORE NAS	19	N	15				5	13		3		1	7	1	1	7				9		1(1)	3(3)		3
LONG BEACH NAVHOSP	1	N	1			1																			1
LONG BEACH NS	9	N	7	1			1	6	1			1	4		2	4				6			2(2)		

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INSTALLATION TOTALS STATUS

STATE INSTALLATION	TOTAL # OF SITES	ON NPL	PA/SI / RFA /SA				RI/FS / RFI/CMS / CAP				RD / DES			RAC / CMI / IMP				RAO / CMO / IMO				IRA		TOTAL	
			C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
LONG BEACH NS SAN PEDRO	8	N	5	3			2	2	4				3			1				1			3(3)		
LONG BEACH NSY	8	N	3					8					4			4				1		1(2)			
MARE ISLAND NSY	36	N	29					28	8				26			26				14		13(15)	10(11)		
MIRAMAR NAS	15	N	9	5		5	1	1					2	4		1	4					5(5)			9
MOFFETT FIELD NAS	34	Y	28				22	8	3	8	6	5	12	4	2	19	3		1	10		10(11)	2(2)		11
MONTEREY NPGS	3	N	3			1	1		1		1		1	1		1	1			1		1(1)			2
NORTH IS NADEP	1	N		1												1									
NORTH ISLAND NAS	21	N	16	2		2	1	10	4				8		2	5				4		6(10)	9(10)		2
NOVATO DOD HOUSING FACILITY	1	N	1					1					1			1				1			1(1)		
OAKLAND FISC	28	N	24	2		12		13					13			13				13		11(12)	7(8)		12
OAKLAND FISC ALAMEDA ANNEX	8	N	8			1		7					4			4				3		2(2)			1
OAKLAND NAVMEDCOM NWREG	1	N	1				1						1			1							1(1)		
PICO RIVERA MCRTC	1	N		1												1									
POINT MOLATE NAVY FUEL DEPOT	4	N	4					4					4			3				3		1(1)	2(2)		
POINT MUGU NAWS	27	N	19	8		10		8					10			7				7			8(15)		10
POINT SUR NAVFAC	1	N						1					1			1				1					
POMONA NIROP	3	N	3			3																			3
PORT HUENEME NCBC	27	N	10	16		5		5	16				19		1	2						1(1)			5
SALTON SEA TEST RANGE	24	N	19	5		9	7	2	1	5				1			1							1	15
SAN CLEMENTE ISLAND NALF	18	N		18					9				14			4						1(1)			
SAN DIEGO FASWTC PAC	3	N		3									3			3						1(1)			
SAN DIEGO FCTC PAC	1	N		1																					
SAN DIEGO FISC	4	N	1	3					4				3			3							1(1)		
SAN DIEGO MCRD	7	N	4	2		4								1		2	1			2		2(3)			5
SAN DIEGO NAVMEDCTR	1	N	1			1																			1
SAN DIEGO NCCOSC	12	N	1	11					12				9			9				1					
SAN DIEGO NCTS	2	N		2																					
SAN DIEGO NISE WEST	9	N		2				3	6				9			9				5					
SAN DIEGO NS	22	N	10	11		2	1	4	5	1			11	1	1		1			9		4(5)	4(6)		4
SAN DIEGO NSB	9	N	1	8					9				3			4				2			1(1)		
SAN DIEGO NTC	14	N	9	1		3	2	3	2			2	6		2	4				7		3(5)			3
SAN NICOLAS ISLAND OLF	20	N	11	9		6									5										6
SEAL BEACH NWS	77	N	39	33		33	3	5	23	1			10	1	2	5	1			2		7(7)	4(4)		35
SKAGGS ISLAND NSGA	11	N	7	1			3	3	5		2		6		4	5				4		5(5)	4(4)		
STOCKTON MCS	72	N	56	15			1	35	22				51			48				20		7(15)	14(19)		

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INSTALLATION TOTALS STATUS

STATE INSTALLATION	TOTAL # OF SITES	ON NPL	PA/SI / RFA /SA				RI/FS / RFI/CMS / CAP				RD / DES			RAC / CMI / IMP				RAO / CMO / IMO				IRA		TOTAL	
			C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
SUNNYVALE NEROP	16	N	16			11	5			5															16
TREASURE ISLAND MS	31	N	26			4		27					24			24				13		3(3)	1(1)		4
TREASURE ISLAND MS HUNTERS PT ANNEX	74	Y	72			4	4	66		4			64			64				46			12(12)		8
TUSTIN MCAS	28	N	7	7				8	2			1	23		3	14				3		2(2)			
TWENTYNINE PALMS MCAGCC	63	N	63			34		1			9	1	7	5	7	5		2	9	4		4(5)	17(26)		34
WARNER SPRINGS SERE CAMP	1	N	1						1				1			1									
TOTAL	1321		767	325		254	98	438	212	44	30	19	563	29	54	565	21	2	12	299		115(141)	151(189)	8	319
CONNECTICUT																									
BLOOMFIELD NPWRP	8	N	7						8				8			8				6					
EAST LYME MUSC	1	N						1					1			1									
NEW LONDON NSB	27	Y	19			1	7	13	6	2	4		17	3	1	17	1			14		7(9)	3(3)		4
TOTAL	36		26			1	7	14	14	2	4		26	3	1	26	1			20		7(9)	3(3)		4
DISTRICT OF COLUMBIA																									
ANACOSTIA MS	6	N	3	1		2	2	1		2												2(2)			4
WASHINGTON DC NAVOBSY	1	N	1					1					1			1						1(4)			
WASHINGTON DC NAVYSECSTA	3	N	3					2	1				1			1				1		1(1)	2(2)		
WASHINGTON NAVY YARD	18	N	3	15			1	1	15	1			15	1		15	1			4		4(6)			2
WASHINGTON NRL	3	N	3			1	2			1			1			1						2(3)			2
TOTAL	31		13	16		3	5	5	16	4			18	1		18	1			5		10(16)	2(2)		8
FLORIDA																									
CECIL FIELD NAS	25	Y	25				9	8	8	1	3		14	1	1	17	1			8		6(8)	5(7)		2
JACKSONVILLE FISC	2	N	2				2			1	1				1					1					1
JACKSONVILLE NAS	64	Y	51	4		12	7	13	30	1	1		38	2	4	38	2			25		13(15)	7(9)		15
KEY WEST NAS	20	N	17	3			2	14	1				9			14				8		9(9)	3(3)		
MAYPORT MS	33	N	18	15		1	3	14	13		2	2	24		2	26				22		8(9)	3(3)		1
ORLANDO NRL UWS REF DET	1	N		1					1				1			1									
ORLANDO NTTC	14	N	13			6	3	3	2	2	1	1	4			6				2			2(2)		8
PANAMA CITY CSF	19	N	19			6	9	4		4			5	1		5				4			3(3)		10
PENSACOLA NAS	53	Y	41	4		4	6	35	7	5	1	3	39	1		42			1	18		12(14)	1(1)	1	9
PENSACOLA NTTC CORRY STATION	4	N	4					4																	
SAUFLEY FIELD NAS	6	N	5	1					6				6			6				1					
WHITING FIELD NAS	44	Y	35	6		2	12	23	6	8	3		28		3	28				13		3(3)			10
TOTAL	285		230	34		31	53	118	74	22	12	6	168	5	11	183	3		1	102		51(58)	24(28)	1	56

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STATE INSTALLATION	TOTAL # OF SITES	ON NPL	PA/SI / RFA /SA				RI/FS / RFI/CMS / CAP				RD / DES			RAC / CMI / IMP				RAO / CMO / IMO				IRA		TOTAL	
			C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
GEORGIA																									
ALBANY MCLB	29	Y	11	9			5	13	1	2	2	2	4	4	1	5	3		1	1		7(9)	3(3)		5
ATHENS NAVSCSCOL	1	N	1				1				1			1					1				1(2)		
ATLANTA NMCRC	1	N	1				1							1			1								1
KINGS BAY NSB	17	N	17			12		4			1		1	1		1	1			1		1(1)	1(1)		13
TOTAL	48		30	9		12	7	17	1	2	4	2	5	7	1	6	5		2	2		8(10)	5(6)		19
GUAM																									
AGANA NAS	30	N	28	1				20	10			1	16			1				1		12(12)	3(3)		
GUAM FISC	8	N	5	3		1	1	2	2			1	4			3				1			3(3)		1
GUAM NAVACTS	28	N	28			8	12	7	1	4	1	10	5	1	7	3	1			2		2(2)	12(14)		13
GUAM NAVFAC	2	N	1	1		1																	1(1)		1
GUAM NAVREGDENCEN	1	N	1				1			1												1(1)			1
GUAM NCTAMS WESTPAC	9	N	8	1		8			1				1			1									8
GUAM NSRF	10	N	10				7	3				7	2			8							8(10)		
GUAM PWC	7	N	7			1	3	3				3			3					2		1(1)	6(7)		1
TOTAL	95		88	6		19	24	35	14	5	1	22	28	1	10	16	1			6		16(16)	33(38)		25
HAWAII																									
BARBERS POINT NAS	25	N	22			2		17	1				16		2	1				1		3(3)			2
BARKING SANDS PMRF	4	N	4			1	1	1	1	1			2			1				2					2
CAMP H.M. SMITH OAHU	2	N	1						2				1										1(1)		
KANEOHE BAY MCB	25	N	21	4		15			7				4			2				5		1(1)			15
LUALUALEI NAVMAG	7	N	6	1		3		1					1			1									3
PEARL HARBOR FISC	12	Y	11	1				10	2				11			8				12		2(3)	3(5)		
PEARL HARBOR INACTSHIPDET	1	Y	1																						
PEARL HARBOR NS	15	Y	15			5	2	6	2	2	1		5			5				3		5(5)	2(2)		7
PEARL HARBOR NSB	7	Y	7				2	4		2			1			1				1					2
PEARL HARBOR NSY	22	Y	18	3		6	3	6	5	3		2	7			2				3		1(3)	3(3)		9
PEARL HARBOR PWC	15	Y	13	1				6	8			1	7			2				4		2(3)	2(2)		
WAHIAWA NCTAMS EASTPAC	28	Y	22	1			1	11	14	1		3	19			16									1
TOTAL	163		141	11		32	9	62	42	9	1	6	74		2	39				31		14(18)	11(13)		41
IDAHO																									
BAYVIEW ID NSWC	1	N		1												1									
TOTAL	1			1												1									

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STATE INSTALLATION	TOTAL # OF SITES	ON NPL	PA/SI / RFA /SA				RI/FS / RFI/CMS / CAP				RD / DES			RAC / CMI / IMP				RAO / CMO / IMO				IRA		TOTAL	
			C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
ILLINOIS																									
GLENVIEW NAS	36	N	6	30		1	1	3	20	1			8		1	7				1			1(1)		2
GREAT LAKES NTC	18	N	17	1		6	1	1	9	1	1		9	1		9	1			5		4(4)			8
TOTAL	54		23	31		7	2	4	29	2	1		17	1	1	16	1			6		4(4)	1(1)		10
INDIANA																									
CRANE NSWC	33	N	28	4		1	1	8	23				32			32				31		10(14)	3(3)		1
INDIANAPOLIS NAWC	3	N	3			2		1					1			1				1					2
TOTAL	36		31	4		3	1	9	23				33			33				32		10(14)	3(3)		3
KENTUCKY																									
LOUISVILLE NSWC	6	N	6			6																			6
TOTAL	6		6			6																			6
LOUISIANA																									
NEW ORLEANS NAS	15	N	13			6	8			7					2							1(1)			13
NEW ORLEANS NSA	5	N	2				5			5															5
TOTAL	20		15			6	13			12					2							1(1)			18
MAINE																									
BRUNSWICK NAS	20	Y	18			5	11	4		1	9		1	8	1	1	3		6			4(4)	3(4)	1	9
CUTLER NCTS	3	N	2	1					3				3			3				2					
PORTSMOUTH NSY	33	Y	16	3		15	3	11	3				13			13				5		1(1)	1(1)		15
TOTAL	56		36	4		20	14	15	6	1	9		17	8	1	17	3		6	7		5(5)	4(5)	1	24
MARYLAND																									
ANNAPOLIS NS	2	N	1	1				1					1			1				1					
ANNAPOLIS NSWC DET BAY HEAD ANNEX	3	N	1	2					3				3			3									
ANNAPOLIS US NAVAL ACADEMY	8	N	6			4	1	2					2	1		2	1					1(2)			5
BAINBRIDGE NTC	4	N	4				1	2		1			1			1				1		3(5)	1(1)		1
BALTIMORE NRC	1	N	1			1																1(2)			1
BETHESDA NAVMEDCOM NATCAPREG	8	N	6	1		6			1				1			1							1(1)		6
CARDEROCK NSWC	9	N	9			3			6				6			6				3		1(4)			3
CHELTENHAM NCTC	3	N	1	2		1																	2(2)		1
CHESAPEAKE BAY DET NRL	8	N	8			8																			8
INDIAN HEAD NSWC	65	Y	30	27		12		15	38				51			51				13		2(4)	2(2)		12
PATUXENT RIVER NAS	57	Y	26	30		2	5	17	33				53		2	53			1	22		9(9)	6(7)		2
POMONKEY TEST RANGE NRL	1	N		1																					

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STATE INSTALLATION	TOTAL # OF SITES	ON NPL	PA/SI / RFA /SA				RI/FS / RFI/CMS / CAP				RD / DES			RAC / CMI / IMP				RAO / CMO / IMO				IRA		TOTAL	
			C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
SOLOMONS ANNEX MAYRECCEN	3	N	3			1			2				2			2										1
ST INIGOES MISM EAST COAST DET	2	N	2			2																				2
WALDORF HRL	1	N		1																		1(1)			
WHITE OAK NSWC	31	N	7	12				6	23			4	20			24				7		1(1)	3(3)		
TOTAL	206		105	77		40	7	43	106	1		4	140	1	2	144	1		1	47		19(28)	15(16)		49
MASSACHUSETTS																									
BEDFORD NWIRP	4	Y	3					4				1	1			2				1			1(1)		
QUINCY HRC	1	N					1			1															1
SOUTH WEYMOUTH NAS	12	Y	10				1	10					7		2	8				2		3(5)			
TOTAL	17		13				2	14		1		1	8		2	10				3		3(5)	1(1)		1
MIDWAY																									
MIDWAY NAF	39	N	28	11		16		5	2													1(1)	15(16)		16
TOTAL	39		28	11		16		5	2													1(1)	15(16)		16
MINNESOTA																									
FRIDLEY MRDP	5	Y	4				3	2		2	1		2			3				2		2(4)	1(1)		2
ST PAUL MRDP	2	N	2			2																			2
TOTAL	7		6			2	3	2		2	1		2			3				2		2(4)	1(1)		4
MISSISSIPPI																									
GULFPORT MCRC	9	N	9					1	8				8			8						1(3)	2(3)		
MERIDIAN NAS	7	N	6				1		6				6		1	5				1			3(3)		
TOTAL	16		15				1	1	14				14		1	13				1		1(3)	5(6)		
MONTANA																									
BILLINGS MACRC	1	N	1			1																			1
BUTTE HRF	1	N	1			1																			1
GREAT FALLS HRC	1	N					1			1															3
TOTAL	3		2			2	1			1															
NEBRASKA																									
LINCOLN HRC	2	N	2			2																			2
TOTAL	2		2			2																			2
NEVADA																									
FALLON NAS	29	N	27			6	1	22				1	11			11				11			6(14)		6
TOTAL	29		27			6	1	22				1	11			11				11			6(14)		6

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STATE INSTALLATION	TOTAL # OF SITES	ON NPL	PA/SI / RFA /SA				RI/FS / RFI/CMS / CAP				RD / DES			RAC / CMI / IMP				RAO / CMO / IMO				IRA		TOTAL	
			C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
NEW JERSEY																									
COLTS NECK NWS EARLE	67	Y	44			16	20	30		16	1	1	20	3		23	3			6		4(5)	4(4)		35
LAKEHURST NAWCAD	45	Y	44				44	1		26	8		1	10		1	5		6	5		17(27)		1	31
TRENTON NAWC	11	N	9				2	9			2	1	1	2		3	2		1			2(4)	2(2)	1	2
TOTAL	123		97			16	66	40		42	11	2	22	15		27	10		7	11		23(36)	6(6)	2	68
NEW YORK																									
BETHPAGE NWIRP	3	N	3				3			1	1	1		1	1		1			1		3(4)	1(2)		2
BINGHAMPTON NIRC	1	N						1								1									
CALVERTON NWIRP	13	N	10	3		6		4	3				7			7				5		1(1)		6
FLOYD BENNETT FIELD NMCIRC	1	N	1											1			1				1(1)				1
NEW YORK NS FORT WADSWORTH	5	N	5			1					3			4			4				4(5)				5
WATERTOWN NIRC	1	N					1			1														1	1
TOTAL	24		19	3		7	4	5	3	2	4	1	7	6	1	8	6			6		8(10)	2(3)	1	15
NORTH CAROLINA																									
CAMP LEJEUNE MCB	175	Y	151	19		72	40	28	24	13	23	12	43	7	12	58	3		7	55		8(8)	10(14)	8	88
CHERRY POINT MCAS	87	Y	80	1		22	31	15	13	5	10	20	14	5	7	37	4		1	40		11(12)	14(15)	2	31
WILMINGTON NIRC	1	N	1				1							1			1					1(1)			1
TOTAL	263		232	20		94	72	43	37	18	33	32	57	13	19	95	8		8	95		20(21)	24(29)	10	120
OKLAHOMA																									
BROKEN ARROW NMCIRC	1	N	1				1							1			1					1(1)			1
TOTAL	1		1				1							1			1					1(1)			1
OREGON																									
COOS HEAD NAV OCEAN PROCESSING FAC.	1	N		1					1							1									
PORTLAND NMCIRC	1	N													1					1		1(1)			
TOTAL	2			1					1						1	1				1		1(1)			
PENNSYLVANIA																									
MECHANICSBURG SPCC	15	Y	10			5	3	5		2	1		7	1	1	6	1					3(8)			8
PHILADELPHIA NAPPROSP	2	N					2				1			2			2								2
PHILADELPHIA NSWC-CD	9	N	6	3		2	2	2	1	1	1		2	1		2	1								4
PHILADELPHIA NSY	28	N	24			3	12	10		3	5	1	3	6	3	12	5			2		7(7)	2(2)	1	11
WARMINSTER NAWC	10	Y	9				2	7			2	4	2	1	2	6	1			6		3(4)	1(1)		1
WILLOW GROVE NAS	13	Y	11					5	6				6	2		6	2			5		3(3)			2
WYOMING MCRC	2	N	2																				1(1)		

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			C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
TOTAL	79		62	3		10	21	29	7	6	10	5	20	13	6	32	12			13		16(22)	4(4)	1	28
PUERTO RICO																									
ROOSEVELT ROADS NS	49	N	24	25		13	10	1	25	5	2		25		1	26		2		9	2	3(3)	1(1)		20
SABANA SECA NSGA	8	Y	4	4			2	2	2		1				1			1		1	1	3(6)			1
SAN JUAN SUPSHIP	3	N	3			3																			3
TOTAL	60		31	29		16	12	3	27	5	3		25		2	26		3		10	3	6(9)	1(1)		24
RHODE ISLAND																									
DAVISVILLE NCBC	25	Y	17			2	10	12		3	9	4	2	5	2	7	5			3		9(10)	2(2)		10
FISHERS ISLAND NUSC	2	N	1			1										1									1
NEWPORT NETC	23	Y	12			7	3	13		1	1		13		2	13				11		4(6)	5(5)		8
TOTAL	50		30			10	13	25		4	10	4	15	5	4	21	5			14		13(16)	7(7)		19
SOUTH CAROLINA																									
BEAUFORT MCAS	41	N	37	3		16	3	17	3		1		11		2	12				1		1(2)	2(2)		16
CHARLESTON FISC	24	N	9	15			1	6	15				17	1	1	17	1			1		2(3)			1
CHARLESTON FMWTC	1	N	1				1							1			1								1
CHARLESTON NRC	1	N	1				1			1															1
CHARLESTON NS	57	N	6	51			1	5	50			1	51			52				6		1(1)	1(2)		
CHARLESTON NSY	39	N	39					39					38			38									
CHARLESTON NWS	40	N	33	1		9	4	8	18	1	2		15	1	2	7	1			1		2(2)			11
LIBERTYVILLE TRAINING SITE	7	N		7					7				1									7(7)			
PARRIS ISLAND MCRD	25	Y	25			7	1	5	10				7	2	1	9	2			7		3(3)	2(2)		9
TOTAL	235		151	77		32	12	80	103	2	3	1	140	5	6	135	5			16		16(18)	5(6)		39
TENNESSEE																									
BRISTOL NWIRP	9	N	9			4			5				5			5						2(5)			4
KNOXVILLE NMCRC	1	N					1				1			1			1					1(1)			1
MEMPHIS NAS	78	N	66	7		15	6	48	3	4	1		12		1	10				10		4(4)	1(1)	1	19
TOTAL	88		75	7		19	7	48	8	4	2		17	1	1	15	1			10		7(10)	1(1)	1	24
TEXAS																									
CHASE FIELD NAS	6	N	6			1	5			1	4			4			4					4(4)			6
CORPUS CHRISTI NAS	21	N	17	4		12	4		4		1		3	2	1	4	1			1		1(3)	3(5)		13
DALLAS NAS	42	N	40	1				40	2				32			42							1(1)		
DALLAS NWIRP	23	N	23					23					12			13				2			1(1)		
KINGSVILLE NAS	20	N	16	4		7	9		4	3			6	1	3	2				1			4(5)		10

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			C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
LUBBOCK MWCRC	1	N	1				1							1			1								1
MCGREGOR MWRP	19	N	19			11	1	2	5				4	1		4	1			1						12
TOTAL	132		122	9		31	20	65	15	4	5		57	9	4	65	7			5		5(7)	9(12)		42
UTAH																									
MAGNA MIRDP	16	N	8			3	13			13															16
TOTAL	16		8			3	13			13															16
VIRGINIA																									
ARLINGTON HEADQUARTERS BATTALION	1	N	1			1																1(1)			1
ARLINGTON SERVICE CENTER	3	N	3			1	2				1			2			1			1					2
CHESAPEAKE HSGA MWEST	4	N	4				4			3	1				1					1			1(1)		3
CRANEY ISLAND FISC	18	N	16	2		4	8	1		2	6	1	2	3	3	5	2		1	2		1(1)	2(2)	2	8
DAHLGREN MSWC	66	Y	42	21		26		16	19			4	33			39				5		10(10)			26
DAM NECK FCTC	11	N	11			7	4			2									1	1		1(1)			9
DRIVER NAVRADSTA	11	N	11			7	3				3			3			3		1			3(4)			10
LITTLE CREEK NAB	36	N	29	7		12	13	1	7	4	6	1	11	4	3	13	3		1	13		5(5)	3(3)	3	19
NORFOLK COMNAVBASE	57	N	42	14		6	20	10	15	8	7	2	18	7	6	21	5	1	3	8	1	10(11)	5(9)		20
NORFOLK NSY	26	N	25			11	7	7		7			7		1	6				7			1(1)		18
OCEANA NAS	39	N	38			2	33	4		16	16	3		9	4		4		4	9		6(6)	8(9)	1	22
PORTSMOUTH NAVMEDCTR	2	N	2												1							1(2)			
QUANTICO MCB	100	Y	15	84		2	3	8	61	1	4		50	2	1	51			2	4		7(10)	4(4)		3
ST JULIEN'S CREEK ANNEX	5	N		5					4				4			4				4					
WILLIAMSBURG FISC CHEATHAM ANNEX	12	N	10	2		8	1		3				3	1		3	1			3		1(1)			9
YORKTOWN FISC FUELS DIVISION	21	N	21			18	2	1		1	1	1		1		1	1			1		1(1)	1(1)		20
YORKTOWN NWS	48	Y	32	15		5	8	14	19	4	1	5	28	3	1	32	1	2		12		10(10)	1(1)		10
TOTAL	460		302	150		110	108	62	128	48	46	17	156	35	21	175	21	3	13	71	1	57(63)	26(31)	6	180
WASHINGTON																									
BANGOR NSB	42	Y	40			16	23			9	5	2		5	12		2			8		10(10)	12(16)	1	27
JIM CREEK NAVRADSTA	10	N	8			8			1						1	1							1(1)		8
KEYPORT NUWC	13	Y	11	1		4	6	1	1	2	1	1	1	3		3	3			2		1(3)			9
PORT HADLOCK NOC FAC DIV DET	17	Y	14	3		5	5		2	1	5		2	4	4	2	3	1		4	1	7(8)	2(2)	1	10
PUGET SOUND FISC BREMERTON	1	N	1				1						1		1					1		1(1)			
PUGET SOUND FISC MANCHESTER	4	N	4			2	1				1			1		1	1					1(1)			3
PUGET SOUND NAVHOSP BREMERTON	1	N														1							1(1)		
PUGET SOUND NS	11	N	11			10					1			1			1					1(1)			11

APPENDIX A
INSTALLATION TOTALS STATUS

STATE INSTALLATION	TOTAL # OF SITES	ON NPL	PA/SI / RFA /SA				RI/FS / RFI/CMS / CAP				RD / DES			RAC / CMI / IMP				RAO / CMO / IMO				IRA		TOTAL	
			C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
PUGET SOUND NS EVERETT	1	N		1					1							1									
PUGET SOUND NSY	33	Y	17			2	2	13	2			3	8	10	7	14	10			7		25(27)	10(11)		12
SEATTLE MAYBESHEDKEN	1	N							1							1									
TACOMA NAVCRC	1	N												1			1					1(1)			1
WHIDBEY ISLAND NAS	89	Y	60	1		11	35	7	9	21	6	3	10	39	3	14	38		1	15		52(69)	8(9)	5	70
TOTAL	224		166	6		58	73	21	17	33	19	9	22	64	28	38	59	1	1	37	1	99(121)	34(40)	7	151
WEST VIRGINIA																									
ALLEGANY BALLISTICS LAB	37	Y	36	1		6	13	17		9		3	2	1		10	1			4		1(1)			16
SUGAR GROVE NSGA	3	N	3			3																			3
TOTAL	40		39	1		9	13	17		9		3	2	1		10	1			4		1(1)			19
GRAND TOTAL	4433		3045	854		904	708	1283	945	999	231	136	1684	928	196	1837	174	9	52	889	5	568 (705)	411 (489)	38	1382

APPENDIX B
BRAC I, II, III AND IV CERCLA INSTALLATION STATUS

STATE INSTALLATION	TOTAL # OF SITES	ON NPL	PA/SI				RI/FS				RD			RAC				RAO				IRA		TOTAL	
			C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
ALASKA																									
ADAK NAS	54	Y	51	1		18	19	9	1		20	1	4	1	11	21				7		1(2)	4(6)		18
TOTAL	54		51	1		18	19	9	1		20	1	4	1	11	21				7		1(2)	4(6)		18
CALIFORNIA																									
ALAMEDA NAS	23	N	8					23					19			19				14			3(3)		
CROWS LANDING NALF	8	N	8			1		6					5	1		5	1			3		1(1)			2
EL TORO MCAS	24	Y	1	1				23	1			1	12			13				2		1(1)	3(3)		
LONG BEACH NS	8	N	7	1			1	6	1				4		1	4				5			2(2)		
LONG BEACH NS SAN PEDRO	5	N	4	1			2	2	1				1			1				1			3(3)		
LONG BEACH NSY	8	N	3					8					4			4				1		1(2)			
MARE ISLAND NSY	28	N	23					27	1				18			18				6		7(9)	10(11)		
MOFFETT FIELD NAS	22	Y	19				18	4		8	6	2	4	4	2	7	3		1	3		4(5)	1(1)		11
OAKLAND FISC	25	N	23	2		12		10					10			10				10		9(10)	6(7)		12
OAKLAND FISC ALAMEDA ANNEX	8	N	8			1		7					4			4				3		2(2)			1
POINT MOLATE NAVY FUEL DEPOT	4	N	4					4					4			3				3		1(1)	2(2)		
SALTON SEA TEST RANGE	24	N	19	5		9	7	2	1	5				1			1							1	15
SAN DIEGO NTC	5	N	3			2		2	1			1	2			1				2					2
TREASURE ISLAND NS	28	N	25			3		25					22			22				11		1(1)	1(1)		3
TREASURE ISLAND NS HUNTERS PT ANNEX	74	Y	72			4	4	66		4			64			64				46			12(12)		8
TUSTIN MCAS	12	N	7	5				7					10			5				2		2(2)			
TOTAL	306		234	15		32	32	222	6	17	6	4	183	6	3	180	5		1	112		29(34)	43(45)	1	54
FLORIDA																									
CECIL FIELD NAS	18	Y	18				5	8	5		3		10			13				3		5(7)	1(1)		
ORLANDO NRL UWS ELF DET	1	N		1					1				1			1									
ORLANDO NTC	10	N	10			6		3	1			1	3			4				1			1(1)		6
TOTAL	29		28	1		6	5	11	7		3	1	14			18				4		5(7)	2(2)		6
GUAM																									
AGANA NAS	30	N	28	1				20	10			1	16			1				1		12(12)	3(3)		
GUAM FISC	2	N	1	1		1							1			1									1
GUAM NAVFACTS	1	N	1					1					1			1							1(2)		
GUAM NSRF	2	N	2					2					2			1							1(1)		
TOTAL	35		32	2		1		23	10			1	20			4				1		12(12)	5(6)		1

APPENDIX B
BRAC I, II, III AND IV CERCLA INSTALLATION STATUS

STATE INSTALLATION	TOTAL # OF SITES	ON NPL	PA/SI				RI/FS				RD			RAC				RAO				IRA		TOTAL	
			C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
HAWAII																									
BARBERS POINT NAS	19	N	19			2		15					13							1					2
TOTAL	19		19			2		15					13							1					2
ILLINOIS																									
GLENVIEW NAS	30	N	3	27		1		2	18				7			6				1			1(1)		1
TOTAL	30		3	27		1		2	18				7			6				1			1(1)		1
INDIANA																									
INDIANAPOLIS NAWC	1	N	1					1					1			1				1					
TOTAL	1		1					1					1			1				1					
KENTUCKY																									
LOUISVILLE NSWC	6	N	6			6																			6
TOTAL	6		6			6																			6
MARYLAND																									
ANNAPOLIS NSWC DET BAY HEAD ANNEX	3	N	1	2					3				3			3									
WHITE OAK NSWC	31	N	7	12				6	23			4	20			24				7		1(1)	3(3)		
TOTAL	34		8	14				6	26			4	23			27				7		1(1)	3(3)		
MASSACHUSETTS																									
SOUTH WEYMOUTH NAS	7	Y	7					7					5			5				1		1(2)			
TOTAL	7		7					7					5			5				1		1(2)			
MIDWAY																									
MIDWAY NAF	39	N	28	11		16		5	2													1(1)	15(16)		16
TOTAL	39		28	11		16		5	2													1(1)	15(16)		16
NEW JERSEY																									
TRENTON NAWC	9	N	9					9			1	1	1			3			1				2(2)	1	
TOTAL	9		9					9			1	1	1			3			1				2(2)	1	
NEW YORK																									
NEW YORK NS FORT WADSWORTH	5	N	5			1					3			4			4						4(5)			5
TOTAL	5		5			1					3			4			4						4(5)			5
PENNSYLVANIA																									
PHILADELPHIA NSY	10	N	10			2	3	5			3		2	3		5	3					7(7)			5
WARMINSTER NAWC	9	Y	9				2	7			1	4	2		2	6				6		2(2)	1(1)		
TOTAL	19		19			2	5	12			4	4	4	3	2	11	3			6		9(9)	1(1)		5

APPENDIX B
BRAC I, II, III AND IV CERCLA INSTALLATION STATUS

STATE INSTALLATION	TOTAL # OF SITES	ON NPL	PA/SI				RI/FS				RD			RAC				RAO				IRA		TOTAL	
			C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
RHODE ISLAND																									
DAVISVILLE NCBC	17	Y	16			1	3	12			5	4	2	2	1	7	2			3		7(8)	2(2)		3
TOTAL	17		16			1	3	12			5	4	2	2	1	7	2			3		7(8)	2(2)		3
SOUTH CAROLINA																									
LIBERTYVILLE TRAINING SITE	7	N		7					7				1									7(7)			
TOTAL	7			7					7				1									7(7)			
TENNESSEE																									
MEMPHIS NAS	4	N		4																		2(2)	1(1)		
TOTAL	4			4																		2(2)	1(1)		
TEXAS																									
CHASE FIELD NAS	6	N	6			1	5			1	4			4			4					4(4)			6
TOTAL	6		6			1	5			1	4			4			4					4(4)			6
VIRGINIA																									
DRIVER NAVRADSTA	11	N	11			7	3				3			3			3		1			3(4)			10
TOTAL	11		11			7	3				3			3			3		1			3(4)			10
WASHINGTON																									
PUGET SOUND NS	8	N	8			8																			8
TOTAL	8		8			8																			8
BRAC GRAND TOTAL	646		491	82		102	72	334	77	18	49	20	278	23	17	283	91		3	144		86(98)	79(85)	2	141

APPENDIX C
BRAC I, II, III AND IV RCRA CA INSTALLATION STATUS

STATE INSTALLATION	TOTAL # OF SITES	RFA				RFI/CMS				DES			CMI				CMO				IRA		TOTAL	
		C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
ALASKA																								
ADAK NAS	2	2				1	1								1						1(2)	1(1)		
TOTAL	2	2				1	1								1						1(2)	1(1)		
CALIFORNIA																								
EL TORO MCAS	1	1					1					1			1									
TUSTIN MCAS	16		2				1	2			1	13		3	9				1					
TOTAL	17	1	2				2	2			1	14		3	10				1					
FLORIDA																								
CECIL FIELD NAS	1	1				1							1			1								1
TOTAL	1	1				1							1			1								1
GUAM																								
GUAM FISC	1	1					1				1				1							1(1)		
GUAM NAVACTS	1	1					1				1				1									
GUAM NSRF	7	7				7					7				7							7(9)		
TOTAL	9	9				7	2				9				9							8(10)		
PENNSYLVANIA																								
PHILADELPHIA NSY	12	12				5	5		3			1	1	1	6				1					3
TOTAL	12	12				5	5		3			1	1	1	6				1					3
SOUTH CAROLINA																								
CHARLESTON FISC	22	7	15				6	15				17			17				1					
CHARLESTON NS	54	5	49				5	48				49			49				3					
CHARLESTON NSY	39	39					39					38			38									
TOTAL	115	51	64				50	63				104			104				4					
TENNESSEE																								
MEMPHIS NAS	32	30	2		2		28	1				5			5				7		1(1)			2
TOTAL	32	30	2		2		28	1				5			5				7		1(1)			2
TEXAS																								
DALLAS NAS	41	40					40	1				31			41									
TOTAL	41	40					40	1				31			41									
BRAC GRAND TOTAL	229	146	68		2	14	128	67	3		10	155	2	4	176	1			13		2(3)	9(11)		6

APPENDIX D
BRAC I, II, III AND IV RCRA UST INSTALLATION STATUS

STATE INSTALLATION	TOTAL # OF SITES	SA				CAP				DES			IMP				IMO				IRA		TOTAL	
		C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
ALASKA																								
ADAK NAS	40	14	1		6	2	7	25		1				1	33			1	2		19(23)	1(1)		6
TOTAL	40	14	1		6	2	7	25		1				1	33			1	2		19(23)	1(1)		6
CALIFORNIA																								
ALAMEDA NAS	7		6					6				7		4	3				7			6(6)		
CROWS LANDING NALF	1					1					1				1				1		1(1)			
EL TORO MCAS	18		2									18		8	10				14			1(1)		
LONG BEACH NAVHOSP	1	1			1																			1
LONG BEACH NS	1										1			1					1					
MARE ISLAND NSY	8	6					1	7				8			8				8		6(6)			
MOFFETT FIELD NAS	12	9				4	4	3			3	8			12				7		6(6)	1(1)		
NOVATO DOD HOUSING FACILITY	1	1					1					1			1				1			1(1)		
OAKLAND FISC	3	1					3					3			3				3		2(2)	1(1)		
OAKLAND NAVMEDCOM NWREG	1	1				1						1			1							1(1)		
SAN DIEGO NTC	6	5			1	1	1				1	1		2	1				4		3(5)			1
TREASURE ISLAND NS	3	1			1		2					2			2				2		2(2)			1
TOTAL	62	25	8		3	7	12	16			6	49		15	42				48		20(22)	11(11)		3
FLORIDA																								
CECIL FIELD NAS	6	6				3		3	1			4		1	4				5		1(1)	4(6)		1
KEY WEST NAS	3	3				2	1					2			3				1			1(1)		
ORLANDO NTC	4	3				3		1	2	1		1			2				1			1(1)		2
TOTAL	13	12				8	1	4	3	1		7		1	9				7		1(1)	6(8)		3
HAWAII																								
BARBERS POINT NAS	3	1					1					1		1	1						2(2)			
TOTAL	3	1					1					1		1	1						2(2)			
ILLINOIS																								
GLENVIEW NAS	3	2	1			1			1					1	1									1
TOTAL	3	2	1			1			1					1	1									1
INDIANA																								
INDIANAPOLIS NAWC	2	2			2																			2
TOTAL	2	2			2																			2
MASSACHUSETTS																								
SOUTH WEYMOUTH NAS	5	3				1	3					2		2	3				1		2(3)			

APPENDIX D
BRAC I, II, III AND IV RCRA UST INSTALLATION STATUS

STATE INSTALLATION	TOTAL # OF SITES	SA				CAP				DES			IMP				IMO				IRA		TOTAL	
		C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
TOTAL	5	3				1	3					9		2	3				1		2(3)			
NEW JERSEY																								
TRENTON NAWC	2					2				1			2			2					2(4)			2
TOTAL	2					2				1			2			2					2(4)			2
PENNSYLVANIA																								
PHILADELPHIA NAVHOSP	2					2				1			2			2								2
PHILADELPHIA NSY	6	2			1	4				2	1		2	2	1	2			1			2(2)	1	3
WARMINSTER NAWC	1									1			1			1					1(2)			1
TOTAL	9	2			1	6				4	1		5	2	1	5			1		1(2)	2(2)	1	6
RHODE ISLAND																								
DAVISVILLE NCBC	8	1			1	7			3	4			3	1		3					2(2)			7
TOTAL	8	1			1	7			3	4			3	1		3					2(2)			7
SOUTH CAROLINA																								
CHARLESTON FISC	2	2				1							1	1		1					2(3)			1
CHARLESTON FMWTC	1	1				1							1			1								1
CHARLESTON NRC	1	1				1			1															1
CHARLESTON NS	3	1	2			1		2			1	2			3				3		1(1)	1(2)		
TOTAL	7	5	2			4		2	1		1	2	2	1	3	2			3		3(4)	1(2)		3
TENNESSEE																								
MEMPHIS NAS	2					2			1	1				1					1					1
TOTAL	2					2			1	1				1					1					1
TEXAS																								
DALLAS NAS	1		1					1				1			1							1(1)		
TOTAL	1		1					1				1			1							1(1)		
WASHINGTON																								
PUGET SOUND NS	3	3			2					1			1			1					1(1)			3
TOTAL	3	3			2					1			1			1					1(1)			3
BRAC GRAND TOTAL	160	70	13		15	40	24	48	9	13	8	62	13	26	94	13		1	63		53(64)	99(95)	1	37

APPENDIX E
DERA CERCLA INSTALLATION STATUS

STATE INSTALLATION	TOTAL # OF SITES	ON NPL	PA/SI				RI/FS				RD			RAC				RAO				IRA		TOTAL	
			C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
ALASKA																									
AMCHITKA FSSC DET 1	11	N	7	4		1			10				5			9				5					1
CAPE PRINCE WALES NCCOSC	3	N	3						2				2	1		2						1(1)	2(2)		
POINT BARROW NARL	13	N	11	2				6	5				4			8				4		3(3)	1(1)		
ST LAWRENCE NCCOSC	4	N	3	1					1				1		1	3									
TIN CITY NCCOSC	1	N	1													1									
TOTAL	32		25	7		1		6	18				12	1	1	23				9		4(4)	3(3)		1
ARIZONA																									
CHOCOLATE MOUNTAIN AGR	7	N		7					1				1									1(2)			
FLAGSTAFF NOS	2	N		2												1									
SENTINEL NCCOSC	2	N	2			2																			2
YUMA MCAS	20	Y	12	1			1	18	1	1	1		3			7				1		1(1)	1(1)		1
TOTAL	31		14	10		2	1	18	2	1	1		4			8				1		2(3)	1(1)		3
CALIFORNIA																									
AZUSA NCCOSC MORRIS DAM FACILITY	2	N	1			1			1				1									1(1)			1
BARSTOW MCLB	38	Y	11				5	33		5			7			7				2		4(4)	2(5)		5
BRIDGEPORT MCMWTC	10	N	4	6				1	7				3		1	2				1		2(2)			
CAMP PENDLETON MCB	57	Y	25			3	10	43		8	2		20	1	1	21				2		7(10)	5(5)		11
CENTERVILLE BEACH NAVFAC	7	N	6					5	2				5			4							1(1)		
CHINA LAKE NAWS	79	N	76	2		43	1	15	12	1			20			19				11			12(12)		44
CONCORD NWS	30	Y	29			14	7	9			7		9	7		8	7			1		1(1)	4(4)	7	21
CORONA NOC NWAD	1	N	1			1																			1
CORONADO NAB	6	N	2	4					5				4			1				5			1(2)		
DIXON NRTF	4	N		4																					
EL CENTRO NAF	17	N	15					1	14		1		11		1	11				5			1(1)		
FALLBROOK NOC PAC DIV DET	11	N	1			1			10				9												1
IMPERIAL BEACH OLF	5	N		5					2				4			3				1					
LEMOORE NAS	17	N	15				4	13		3		1	6		1	6				7		1(1)	3(3)		3
LONG BEACH NS SAN PEDRO	3	N	1	2					3				2												
MIRAMAR NAS	14	N	9	4		5	1	1					2	4		1	4					5(5)			9
MONTEREY NPGS	2	N	2			1	1				1			1			1					1(1)			2
NORTH ISLAND NAS	1	N	1																	1			1(1)		
POINT MUGU NAWS	18	N	10	8		2		8					10			7				7			7(14)		2
POMONA NIROP	3	N	3			3																			3

APPENDIX E
DERA CERCLA INSTALLATION STATUS

STATE INSTALLATION	TOTAL # OF SITES	ON NPL	PA/SI				RI/FS				RD			RAC				RAO				IRA		TOTAL	
			C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
PORT HUENEME NCBC	23	N	8	15		3		5	14				17			1									3
SAN CLEMENTE ISLAND NALF	14	N		14					6				11			3									
SAN DIEGO FASWTC PAC	1	N		1									1			1									
SAN DIEGO FCTC PAC	1	N		1																					
SAN DIEGO FISC	3	N	1	2					3				3			3									
SAN DIEGO MCRD	2	N	2			2																			2
SAN DIEGO NAVMEDCTR	1	N	1			1																			1
SAN DIEGO NCCOSC	10	N	1	9					10				7			7									
SAN DIEGO NCTS	1	N		1																					
SAN DIEGO NISE WEST	9	N		2				3	6				9			9				5					
SAN DIEGO NS	14	N	5	9		2			3				7	1			1			6		3(3)	4(6)		3
SAN DIEGO NSB	5	N	1	4					5				2			3				1			1(1)		
SAN DIEGO NTC	1	N		1					1				1												
SAN NICOLAS ISLAND OLF	7	N	5	2											5										
SEAL BEACH NWS	47	N	17	30		11	1	3	22	1			9		2	4				2		1(1)	3(3)		12
SKAGGS ISLAND NSGA	6	N	6					2	4				5			4						2(2)	1(1)		
STOCKTON NCS	71	N	56	15				35	22				50			47				19		7(15)	14(19)		
SUNNYVALE NIROP	16	N	16			11	5			5															16
TWENTYNINE PALMS MCAGCC	54	N	54			34		1			1		7	3	4	4			5	4		3(4)	9(12)		34
WARNER SPRINGS SERE CAMP	1	N	1						1				1			1									
TOTAL	612		386	141		138	35	178	153	23	12	1	243	17	15	177	13		5	80		38(50)	69(90)	7	174
CONNECTICUT																									
BLOOMFIELD NWIRP	8	N	7						8				8			8				6					
EAST LYME NUSC	1	N						1					1			1									
NEW LONDON NSB	22	Y	17			1	3	12	6	1	1		16		1	16				11		6(7)	2(2)		2
TOTAL	31		24			1	3	13	14	1	1		25		1	25				17		6(7)	2(2)		2
DISTRICT OF COLUMBIA																									
ANACOSTIA NS	3	N	3			2		1																	2
WASHINGTON DC NAVSECSTA	3	N	3					2	1				1			1				1		1(1)	2(2)		
WASHINGTON NAVY YARD	15	N		15					15				15			15				4		2(2)			
WASHINGTON NRL	1	N	1			1																			1
TOTAL	22		7	15		3		3	16				16			16				5		3(3)	2(2)		3
FLORIDA																									
JACKSONVILLE NAS	48	Y	42	3		11	2	12	23				30			30				16		11(13)	4(4)		11

APPENDIX E
DERA CERCLA INSTALLATION STATUS

STATE INSTALLATION	TOTAL # OF SITES	ON NPL	PA/SI				RI/FS				RD			RAC				RAO				IRA		TOTAL	
			C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
KEY WEST NAS	8	N	5	3				5					3			3				3		4(4)	1(1)		
PENSACOLA NAS	38	Y	30	1			5	30	3	5		3	30			33				13		7(9)	1(1)		5
PENSACOLA NTTC CORRY STATION	4	N	4					4																	
SAUFLEY FIELD NAS	5	N	5						5				5			5				1					
WHITING FIELD NAS	38	Y	33	5			10	23	5	7	2		27		2	27				11		3(3)			7
TOTAL	141		119	12		11	17	74	36	12	2	3	95		2	98				44		25(29)	6(6)		23
GEORGIA																									
ALBANY MCLB	23	Y	8	9			3	10	1	1	2		4	2		4	2			1		5(6)	2(2)		3
KINGS BAY NSB	16	N	16			12		4					1			1				1			1(1)		12
TOTAL	39		24	9		12	3	14	1	1	2		5	2		5	2			2		5(6)	3(3)		15
GUAM																									
GUAM FISC	4	N	2	2				1	2				2										1(1)		
GUAM NAVACTS	13	N	13			8		4	1			1	4							1		1(1)	3(4)		8
GUAM NAVFAC	2	N	1	1		1																	1(1)		1
GUAM NAVREGDENCEN	1	N	1				1			1												1(1)			1
GUAM NCTAMS WESTPAC	9	N	8	1		8			1				1			1									8
GUAM NSRF	1	N	1					1																	
GUAM PWC	4	N	4			1		3												1		1(1)	3(3)		1
TOTAL	34		30	4		18	1	9	4	1		1	7			1				2		3(3)	8(9)		19
HAWAII																									
BARBERS POINT NAS	2	N	2					1	1				2												
BARKING SANDS PMRF	4	N	4			1	1	1	1	1			2			1				2					2
CAMP H.M. SMITH OAHU	2	N	1						2				1										1(1)		
KANEOHE BAY MCB	25	N	21	4		15			7				4			2				5		1(1)			15
LUALUALEI NAVMAG	6	N	6			3		1					1			1									3
PEARL HARBOR FISC	12	Y	11	1				10	2				11			8				12		2(3)	3(5)		
PEARL HARBOR INACTSHIPDET	1	Y	1																						
PEARL HARBOR NS	11	Y	11			5	1	5		1			4			4				3		4(4)	2(2)		6
PEARL HARBOR NSB	2	Y	2					1					1			1				1					
PEARL HARBOR NSY	19	Y	15	3		5	1	6	5	1		2	7			2				3		1(3)	3(3)		6
PEARL HARBOR PWC	12	Y	10	1				3	8			1	7			2				4		2(3)	2(2)		
WAHIAWA NCTAMS EASTPAC	24	Y	18	1				11	11				19			13									
TOTAL	120		102	10		29	3	39	37	3		3	59			34				30		10(14)	11(13)		32

APPENDIX E
DERA CERCLA INSTALLATION STATUS

STATE INSTALLATION	TOTAL # OF SITES	ON NPL	PA/SI				RI/FS				RD			RAC				RAO				IRA		TOTAL	
			C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
IDAHO																									
BAYVIEW ID NSWC	1	N		1												1									
TOTAL	1			1												1									
ILLINOIS																									
GLENVIEW NAS	3	N	1	2				1	2				1												
GREAT LAKES NTC	13	N	12	1		6	1	1	5	1			5			5				4		3(3)			7
TOTAL	16		13	3		6	1	2	7	1			6			5				4		3(3)			7
LOUISIANA																									
NEW ORLEANS NAS	13	N	11			5	7			7					1										12
NEW ORLEANS NSA	5	N	2				5			5															5
TOTAL	18		13			5	12			12					1										17
MAINE																									
BRUNSWICK NAS	17	Y	17			4	9	4		1	7		1	6	1	1	3		4			3(3)	3(4)	1	8
CUTLER NCTS	3	N	2	1					3				3			3				2					
PORTSMOUTH NSY	17	Y	1	2			3	11	3				12			12				5		1(1)	1(1)		
TOTAL	37		20	3		4	12	15	6	1	7		16	6	1	16	3		4	7		4(4)	4(5)	1	8
MARYLAND																									
ANNAPOLIS NS	1	N	1					1					1			1				1					
ANNAPOLIS US NAVAL ACADEMY	1	N											1			1									
BAINBRIDGE NTC	3	N	3					2					1			1				1		2(4)	1(1)		
BETHESDA NAVMEDCOM NATCAPREG	7	N	6			6																	1(1)		6
CARDEROCK NSWC	9	N	9			3			6				6			6				3		1(4)			3
CHELTENHAM NCTC	3	N	1	2		1																	2(2)		1
CHESAPEAKE BAY DET NRL	8	N	8			8																			8
INDIAN HEAD NSWC	48	Y	22	26		4		15	29				42			42				10		2(4)	2(2)		4
PATUXENT RIVER NAS	51	Y	20	30		2		16	33				49			49				21		5(5)	4(4)		2
POMONKEY TEST RANGE NRL	1	N		1																					
SOLOMONS ANNEX NAVRECCEN	3	N	3			1			2				2			2									1
ST INIGOES NISE EAST COAST DET	2	N	2			2																			2
WALDORF NRL	1	N		1																		1(1)			
TOTAL	138		75	60		27		34	70				102			102				36		11(18)	10(10)		27
MASSACHUSETTS																									
BEDFORD NWIRP	4	Y	3					4				1	1			2				1			1(1)		

APPENDIX E
DERA CERCLA INSTALLATION STATUS

STATE INSTALLATION	TOTAL # OF SITES	ON NPL	PA/SI				RI/FS				RD			RAC				RAO				IRA		TOTAL	
			C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
TOTAL	4		3					4				1	1			2				1			1(1)		
MINNESOTA																									
FRIDLEY MRCOP	5	Y	4				3	2		2	1		2			3				2		2(4)	1(1)		2
ST PAUL MRCOP	2	N	2			2																			2
TOTAL	7		6			2	3	2		2	1		2			3				2		2(4)	1(1)		4
MISSISSIPPI																									
GULFPORT NCBC	9	N	9					1	8				8			8						1(3)	2(3)		
MERIDIAN NAS	6	N	6						6				6			5							3(3)		
TOTAL	15		15					1	14				14			13						1(3)	5(6)		
MONTANA																									
BILLINGS MRNCBC	1	N	1			1																			1
BUTTE NRF	1	N	1			1																			1
GREAT FALLS MRC	1	N					1			1															1
TOTAL	3		2			2	1			1															3
NEBRASKA																									
LINCOLN MRC	2	N	2			2																			2
TOTAL	2		2			2																			2
NEVADA																									
FALLON NAS	27	N	27			6		21					10			9				9			6(14)		6
TOTAL	27		27			6		21					10			9				9			6(14)		6
NEW JERSEY																									
COLTS NECK NWS EARLE	43	Y	43			15	1	27		1			19			19				5		1(1)	4(4)		16
LAKEHURST NAWCAD	45	Y	44				44	1		26	8		1	10		1	5		6	5		17(27)		1	31
TOTAL	88		87			15	45	28		27	8		20	10		20	5		6	10		18(28)	4(4)	1	47
NEW YORK																									
BETHPAGE NWIRP	3	N	3				3			1	1	1		1	1		1			1		3(4)	1(2)		2
CALVERTON NWIRP	5	N	5			5																			5
FLOYD BENNETT FIELD NWCBC	1	N	1											1			1					1(1)			1
TOTAL	9		9			5	3			1	1	1		2	1		2			1		4(5)	1(2)		8
NORTH CAROLINA																									
CAMP LEJEUNE MCB	89	Y	87	2		47	13	27	1	8	8	9	10	4	1	17	2		2	8		8(8)	1(1)	7	57
CHERRY POINT MCAS	9	Y	9			8			1														1(2)		8

APPENDIX E
DERA CERCLA INSTALLATION STATUS

STATE INSTALLATION	TOTAL # OF SITES	ON NPL	PA/SI				RI/FS				RD			RAC				RAO				IRA		TOTAL	
			C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
TOTAL	98		96	2		55	13	27	2	8	8	9	10	4	1	17	2		2	8		8(8)	2(3)	7	65
OREGON																									
COOS HEAD NAV OCEAN PROCESSING FAC.	1	N		1					1							1									
TOTAL	1			1					1							1									
PENNSYLVANIA																									
MECHANICSBURG SPCC	15	Y	10			5	3	5		2	1		7	1	1	6	1					3(8)			8
PHILADELPHIA NSWC-CD	3	N	3				1	2			1			1			1								1
WILLOW GROVE NAS	11	Y	11					5	6				6			6				5		1(1)			
WYOMING MCRC	2	N	2																				1(1)		
TOTAL	31		26			5	4	12	6	2	2		13	2	1	12	2			5		4(9)	1(1)		9
PUERTO RICO																									
ROOSEVELT ROADS NS	7	N	6	1		3	2	1	1	2												1(1)			5
SABANA SECA NSGA	7	Y	3	4			1	2	2		1				1					1		3(6)			
SAN JUAN SUPSHIP	3	N	3			3																			3
TOTAL	17		12	5		6	3	3	3	2	1				1					1		4(7)			8
RHODE ISLAND																									
FISHERS ISLAND NUSC	1	N	1			1																			1
NEWPORT NETC	19	Y	12			7		12					12			12				9		3(4)	2(2)		7
TOTAL	20		13			8		12					12			12				9		3(4)	2(2)		8
SOUTH CAROLINA																									
BEAUFORT MCAS	22	N	20	1		16		4	2				3			3									16
CHARLESTON NWS	4	N	4			3			1																3
PARRIS ISLAND MCRD	17	Y	17			3		4	10				7			8				5			1(1)		3
TOTAL	43		41	1		22		8	13				10			11				5			1(1)		22
TENNESSEE																									
BRISTOL NWIRP	9	N	9			4			5				5			5						2(5)			4
TOTAL	9		9			4			5				5			5						2(5)			4
TEXAS																									
CORPUS CHRISTI NAS	12	N	12			12																			12
KINGSVILLE NAS	10	N	6	4		6			4				4												6
MCGREGOR NWIRP	10	N	10			10																			10
TOTAL	32		28	4		28			4				4												28

APPENDIX E
DERA CERCLA INSTALLATION STATUS

STATE INSTALLATION	TOTAL # OF SITES	ON NPL	PA/SI				RI/FS				RD			RAC				RAO				IRA		TOTAL	
			C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
VIRGINIA																									
ARLINGTON HEADQUARTERS BATTALION	1	N	1			1																1(1)			1
CRANEY ISLAND FISC	13	N	11	2		4	3	1			4	1	2	2	2	4	2					1(1)		2	6
DAHLGREN NSWC	65	Y	41	21		25		16	19			4	33			39				5		10(10)			25
DAM NECK FCTC	6	N	6			4	2												1	1					4
LITTLE CREEK NAB	23	N	16	7		8	5	1	7	2	1	1	10	2		11	2			9		3(3)		3	12
NORFOLK COMNAVBASE	25	N	22	3		3	4	7	9		4	2	9	3	1	12	3			2		4(4)			6
NORFOLK NSY	19	N	19			11		7					7		1	6				7			1(1)		11
OCEANA NAS	2	N	2				2			1	1			1						1		1(1)			1
PORTSMOUTH NAVMEDCTR	2	N	2												1							1(2)			
QUANTICO MCB	94	Y	9	84		2		7	61				50			50				3		4(6)	2(2)		2
ST JULIEN'S CREEK ANNEX	5	N		5					4				4			4				4					
WILLIAMSBURG FISC CHEATHAM ANNEX	12	N	10	2		8	1		3				3	1		3	1			3		1(1)			9
YORKTOWN FISC FUELS DIVISION	19	N	19			18	1				1			1			1					1(1)			19
YORKTOWN NWS	44	Y	28	15		5	4	14	19	2	1	5	28	1	1	32	1			12		10(10)	1(1)		8
TOTAL	330		186	139		89	22	53	122	5	12	13	146	11	6	161	10		1	47		37(40)	4(4)	5	104
WASHINGTON																									
BANGOR NSB	38	Y	37			15	22			9	4	2		3	11					7		9(9)	12(16)	1	24
JIM CREEK NAVRADSTA	10	N	8			8			1						1	1							1(1)		8
KEYPORT NUWC	11	Y	10	1		4	5	1		2		1	1	2		3	2			2		1(3)			8
PORT HADLOCK NOC PAC DIV DET	17	Y	14	3		5	5		2	1	5		2	4	4	2	3	1		4	1	7(8)	2(2)	1	10
PUGET SOUND FISC BREMERTON	1	N	1				1						1		1					1		1(1)			
PUGET SOUND FISC MANCHESTER	2	N	2			1	1				1			1			1					1(1)			2
PUGET SOUND NSY	17	Y	17			2		13	2			3	8		1	14				7		9(9)	4(5)		2
WHIDBEY ISLAND NAS	53	Y	52	1		8	35	7	2	21	6	3	4	13	2	8	12		1	9		20(37)	8(9)	5	41
TOTAL	149		141	5		43	69	21	7	33	16	9	16	23	20	28	18	1	1	30	1	48(68)	27(33)	7	95
WEST VIRGINIA																									
ALLEGANY BALLISTICS LAB	12	Y	12			3	5	4		2		3	1	1		4	1			3		1(1)			6
SUGAR GROVE NSGA	3	N	3			3																			3
TOTAL	15		15			6	5	4		2		3	1	1		4	1			3		1(1)			9
GRAND TOTAL	2172		1570	432		555	256	601	541	139	74	44	854	79	51	809	58	1	19	368	1	246 (326)	174 (216)	28	753

APPENDIX F
DERA RCRA CA INSTALLATION STATUS

STATE INSTALLATION	TOTAL # OF SITES	RFA				RFI/CMS				DES			CMI				CMO				IRA		TOTAL	
		C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
CALIFORNIA																								
BARSTOW MCLB	1							1				1			1									
BRIDGEPORT MCMWTC	1	1			1																			1
CAMP PENDLETON MCB	113	40	73		38							1			75									38
CONCORD NWS	19		19					5				5			5				4			3(3)		
NORTH IS NADEP	1		1												1									
NORTH ISLAND NAS	17	14	1		2	1	10	4				6		1	4				3		5(9)	6(7)		2
SAN DIEGO NS	7	5	2			1	4	2	1			4							3					1
SEAL BEACH NWS	21	19	2		19			1				1									1(1)			19
SKAGGS ISLAND NSGA	1	1						1				1			1						1(1)			
TOTAL	181	80	98		60	2	14	14	1			19		1	87				10		7(11)	9(10)		61
FLORIDA																								
JACKSONVILLE FISC	2	2				2			1	1				1					1					1
JACKSONVILLE NAS	3					1							1	2		1					1(1)	1(1)		1
KEY WEST NAS	7	7					7					3			7				4		4(4)	1(1)		
MAYPORT NS	21	11	10				11	10				20			20				18		2(2)	3(3)		
PANAMA CITY CSS	16	16			6	6	4		3			5			5				2			3(3)		9
PENSACOLA NAS	1					1				1			1					1			1(1)			
TOTAL	50	36	10		6	10	22	10	4	2		28	2	3	32	1		1	25		8(8)	8(8)		11
GEORGIA																								
ALBANY MCLB	6	3				2	3		1		2		2	1	1	1		1			2(3)	1(1)		2
TOTAL	6	3				2	3		1		2		2	1	1	1		1			2(3)	1(1)		2
GUAM																								
GUAM FISC	1	1				1						1			1				1			1(1)		
GUAM NAVACTS	13	13				12	1		4	1	8		1	7	1	1			1		1(1)	8(8)		5
GUAM PWC	3	3				3					3			3					1			3(4)		
TOTAL	17	17				16	1		4	1	11	1	1	10	2	1			3		1(1)	12(13)		5
HAWAII																								
PEARL HARBOR NS	3	3				1		2	1			1												1
PEARL HARBOR NSB	5	5				2	3		2															2
PEARL HARBOR NSY	3	3			1	2			2															3
PEARL HARBOR PWC	3	3					3																	
TOTAL	14	14			1	5	6	2	5			1												6

APPENDIX F
DERA RCRA CA INSTALLATION STATUS

STATE INSTALLATION	TOTAL # OF SITES	RFA				RFI/CMS				DES			CMI				CMO				IRA		TOTAL	
		C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
INDIANA																								
CRANE NSWC	32	28	4		1	1	8	22				31			31				30		10(14)	3(3)		1
TOTAL	32	28	4		1	1	8	22				31			31				30		10(14)	3(3)		1
LOUISIANA																								
NEW ORLEANS NAS	1	1				1								1							1(1)			
TOTAL	1	1				1								1							1(1)			
MAINE																								
PORTSMOUTH NSY	16	15	1		15							1			1									15
TOTAL	16	15	1		15							1			1									15
MARYLAND																								
ANNAPOLIS US NAVAL ACADEMY	6	6			4		2					1			1									4
BETHESDA NAVMEDCOM NATCAPMED	1		1					1				1			1									
INDIAN HEAD NSWC	17	8	1		8			9				9			9				3					8
TOTAL	24	14	2		12		2	10				11			11				3					12
NEW JERSEY																								
COLTS NECK NWS EARLE	3	1			1	1				1			2			2					1(1)			3
TOTAL	3	1			1	1				1			2			2					1(1)			3
NEW YORK																								
GALVESTON NWSY	8	5	3		1		4	3				7			7				5			1(1)		1
TOTAL	8	5	3		1		4	3				7			7				5			1(1)		1
NORTH CAROLINA																								
CHERRY POINT MCAS	42	41	1		11	7	8	12	1	5	3	12	5	2	16	4			21		8(9)	9(9)		16
TOTAL	42	41	1		11	7	8	12	1	5	3	12	5	2	16	4			21		8(9)	9(9)		16
PENNSYLVANIA																								
PHILADELPHIA NSYC-CD	4	3	1		2	1			1			1			1									3
TOTAL	4	3	1		2	1			1			1			1									3
PUERTO RICO																								
ROOSEVELT ROADS NS	26	2	24		2			24				24			24				6		2(2)			2
TOTAL	26	2	24		2			24				24			24				6		2(2)			2
SOUTH CAROLINA																								
BEAUFORT MCAS	14	12	2				11	1				7			7									7
CHARLESTON NWS	33	26	1		6	1	8	17		2		15	1		7	1			1		2(2)			

APPENDIX F
DERA RCRA CA INSTALLATION STATUS

STATE INSTALLATION	TOTAL # OF SITES	RFA				RFI/CMS				DES			CMI				CMO				IRA		TOTAL	
		C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
TOTAL	47	38	3		6	1	19	18		2		22	1		14	1			1		2(2)			7
TENNESSEE																								
MEMPHIS NAS	36	36			13	1	20	2	1			6			4				2		1(1)			14
TOTAL	36	36			13	1	20	2	1			6			4				2		1(1)			14
TEXAS																								
CORPUS CHRISTI NAS	5	1	4			1		4		1		3			3							1(1)		
DALLAS NWIRP	23	23					23					12			13				2			1(1)		
MCGREGOR NWIRP	8	8			1		2	5				4			4				1					1
TOTAL	36	32	4		1	1	25	9		1		19			20				3			2(2)		1
UTAH																								
MAGNA NIROP	16	8			3	13			13															16
TOTAL	16	8			3	13			13															16
VIRGINIA																								
DAHLGREN NSWC	1	1			1																			1
NORFOLK COMNAVBASE	11		11				2	6				9			9				3					
OCEANA NAS	21	21			1	16	4		8	6	3		4			4			4		5(5)	1(1)		13
QUANTICO MCB	4	4				1	1			3			2	1	1			9	1		2(3)	1(1)		
TOTAL	37	26	11		2	17	7	6	8	9	3	9	6	1	10	4		2	8		7(8)	2(2)		14
WEST VIRGINIA																								
ALLEGANY BALLISTICS LAB	25	24	1		3	8	13		7			1			6				1					10
TOTAL	25	24	1		3	8	13		7			1			6				1					10
GRAND TOTAL	621	424	163		140	87	152	132	46	21	19	193	19	19	267	14		4	118		50(61)	47(49)		200

APPENDIX G
DERA RCRA UST INSTALLATION STATUS

STATE INSTALLATION	TOTAL # OF SITES	SA				CAP				DES			IMP				IMO				IRA		TOTAL	
		C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
ARIZONA																								
SENTINEL NCCOSC	1												1			1					1(2)			1
YUMA MCAS	5					2							1	2	2				3			2(2)		
TOTAL	6					2							2	2	2	1			3		1(2)	2(2)		1
CALIFORNIA																								
BARSTOW MCLB	3		2			1		2				1		1	2						1(1)			
BRIDGEPORT MCMWTC	7	2				1	3					4		1	4						2(2)			
CAMP PENDLETON MCB	30		29								5	22		1	29			2	21			3(4)		
CENTERVILLE BEACH NAVFAC	3					2	1					3			3				3		1(1)			
CHINA LAKE NAWS	9					6	1		2	1	1	2		4	3				5		1(1)			2
CONCORD NWS	3	1				2		1				1			3				3					
CORONA NOC NWAD	1					1			1															1
CORONADO NAB	1		1					1				1			1				1					
EL CENTRO NAF	4	2						4		1		2			4									
FALLBROOK NOC PAC DIV DET	2	2				1	1					1	1		1	1			1		1(2)			1
LEMOORE NAS	2					1						1	1		1				2					
MIRAMAR NAS	1		1																					
MONTEREY NPGS	1	1						1				1			1				1					
NORTH ISLAND NAS	3	1	1									2		1	1						1(1)	2(2)		
PICO RIVERA MCRTC	1		1												1									
POINT MUGU NAWS	9	9			8																	1(1)		8
POINT SUR NAVFAC	1						1					1			1				1					
PORT HUENEME NCBC	4	2	1		2			2				2		1	1						1(1)			2
SAN CLEMENTE ISLAND NALF	4		4					3				3			1						1(1)			
SAN DIEGO FASWTC PAC	2		2									2			2						1(1)			
SAN DIEGO FISC	1		1					1														1(1)		
SAN DIEGO MCRD	5	2	2		2								1		2	1			2		2(3)			3
SAN DIEGO NCCOSC	2		2					2				2			2				1					
SAN DIEGO NCTS	1		1																					
SAN DIEGO NS	1													1							1(2)			
SAN DIEGO NSB	4		4					4				1			1				1					
SAN DIEGO NTC	2	1				1						2			2				1					
SAN NICOLAS ISLAND OLF	13	6	7		6																			6

APPENDIX G
DERA RCRA UST INSTALLATION STATUS

STATE INSTALLATION	TOTAL # OF SITES	SA				CAP				DES			IMP				IMO				IRA		TOTAL	
		C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
SEAL BEACH NWS	9	3	1		3	2	2						1		1	1					5(5)	1(1)		4
SKAGGS ISLAND NSGA	4		1			3	1			2				4					4		2(2)	3(3)		
STOCKTON NCS	1					1						1			1				1					
TWENTYNINE PALMS MCAGCC	9	9								8	1		2	3	1		2	4			1(1)	8(14)		
TOTAL	143	41	61		21	22	10	21	3	12	7	55	6	17	69	3	2	6	48		21(24)	19(26)		27
CONNECTICUT																								
NEW LONDON NSB	5	2				4	1		1	3		1	3		1	1			3		1(2)	1(1)		2
TOTAL	5	2				4	1		1	3		1	3		1	1			3		1(2)	1(1)		2
DISTRICT OF COLUMBIA																								
ANACOSTIA NS	3		1			2			2												2(2)			2
WASHINGTON DC NAVOBSY	1	1					1					1			1						1(4)			
WASHINGTON NAVY YARD	3	3				1	1		1				1			1					2(4)			2
WASHINGTON NRL	2	2				2			1			1			1						2(3)			1
TOTAL	9	6	1			5	2		4			2	1		2	1					7(13)			5
FLORIDA																								
JACKSONVILLE NAS	13	9	1		1	4	1	7	1	1		8	1	2	8	1			9		1(1)	2(4)		3
KEY WEST NAS	2	2					1	1				1			1						1(1)			
MAYPORT NS	12	7	5		1	3	3	3		2	2	4		2	6				4		6(7)			1
PANAMA CITY CSS	3	3				3			1				1						2					1
PENSACOLA NAS	14	11	3		4		5	4				9			9				5		4(4)		1	4
SAUFLEY FIELD NAS	1		1					1				1			1									
WHITING FIELD NAS	6	2	1		2	2		1	1	1		1		1	1				2					3
TOTAL	51	34	11		8	12	10	17	3	4	2	24	2	5	26	1			22		12(13)	2(4)	1	12
GEORGIA																								
ATHENS NAVSCSCOL	1	1				1				1			1					1				1(2)		
ATLANTA NMCRC	1	1				1							1			1								1
KINGS BAY NSB	1	1								1			1			1					1(1)			1
TOTAL	3	3				2				2			3			2		1			1(1)	1(2)		2
HAWAII																								
BARBERS POINT NAS	1													1							1(1)			
LUALUALEI NAVMAG	1		1																					
PEARL HARBOR NS	1	1					1			1					1						1(1)			

APPENDIX G
DERA RCRA UST INSTALLATION STATUS

STATE INSTALLATION	TOTAL # OF SITES	SA				CAP				DES			IMP				IMO				IRA		TOTAL	
		C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
WAHIAWA NCTAMS EASTPAC	4	4				1		3	1		3				3									1
TOTAL	7	5	1			1	1	3	1	1	3			1	4						2(2)			1
ILLINOIS																								
GREAT LAKES NTC	5	5						4		1		4	1		4	1			1		1(1)			1
TOTAL	5	5						4		1		4	1		4	1			1		1(1)			1
INDIANA																								
CRANE NSWC	1							1				1			1				1					
TOTAL	1							1				1			1				1					
LOUISIANA																								
NEW ORLEANS NAS	1	1			1																			1
TOTAL	1	1			1																			1
MAINE																								
BRUNSWICK NAS	3	1			1	2				2			2					2			1(1)			1
TOTAL	3	1			1	2				2			2					2			1(1)			1
MARYLAND																								
ANNAPOLIS NS	1		1																					
ANNAPOLIS US NAVAL ACADEMY	1					1							1			1					1(2)			1
BAINBRIDGE NTC	1	1				1			1												1(1)			1
BALTIMORE NRC	1	1			1																1(2)			1
PATUXENT RIVER NAS	6	6				5	1					4		2	4			1	1		4(4)	2(3)		
TOTAL	10	8	1		1	7	1		1			4	1	2	4	1		1	1		7(9)	2(3)		3
MASSACHUSETTS																								
QUINCY NRC	1					1			1															1
TOTAL	1					1			1															1
MISSISSIPPI																								
MERIDIAN NAS	1					1								1					1					
TOTAL	1					1								1					1					
NEVADA																								
FALLON NAS	2					1	1				1	1			2				2					
TOTAL	2					1	1				1	1			2				2					

APPENDIX G
DERA RCRA UST INSTALLATION STATUS

STATE INSTALLATION	TOTAL # OF SITES	SA				CAP				DES			IMP				IMO				IRA		TOTAL	
		C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
NEW JERSEY																								
COLTS NECK NAVS EARLE	21					18	3		15		1	1	1		4	1			1		2(3)			16
TOTAL	21					18	3		15		1	1	1		4	1			1		2(3)			16
NEW YORK																								
BINGHAMPTON NRC	1						1								1								1	1
WATERTOWN NRC	1					1			1														1	1
TOTAL	2					1	1		1						1									
NORTH CAROLINA																								
CAMP LEJEUNE MCB	86	64	17		25	27	1	23	5	15	3	33	3	11	41	1		5	47			9(13)	1	31
CHERRY POINT MCAS	36	30			3	24	7		4	5	17	2		5	21			1	19		3(3)	4(4)	2	7
WILMINGTON NRC	1	1				1							1			1					1(1)			1
TOTAL	123	95	17		28	52	8	23	9	20	20	35	4	16	62	2		6	66		4(4)	13(17)	3	39
OKLAHOMA																								
BROKEN ARROW NWCRC	1	1				1							1			1					1(1)			1
TOTAL	1	1				1							1			1					1(1)			1
OREGON																								
PORTLAND NWCRFC	1													1					1		1(1)			
TOTAL	1													1					1		1(1)			
PENNSYLVANIA																								
PHILADELPHIA NSWC CD	2		2					1				1	2			2					2(2)			2
WILLOW GROVE NAS	2																				2(2)			2
TOTAL	4		2					1				1	2		1	2								
PUERTO RICO																								
ROOSEVELT ROADS NS	16	16			8	8			3	2		1		1	2		2		3	2		1(1)		13
SABANA SECA NSGA	1	1				1											1			1				1
TOTAL	17	17			8	9			3	2		1		1	2		3		3	3		1(1)		14
RHODE ISLAND																								
FISHERS ISLAND NUSC	1														1									
NEWPORT NETC	4					3	1		1	1		1		2	1				2		1(2)	3(3)		1
TOTAL	5					3	1		1	1		1		2	2				2		1(2)	3(3)		1

APPENDIX G
DERA RCRA UST Installation Status

STATE INSTALLATION	TOTAL # OF SITES	SA				CAP				DES			IMP				IMO				IRA		TOTAL	
		C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
SOUTH CAROLINA																								
BEAUFORT MCAS	5	5				3	2			1		1		2	2				1		1(2)	2(2)		
CHARLESTON NWS	3	3				3			1					2										1
PARRIS ISLAND MCRD	8	8			4	1	1						2	1	1	2			2		3(3)	1(1)		6
TOTAL	16	16			4	7	3		1	1		1	2	5	3	2			3		4(5)	3(3)		7
TENNESSEE																								
KNOXVILLE NMCRC	1					1				1			1			1					1(1)			1
MEMPHIS NAS	4		1			3			2			1			1							1	2
TOTAL	5		1			4			2	1		1	1		1	1					1(1)		1	3
TEXAS																								
CORPUS CHRISTI NAS	4	4				3							2	1	1	1			1		1(3)	2(4)		1
KINGSVILLE NAS	10	10			1	9			3			2	1	3	2				1			4(5)		4
LUBBOCK NMCRC	1	1				1							1			1								1
MCGREGOR NWIRP	1	1				1							1			1								1
TOTAL	16	16			1	14			3			2	5	4	3	3			2		1(3)	6(9)		7
VIRGINIA																								
ARLINGTON SERVICE CENTER	3	3			1	2				1			2			1			1					2
CHESAPEAKE NSGA NWEST	4	4				4			3	1				1					1			1(1)		3
CRANEY ISLAND FISC	5	5				5			2	2			1	1	1			1	2			2(2)		2
DAM NECK FCTC	5	5			3	2			2												1(1)			5
LITTLE CREEK NAB	13	13			4	8			2	5		1	2	3	2	1		1	4		2(2)	3(3)		7
NORFOLK COMNAVBASE	21	20			3	16	1		8	3			4	5		2	1	3	3	1	6(7)	5(9)		14
NORFOLK NSY	7	6				7			7															7
OCEANA NAS	16	15			1	15			7	9			4	4				4	4			7(8)	1	8
QUANTICO MCB	2	2				2			1	1											1(1)	1(1)		1
YORKTOWN FISC FUELS DIVISION	2	2				1	1		1		1				1				1			1(1)		1
YORKTOWN NWS	4	4				4			2				2				2							2
TOTAL	82	79			12	66	2		35	22	1	1	15	14	4	4	3	9	16	1	10(11)	20(25)	1	52
WASHINGTON																								
BANGOR NSB	4	3			1	1				1			2	1		2			1		1(1)			3
KEYPORT NUWC	2	1				1		1		1			1			1								1
PUGET SOUND FISC MANCHESTER	2	2			1										1									1

APPENDIX G
DERA RCRA UST INSTALLATION STATUS

STATE INSTALLATION	TOTAL # OF SITES	SA				CAP				DES			IMP				IMO				IRA		TOTAL	
		C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
PUGET SOUND NAVHOSP BREMERTON	1														1							1(1)		
PUGET SOUND NS EVERETT	1		1					1							1									
PUGET SOUND NSY	16					2							10	6		10					16(18)	6(6)		10
SEATTLE NAVRESREDCEN	1							1							1									
TACOMA NMCRC	1												1			1					1(1)			1
WHIDBEY ISLAND NAS	36	8			3			7				6	26	1	6	26			6		32(32)			29
TOTAL	64	14	1		5	4		10		2		6	40	8	10	40			7		50(52)	7(7)		45
GRAND TOTAL	605	344	96		90	239	44	80	84	74	35	142	92	79	208	67	8	25	183	4	131(153)	80(103)	7	245

APPENDIX H
STATUS TOTALS

BRAC (I, II, III, and IV)	TOTAL # OF SITES	C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
		PA/SI				RI/FS				RD			RAC				RAO				IRA		TOTAL	
CERCLA	646	491	82		102	72	334	77	18	49	20	278	23	17	283	21		3	144		86(98)	79(85)	2	141
		RFA				RFI/CMS				DES			CMI				CMO				IRA		TOTAL	
RCRA CA	229	146	68		2	14	128	67	3		10	155	2	4	176	1			13		2(3)	9(11)		6
		SA				CAP				DES			IMP				IMO				IRA		TOTAL	
RCRA UST	160	70	13		15	40	24	48	9	13	8	62	13	26	94	13		1	63		53(64)	22(25)	1	37
TOTAL	1035	707	163		119	126	486	192	30	62	38	495	38	47	553	35		4	220		141(165)	110(121)	3	184

DERA	TOTAL # OF SITES	C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
		PA/SI				RI/FS				RD			RAC				RAO				IRA		TOTAL	
CERCLA	2172	1570	432		555	256	601	541	139	74	44	854	79	51	809	58	1	19	368	1	246(326)	174(216)	28	753
		RFA				RFI/CMS				DES			CMI				CMO				IRA		TOTAL	
RCRA CA	621	424	163		140	87	152	132	46	21	19	193	19	19	267	14		4	118		50(61)	47(49)		200
		SA				CAP				DES			IMP				IMO				IRA		TOTAL	
RCRA UST	605	344	96		90	239	44	80	84	74	35	142	92	79	208	67	8	25	183	4	131(153)	80(103)	7	245
TOTAL	3398	2338	691		785	582	797	753	269	169	98	1189	190	149	1284	139	9	48	669	5	427(540)	301(368)	35	1198

NPL	TOTAL # OF SITES	C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
		PA/SI / RFA / SA				RI/FS / RFI/CMS / CAP				RD / DES			RAC / CMI / IMP				RAO / CMO / IMO				IRA		TOTAL	
BRAC I, II, III and IV NPL	246	211	2		23	60	141	13	13	35	15	115	8	17	153	6		1	83		29(36)	30(34)		42
DERA NPL	1460	939	342		259	232	457	294	116	65	48	555	90	41	675	68	1	20	283	1	219(279)	104(121)	24	444
TOTAL	1706	1150	344		282	292	598	307	129	100	63	670	98	58	828	74	1	21	366	1	248(315)	134(155)	24	486

ALL SITES	TOTAL # OF SITES	C	U	F	RC	C	U	F	RC	C	U	F	C	U	F	RC	C	U	F	RC	C(ACT)	U(ACT)	LTM	RC
		PA/SI				RI/FS				RD			RAC				RAO				IRA		TOTAL	
CERCLA	2818	2061	514		657	328	935	618	157	123	64	1132	102	68	1092	79	1	22	512	1	332(424)	253(301)	30	894
		RFA				RFI/CMS				DES			CMI				CMO				IRA		TOTAL	
RCRA CA	850	570	231		142	101	280	199	49	21	29	348	21	23	443	15		4	131		52(64)	56(60)		206
		SA				CAP				DES			IMP				IMO				IRA		TOTAL	
RCRA UST	765	414	109		105	279	68	128	93	87	43	204	105	105	302	80	8	26	246	4	184(217)	102(128)	8	282
TOTAL	4433	3045	854		904	708	1283	945	299	231	136	1684	228	196	1837	174	9	52	889	5	568(705)	411(489)	38	1382

APPENDIX I
INSTALLATIONS WITH ASSESSMENT COMPLETE AND NO SITES IDENTIFIED AS OF 30 SEPTEMBER 1995

CALIFORNIA

Chollas Heights Radio Transmitter
Imperial Beach Singer Education Division
Long Beach Fleet and Industrial Supply Center Detachment
Moffett Field Naval Air Station Outlying Areas
San Diego Naval Undersea Warfare Engineering Station, Southern California Detachment
Tupman Naval Petroleum Reserve Number 1

COLORADO

Rifle Naval Petroleum Reserve, Anvil Points Facility

CONNECTICUT

New London Naval Underwater Systems Center

DELAWARE

Lewes Naval Reserve Facility

FLORIDA

Ft. Lauderdale Naval Underwater Systems Center
Homestead Naval Security Group Activity
Richmond Naval Air Station
West Palm Beach Naval Underwater Systems Center

GUAM

Guam Navy Publishing and Printing Services Office

HAWAII

Pearl Harbor Fleet Training Group Activity

INDIANA

Gary Naval and Marine Corps Reserve Center

MAINE

Corea Naval Security Group Activity
Winter Harbor Naval Security Group Activity

MARYLAND

Annapolis Naval Surface Warfare Center Detachment
Bloodsworth Archipelago Bombardment Range
Suitland Naval Technical Intelligence Center
Washington DC Naval Air Facility

MASSACHUSETTS

Boston Naval Shipyard
Pittsfield Naval Industrial Reserve Ordnance Plant

MINNESOTA

Rosemount Navy Astronautics Group Detachment Bravo

MISSOURI

St. Louis Naval and Marine Corps Reserve Center
St. Louis Naval Plant Representative Office

NEBRASKA

Omaha Naval and Marine Corps Reserve Center

NEW YORK

Fort Schuyler Naval and Marine Corps Reserve Center
Glens Falls Naval Reserve Center
New York Naval Station Brooklyn
New York Naval Station Stapleton
Rochester Naval Industrial Reserve Ordnance Plant
Scotia Naval Administration Unit

OHIO

Toledo Naval Weapons Industrial Reserve Plant

PENNSYLVANIA

Philadelphia Naval Aviation Supply Office

PUERTO RICO

Roosevelt Roads Naval Radio Transmitting Facility, Isabella

RHODE ISLAND

Charlestown Naval Air Station
Providence Armed Forces Reserve Center
Quonset Point Naval Air Station

VIRGINIA

Alexandria Naval Facilities Engineering Command
Norfolk Atlantic Division Naval Facilities Engineering Command
Norfolk Naval Air Station
Norfolk Naval Station
Norfolk Public Works Center
Roanoke Naval and Marine Corps Reserve Center
Williamsburg Armed Forces Experimental Training Activity, Camp Peary

APPENDIX J
INFORMATION REPOSITORIES FOR IR & BRAC INSTALLATIONS

INSTALLATION	LIBRARY NAME	STREET ADDRESS	CITY	STATE	ZIP CODE	PHONE #
ATLANTIC DIVISION						
ALLEGANY BALLISTICS LABORATORY	FORT ASHBY PUBLIC LIBRARY	BOX 74 LINCOLN STREET	FORT ASHBY	WV	26719	304-298-4493
	LAVALE PUBLIC LIBRARY	815 NATIONAL HIGHWAY	LAVALLE	MD	21502	301-729-0855
CAMP LEJEUNE MCB	MCB CAMP LEJEUNE	BUILDING 67, ROOM 237	CAMP LEJEUNE	NC	28542	910-451-5068
	ONSLOW COUNTY PUBLIC LIBRARY	58 DORIS AVENUE EAST	JACKSONVILLE	NC	28540	910-455-7350
CHERRY POINT MCAS	HAVELOCK PUBLIC LIBRARY	300 MILLER BLVD.	HAVELOCK	NC	28532	919-447-7509
	US MARINE CORPS STATION LIBRARY	PSC BOX 8019	CHERRY POINT	NC	28533-3552	919-466-3552
CRANEY ISLAND FISC	CHURCHLAND PUBLIC BRANCH LIBRARY	3215 ACADEMY AVENUE	PORTSMOUTH	VA		757-398-8048
	PORTSMOUTH MAIN PUBLIC LIBRARY	601 COURT STREET	PORTSMOUTH	VA	23704	757-393-8501
DAM NECK FCTC	CITY OF VIRGINIA BEACH CENTRAL LIB.	4100 VIRGINIA BEACH BLVD.	VIRGINIA BEACH	VA	23452	757-431-3042
DRIVER NAVRADSTA	BENNETTS CREEK STATION BRANCH LIB.	2897 BRIDGE ROAD	SUFFOLK	VA	23435	757-483-0814
	MORGAN MEMORIAL PUBLIC LIBRARY	443 W. WASHINGTON STREET	SUFFOLK	VA	23434	757-934-7686
LITTLE CREEK NAB	BAYSIDE AREA LIBRARY	956 INDEPENDENCE BLVD.	VIRGINIA BEACH	VA	23455	757-460-8406
	CITY OF VIRGINIA BEACH CENTRAL LIB.	4100 VIRGINIA BEACH BLVD.	VIRGINIA BEACH	VA	23452	757-431-3042
	LITTLE CREEK BRANCH PUBLIC LIBRARY	7853 TARPON PLACE	NORFOLK	VA	23518	757-441-1751
	NAB LITTLE CREEK BASE LIBRARY	BLDG. 3004, 8TH STREET	NORFOLK	VA	23521	757-464-7691
NORFOLK COMNAVBASE	KIRN LIBRARY	301 CITY HALL AVENUE	NORFOLK	VA		757-664-7323
	LARCHMONT PUBLIC LIBRARY	6525 HAMPTON BLVD.	NORFOLK	VA		757-441-5355
	MARY PRETLOW PUBLIC LIBRARY	9640 GRANBY STREET	NORFOLK	VA		757-441-1750
	NAVAL AIR STATION LIBRARY	BLDG. C-9, BACON AVENUE	NORFOLK	VA		757-433-6565
NORFOLK NSY	CITY OF PORTSMOUTH MAIN BRANCH LIB.	601 COURT STREET	PORTSMOUTH	VA	23705	757-393-8501
	OCCUP. SAFETY, HEALTH & ENV. OFFICE	NORFOLK NAVAL SHIPYARD	PORTSMOUTH	VA	23709	757-396-3499
OCEANA NAS	CENTRAL LIBRARY, CITY OF CHESAPEAKE	298 CEDAR ROAD	CHESAPEAKE	VA	23320	757-436-8300
	CITY OF VIRGINIA BEACH CENTRAL LIBRARY	4100 VIRGINIA BEACH BLVD.	VIRGINIA BEACH	VA	23452	757-431-3042
	GREENBRIER BRANCH LIBRARY	1214 VOLVO PARKWAY	CHESAPEAKE	VA	23321	757-436-7400
	INDIAN RIVER BRANCH LIBRARY	2320 OLD GREENBRIER ROAD	CHESAPEAKE	VA	23320	757-420-5804
	MAJOR HILLARD BRANCH LIBRARY	949 GEORGE WASH. HWY. N.	CHESAPEAKE	VA	23323	757-485-1543
	NAS OCEANA BASE LIBRARY	BASE LIBRARY	VIRGINIA BEACH	VA	23460	757-433-2400
	RUSSELL MEMORIAL BRANCH LIBRARY	2408 TAYLOR ROAD	CHESAPEAKE	VA	23321	757-488-9270
	SOUTH NORFOLK MEMORIAL BRANCH LIB.	1100 POINDEXTER STREET	CHESAPEAKE	VA	23321	757-545-2436
ROOSEVELT ROADS NS	JOSE GAUTHIER BENITEZ PUBLIC LIBRARY		VIEQUES ISLAND	PR	735	
	NAVAL STATION ROOSEVELT ROADS	PUBLIC WORKS ENV. ENG. DIV.	CEIBA	PR	735	809-865-4429
	PUBLIC LIBRARY		CEIBA	PR	735	
SABANA SECA NSGA	BIBLIOTECA PUB. J. FONADELLA GARRIGA	LUIS MUNOZ RIVERA #56	TOA BAJA	PR	949	809-794-2145
	NAVAL BASE SABANA SECA	LIBRARY, BLDG. 193, ROUTE #866	SABANA SECA	PR	952	

APPENDIX J
INFORMATION REPOSITORIES FOR IR & BRAC INSTALLATIONS

INSTALLATION	LIBRARY NAME	STREET ADDRESS	CITY	STATE	ZIP CODE	PHONE #
SABANA SECA NSGA	U.S. NSGA SABANA SECA, PR	BASE LIBRARY, BLDG. #193	FPO	AA	34953-1000	809-261-8312
WILLIAMSBURG FISC CHEATHAM ANNEX	YORK COUNTY PUBLIC LIBRARY	8500 GEORGE WASHINGTON HWY	YORKTOWN	VA	23692	757-898-0077
YORKTOWN FISC FUELS DIVISION	YORK COUNTY PUBLIC LIBRARY	8500 GEORGE WASHINGTON HWY	YORKTOWN	VA	23692	757-898-0077
YORKTOWN NWS	GLOUCESTER PUBLIC LIBRARY	P.O. BOX 367 MAIN STREET	GLOUCESTER	VA	23601	757-693-2998
	NEWPORT NEWS CITY PUBLIC LIBRARY	366 DESHAZOR DR. GRISSOM BR.	NEWPORT NEWS	VA	23602	757-886-7896
	YORK COUNTY PUBLIC LIBRARY	8500 GEORGE WASHINGTON HWY	YORKTOWN	VA	23692	757-898-0077
CHESAPEAKE ENGINEERING FIELD ACTIVITY						
WASHINGTON DC NAVSECSTA	TENLEY FRIENDSHIP LIB. INFO. DESK	4450 ALBEMARLEST NW	WASHINGTON	DC	20016	
NORTHERN DIVISION						
BETHPAGE NWIRP	BETHPAGE PUBLIC LIBRARY	47 POWELL AVENUE		NY		-931-3907
BRUNSWICK NAS	CURTIS MEMORIAL LIBRARY	23 PLEASANT STREET	BRUNSWICK	ME	4011	207-725-5242
CALVERTON NWIRP	RIVERHEAD FREE LIBRARY					
COLTS NECK NWS EARLE	MONMOUTH CITY LIBRARY	15 HEYERS MILL ROAD	COLTS NECK	NJ	7722	908-431-5656
DAVISVILLE NCBC	CSO DAVISVILLE B404		DAVISVILLE NCBC	RI		
LAKEHURST NAWCAD	OCEAN COUNTY LIBRARY	101 WASHINGTON	TOMS RIVER	NJ	8753	908-657-7600
MECHANICSBURG NICP	LIBRARY IN MECHANICSBURG		MECHANICSBURG	PA		
NEW LONDON NSB	GROTON PUBLIC LIBRARY	52 ROUTE 117, NEW TOWN RD.	GROTON	CT	6340	860-441-6750
NEWPORT NETC	NETC, NEWPORT RI		NEWPORT	RI		
PHILADELPHIA PA NAVSTA	FREE PUBLIC LIBRARY, PASSYUNK BRANCH	1935 SHUNK STREET	PHILADELPHIA	PA	19145	215-686-5322
PHILADELPHIA PA NSWCSSES	FREE PUBLIC LIBRARY, PASSYUNK BRANC	1935 SHUNK STREET	PHILADELPHIA	PA	19145	215-686-5322
PHILADELPHIA PA NSY	FREE PUBLIC LIBRARY, PASSYUNK BRANCH	1935 SHUNK STREET	PHILADELPHIA	PA	19145	215-686-5322
TRENTON NAWC	EWING TWP LIBRARY	61 SCHOTCH ROAD	EWING	NJ	8628	609-882-3130
WARMINSTER NAWC	BUCKS CO. LIBRARY	150 SOUTH PINE STREET	DOYLESTOWN	PA	18901	215-348-0332
WILLOW GROVE NAS	HORSHAM TOWNSHIP BLDG	1025 HORSHAM ROAD	HORSHAM	PA	19044	215-643-3131
NORTHWEST ENGINEERING FIELD ACTIVITY						
ADAK NAF	ENGINEERING FIELD ACTIVITY, NW	19917 7TH AVENUE NE	POULSBO	WA	98370-7550	360-396-0053
AMCHTKA FSSC DET	US BUREAU OF LAND MANAGEMENT	222 W. 7TH #36	ANCHORAGE	AK	99501	907-271-5025
BANGOR NSB	ENGINEERING FIELD ACTIVITY, NW	19917 7TH AVENUE NE	POULSBO	WA	98370-7550	360-396-0009
BAYVIEW NSWC ARD	CENTRAL KITSAP LIBRARY	1301 SYLVAN WAY	BREMERTON	WA	98310	206-377-7601
BILLINGS NMRC	SUBASE BANGOR LIBRARY		SILVERDALE	WA	98315	360-396-5099
BUTTE NRF	ENGINEERING FIELD ACTIVITY, NW	19917 7TH AVENUE NE	POULSBO	WA	98370-7550	360-396-0009
CAPE PRINCE OF WALES NCCOSC	ENGINEERING FIELD ACTIVITY, NW	19917 7TH AVENUE NE	POULSBO	WA	98370-7550	360-396-0009
JIM CREEK NRS	ENGINEERING FIELD ACTIVITY, NW	19917 7TH AVENUE NE	POULSBO	WA	98370-7550	360-396-0009
	ENGINEERING FIELD ACTIVITY, NW	19917 7TH AVENUE NE	POULSBO	WA	98370-7550	360-396-0009

APPENDIX J
INFORMATION REPOSITORIES FOR IR & BRAC INSTALLATIONS

INSTALLATION	LIBRARY NAME	STREET ADDRESS	CITY	STATE	ZIP CODE	PHONE #
KEYPORT NUWC	CENTRAL KITSAP LIBRARY	1301 SYLVAN WAY	BREMERTON	WA	98310	206-377-7601
	KITSAP PUBLIC UTILITY DISTRICT NO. 1	1431 FINN HILL RD.	POULSBO	WA	98370	206-377-7601
	"POUSBO BRANCH, KITSAP LIBRARY"	700 N. E. LINCOLN	POUSBO	WA	98370	206-377-7601
POINT BARROW NARL	ENGINEERING FIELD ACTIVITY, NW	19917 7TH AVENUE NE	POULSBO	WA	98370-7550	360-396-0009
PORT HADLOCK NOC PAC DIV DET	ENGINEERING FIELD ACTIVITY, NW	19917 7TH AVENUE NE	POULSBO	WA	98370-7550	360-396-0002
	JEFFERSON COUNTY LIBRARY	620 CEDAR AVENUE	PORT HADLOCK	WA	98339	360-385-6544
PORTLAND NMRRC	ENGINEERING FIELD ACTIVITY, NW	19917 7TH AVENUE NE	POULSBO	WA	98370-7550	360-396-0002
PUGET SOUND FISC MANCHESTER	ENGINEERING FIELD ACTIVITY, NW	19917 7TH AVENUE NE	POULSBO	WA	98370-7550	360-396-0002
PUGET SOUND NS EVERETT	ENGINEERING FIELD ACTIVITY, NW	19917 7TH AVENUE NE	POULSBO	WA	98370-7550	360-396-0002
PUGET SOUND NSY, NS & JACKSON	ENGINEERING FIELD ACTIVITY, NW	19917 7TH AVENUE NE	POULSBO	WA	98370-7550	360-396-0002
PUGET SOUND NSY & JACKSON PARK HOUSING	ENGINEERING FIELD ACTIVITY, NW	19917 7TH AVENUE NE	POULSBO	WA	98370-7550	360-396-0002
PUGET SOUNT FISC BREMERTON	ENGINEERING FIELD ACTIVITY, NW	19917 7TH AVENUE NE	POULSBO	WA	98370-7550	360-396-0002
ST LAWERENCE NCCOSC	ENGINEERING FIELD ACTIVITY, NW	19917 7TH AVENUE NE	POULSBO	WA	98370-7550	360-396-0002
TACOMA NMCRC	ENGINEERING FIELD ACTIVITY, NW	19917 7TH AVENUE NE	POULSBO	WA	98370-7550	360-396-0002
TIN CITY NCCOSC	ENGINEERING FIELD ACTIVITY, NW	19917 7TH AVENUE NE	POULSBO	WA	98370-7550	360-396-0002
WHIDBEY ISLAND NAS	ENGINEERING FIELD ACTIVITY, NW	19917 7TH AVENUE NE	POULSBO	WA	98370-7550	360-396-0002
	OAK HARBOR LIBRARY	7030 70TH NE	OAK HARBOR	WA	98277	360-675-5115
	SNO-ISLE REGIONAL LIBRARY SYSTEM	788 NW ALEXANDER	COUPEVILLE	WA	98239	360-678-4911
PACIFIC DIVISION						
AGANA NAS	NIEVES M. FLORES MEMORIAL LIBRARY	254 MARTYR STREET	AGANA	GU	96910	705-472-1389
BARBERS POINT NAS	EWA BEACH PUBLIC & SCHOOL LIBRARY	91-950 NORTH ROAD	EWA BEACH	HI	96706	808-689-8391
BARKING SANDS PMRF	LIHUE PUBLIC LIBRARY	4341-A RICE STREET	LIHUE	HI	96766	808-241-3222
	WAIMEA PUBLIC LIBRARY	9750 KAUMUALII HIGHWAY	WAIMEA	HI	96796	808-338-6848
CAMP H.M. SMITH OAHU	AIEA PUBLIC LIBRARY	99-143 MOANALUA ROAD	AIEA	HI	96701	808-483-7333
GUAM FISC	NIEVES M. FLORES MEMORIAL LIBRARY	254 MARTYR STREET	AGANA	GU	96910	705-472-1389
GUAM NAVACTS	NIEVES M. FLORES MEMORIAL LIBRARY	254 MARTYR STREET	AGANA	GU	96910	705-472-1389
GUAM NAVFAC	NIEVES M. FLORES MEMORIAL LIBRARY	254 MARTYR STREET	AGANA	GU	96910	705-472-1389
GUAM NCTAMS WESTPAC	NIEVES M. FLORES MEMORIAL LIBRARY	254 MARTYR STREET	AGANA	GU	96910	705-472-1389
GUAM PWC	NIEVES M. FLORES MEMORIAL LIBRARY	254 MARTYR STREET	AGANA	GU	96910	705-472-1389
KANEOHE BAY MCB	KAILUA PUBLIC LIBRARY	239 KUULEI ROAD	KAILUA	HI	96734	808-266-9911
	KANEOHE PUBLIC LIBRARY	45-829 KAMEHAMEHA HWY	KANEOHE	HI	96744	808-233-5676
LUALUALEI NAVMAG	WAIANAE PUBLIC LIBRARY	85-625 FARRINGTON HWY	WALANAE	HI	96792	808-696-4257
MIDWAY NAF	UNIVERSITY OF HAWAII AT MANOA					
PEARL HARBOR FISC	AIEA PUBLIC LIBRARY	99-143 MOANALUA ROAD	AIEA	HI	96701	808-483-7333
	PEARL CITY PUBLIC LIBRARY	1138 WAIMANO HOME ROAD	PEARL CITY	HI	96782	808-453-6566

APPENDIX J
INFORMATION REPOSITORIES FOR IR & BRAC INSTALLATIONS

INSTALLATION	LIBRARY NAME	STREET ADDRESS	CITY	STATE	ZIP CODE	PHONE #
PEARL HARBOR INACTSHIPDET	PEARL CITY PUBLIC LIBRARY	1138 WALMANO HOME ROAD	PEARL CITY	HI	96782	808-483-6566
PEARL HARBOR NS	AIEA PUBLIC LIBRARY	99-143 MOANALUA ROAD	AIEA	HI	96701	808-483-7333
	EWA BEACH PUBLIC & SCHOOL LIBRARY	91-950 NORTH ROAD	EWA BEACH	HI	96706	808-689-8391
	PEARL CITY PUBLIC LIBRARY	1138 WAIMANO HOME ROAD	PEARL CITY	HI	96782	808-453-6566
PEARL HARBOR NSB	AIEA PUBLIC LIBRARY	99-143 MOANALUA ROAD	AIEA	HI	96701	808-483-7333
PEARL HARBOR NSY	AIEA PUBLIC LIBRARY	99-143 MOANALUA ROAD	AIEA	HI	96701	808-483-7333
PEARL HARBOR PWC	AIEA PUBLIC LIBRARY	99-143 MOANALUA ROAD	AIEA	HI	96701	808-483-7333
	PEARL CITY PUBLIC LIBRARY	1138 WALMANO HOME ROAD	PEARL CITY	HI	96782	808-483-6566
WAHIAWA NCTAMS EASTPAC	WAHIAWA PUBLIC LIBRARY	820 CALIFORNIA AVENUE	WAHIAWA	HI	96786	808-621-6331
	WAIANAE PUBLIC LIBRARY	85-625 FARRINGTON HWY	WALANAE	HI	96792	808-696-4257
SOUTHERN DIVISION						
ALBANY MCLB	DOUGHERTY COUNTY PUBLIC LIBRARY	300 PINE AVE. 2ND FLOOR	ALBANY	GA	31701	215-431-2900
CECIL FIELD NAS	WESTCONNECT LIBRARY	6887 103RD STREET	JACKSONVILLE	FL	32210	904-778-6055
CHARLESTON FISC	DORCHESTER ROAD REGIONAL CTY. LIB.	6325 DORCHESTER ROAD	CHARLESTON	SC	29418	803-552-6466
CHARLESTON FMWTC	DORCHESTER ROAD REGIONAL CTY. LIB.	6325 DORCHESTER ROAD	CHARLESTON	SC	29418	803-552-6466
CHARLESTON NS	DORCHESTER ROAD REGIONAL CTY. LIB.	6325 DORCHESTER ROAD	CHARLESTON	SC	29418	803-552-6466
CHARLESTON NSY	DORCHESTER ROAD REGIONAL CTY. LIB.	6325 DORCHESTER ROAD	CHARLESTON	SC	29418	803-552-6466
CRANE NSWC	NSWCC BASE LIBRARY		CRANE NSWC	IN		
DALLAS NWIRP	GRAND PRAIRIE PUBLIC LIBRARY	901 CONOVER DRIVE	GRAND PRAIRIE	TX	75051	214-264-9536
FRIDLEY NIROP	CHICAGO, CHARLESTON					
GLENVIEW NAS	NAS GLENVIEW BCO	AVENUE D	GLENVIEW	IL		
INDIANAPOLIS NAWC	WARREN LIBRARY	9701 EAST 21ST STREET	INDIANAPOLIS	IN	46229	317-269-1890
JACKSONVILLE NAS	WESCONNET PUBLIC LIBRARY	6887 103RD STREET	JACKSONVILLE	FL	32210	904-778-7306
KEY WEST NAS	MONROE CTY. PUBLIC LIBRARY	700 FLENING STREET	KEY WEST	FL	33040	305-292-3595
KINGS BAY NSB	ST. MARYS PUBLIC LIBRARY	100 HERB BAUER DRIVER	ST. MARYS	GA	31558	912-882-4800
MAYPORT NS	BEACHES BRANCH PUBLIC LIBRARY	600 THIRD STREET	NEPTUNE BEACH	FL	32266	904-241-1141
MEMPHIS NAS	SHELBY CTY. PUB. LIB. MILLINGTON BR.	4858 NAVY ROAD	MILLINGTON	TN	38053	901-725-8895
ORLANDO NTC	ORANGE COUNTY PUBLIC LIBRARY	101 EAST CENTRAL BLVD.	ORLANDO	FL	32801	407-425-4694
PENSACOLA NAS	NAS PENSACOLA LIBRARY	190 RADFORD BLVD. BLDG. 633	PENSACOLA	FL	32508	904-435-1760
PENSACOLA NAS	UNIV. OF WEST FL JOHN C. PACE LIB.	11000 UNIVERSITY PARKWAY	PENSACOLA	FL		904-474-2424
WHITING FIELD NAS	WEST FLORIDA REGIONAL MILTON BR.LIB.	805 ALABAMA ST.	MILTON	FL	32570	904-623-7274
SOUTHWESTERN DIVISION						
BARSTOW MCLB	BARSTOW BRANCH LIBRARY	304 EAST BUENA VISTA	BARSTOW	CA	92311	619-256-5850
	MARINE CORPS LOGISTICS BASE	ENVIRONMENTAL BRANCH	BARSTOW	CA		619-577-6839
CAMP PENDLETON MCB	MCB CAMP PENDLTON BASE LIBRARY	BUILDING 1122	CAMP PENDLTON	CA	92055	619-725-5669

APPENDIX J
INFORMATION REPOSITORIES FOR IR & BRAC INSTALLATIONS

INSTALLATION	LIBRARY NAME	STREET ADDRESS	CITY	STATE	ZIP CODE	PHONE #
CAMP PENDLETON MCB	OCEANSIDE PUBLIC LIBRARY	330 N. HILL STREET	OCEANSIDE	CA	92054	619-966-4677
CORONADO NAB	CITY OF CORONADO PUBLIC LIBRARY	640 ORANGE AVENUE	CORONADO	CA	92118	619-522-7390
	NAVAL AMPHIBOUS BASE, CORONADO	ENVIRONMENTAL DEPT. BLDG 104	CORONADO	CA	92118	619-437-2047
EL CENTRO NAF	CITY OF BRAWLEY PUBLIC LIBRARY	400 MAIN STREET	BRAWLEY	CA	92227	619-344-1896
	EL CENTRO PUBLIC LIBRARY	539 STATE STREET	EL CENTRO	CA	92243	619-337-4565
EL TORO MCAS	HERTIAGE PARK REGIONAL LIBRARY	14361 YALE AVENUE	IRVINE	CA	92714	714-551-7151
	MARINE CORPS AIR STATION LIBRARY	BUILDING 280	SANTA ANA	CA	92709	
LONG BEACH NS	LONG BEACH PUBLIC LIBRARY	101 PACIFIC AVENUE	LONG BEACH	CA	90810	310-437-2949
LONG BEACH NS SAN PEDRO	SAN PEDRO PUBLIC LIBRARY	931 S. GAFFEY STREET	SAN PEDRO	CA	90731	310-548-7779
LONG BEACH NSY	LONG BEACH PUBLIC LIBRARY	101 PACIFIC AVENUE	LONG BEACH	CA	90810	310-437-2949
MIRAMAR NAS	NAVAL AIR STATION, MIRAMAR	ENVIRONMENTAL OFFICE	MIRAMAR	CA		
NORTH ISLAND NAS	CITY OF CORONADO PUBLIC LIBRARY	640 ORANGE AVENUE	CORONADO	CA	92118	619-522-7390
	NAVAL AIR STATION, NORTH ISLAND	BASE LIBRARY, BUILDING 650	SAN DIEGO	CA	92135	619-545-8231
POINT MUGU NAWS	CITY OF OXNARD PUBLIC LIBRARY	214 SOUTH C STREET	OXNARD	CA	93030	805-984-4636
	NAVAL AIR WEAPONS STAT. BASE LIB.	BASE LIBRARY	POINT MUGU	CA		
PORT HUENEME NCBC	CITY OF OXNARD PUBLIC LIBRARY	214 SOUTH C STREET	OXNARD	CA	93030	805-984-4636
SALTON SEA TEST RANGE	SALTON COMMUNITY SERVICE DISTRICT	2098 FRONTAGE ROAD HWY 86	SALTON CITY	CA	92275	619-394-4446
	SPENCER LIBRARY IMPERIAL VALLEY COL.	P.O.BOX158 ATEN RD./HWY111	IMPERIAL	CA	92251	619-355-6377
SAN DIEGO NCCOSC	POINT LOMA PUBLIC LIBRARY	2130 POINSETTIA DRIVE	SAN DIEGO	CA	92107	619-531-1539
SAN DIEGO NS	NAVAL CITY LIBRARY					
SAN DIEGO NSB	POINT LOMA PUBLIC LIBRARY	2130 POINSETTIA DRIVE	SAN DIEGO	CA	92107	619-531-1539
SAN DIEGO NTC	POINT LOMA PUBLIC LIBRARY	2130 POINSETTIA DRIVE	SAN DIEGO	CA	92107	619-531-1539
SAN NICOLAS ISLAND OLF	NAVAL AIR WEAPONS STAT. BASE LIB.	BASE LIBRARY	POINT MUGU	CA		
	OXNARD PUBLIC LIBRARY MAIN BRANCH	251 SOUTH A STREET	OXNARD	CA	93030	805-385-7500
SEAL BEACH NWS	SEAL BEACH LIB. MARY WILSON BRANCH	707 ELECTRIC AVENUE	SEAL BEACH	CA	90740	310-431-3584
TUSTIN MCAS	MAIN LIB. GOVERN. PUBLICATIONS DEPT.	UNIVERSITY OF CALIF., IRVINE	IRVINE	CA	92714	714 824 7362
TWENTYNINE PALMS MCAGCC	MCAGCC TWENTYNINE PALMS LIBRARY	BASE LIBRARY	TWENTYNINE PALMS	CA	92278	
	TWENTYNINE PALMS BRANCH LIBRARY	6078 ADOBE ROAD	TWENTYNINE PALMS	CA		
WEST ENGINEERING FIELD ACTIVITY						
ALAMEDA NAS	ALAMEDA PUBLIC LIB. MAIN BRANCH	2264 SANTA CLARA AVENUE	ALAMEDA	CA	94501	510-748-4661
CENTERVILLE BEACH NAVFAC	FERNDALE PUBLIC LIBRARY	807 MAIN STREET	FERNDALE	CA	95536	707-786-9559
CHINA LAKE NAWS	KERN COUNTY LIBRARY, RIDGECREST	131 EAST LAS FLORES	RIDGECREST	CA	93555	619-375-7666
CONCORD NWS	CONTRA COSTA COUNTY LIB. MAIN BR.	1750 OAK PARK BOULEVARD	PLEASANT HILL	CA	94523	510-646-6434
CROWS LANDING NALF	PATTERSON LIBRARY	46 N. SALADO AVENUE	PATTERSON	CA	95363	209-892-6473
FALLON NAS	CHURCHILL COUNTY LIBRARY	160 CAMPUS WAY	FALLON	NV	89406	702-423-7581

APPENDIX J
INFORMATION REPOSITORIES FOR IR & BRAC INSTALLATIONS

INSTALLATION	LIBRARY NAME	STREET ADDRESS	CITY	STATE	ZIP CODE	PHONE #
LEMOORE NAS	CITY OF LEMOORE PUBLIC LIBRARY	457 C STREET	LEMOORE	CA	93245	209-924-2188
MARE ISLAND NSY	JOHN F. KENNEDY LIBRARY	505 SANTA CLARA	VALLEJO	CA	94590	707-553-5568
MOFFETT FIELD NAS	CITY OF MOUNTAIN VIEW LIBRARY	585 FRANKLIN STREET	MOUNTAIN VIEW	CA	94041	415-966-6335
MONTEREY NPGS	ENGINEERING FIELD ACTIVITY, WEST	900 COMMODORE DRIVE	SAN BRUNO	CA		415-244-2564
OAKLAND FISC	OAKLAND MAIN LIBRARY	125 14TH STREET	OAKLAND	CA	94612	510-238-3138
OAKLAND FISC ALAMEDA ANNEX	ALAMEDA PUBLIC LIB. MAIN BRANCH	2264 SANTA CLARA AVENUE	ALAMEDA	CA	94501	510-748-4661
OAKLAND FISC ALAMEDA ANNEX	OAKLAND MAIN LIBRARY	125 14TH STREET	OAKLAND	CA	94612	510-238-3138
POINT MOLATE NAVY FUEL DEPOT	RICHMOND CITY HALL	2600 BARRETT AVENUE	RICHMOND	CA	94804	510-620-6542
POINT MOLATE NAVY FUEL DEPOT	RICHMOND PUBLIC LIBRARY	325 CIVIC CENTER PLAZA	RICHMOND	CA	94804	510-620-6561
SKAGGS ISLAND NSGA	SONOMA VALLEY REGIONAL LIBRARY	755 W. NAPA STREET	SONOMA	CA	95476	707-996-5217
STOCKTON NCS	STOCKTON PUBLIC LIBRARY	605 N. EL DORADO STREET	STOCKTON	CA	95202	209-937-8221
TREASURE ISLAND NS	SAN FRANCISCO PUBLIC LIBRARY	GOV.INFO.CTR. 11 HYDE STREET	SAN FRANCISCO	CA	94102	415-557-4470
TREASURE ISLAND NS HUNTERS POINT ANNEX	ANNA E. WADEN BRANCH LIBRARY	5075 THIRD STREET	SAN FRANCISCO	CA	94124	415-468-1323
TREASURE ISLAND NS HUNTERS POINT ANNEX	SAN FRANCISCO LIBRARY MAIN BRANCH	GOV.INFOR.CTR. 11 HYDE STREET	SAN FRANCISCO	CA	94120	415-557-4470

APPENDIX K
REGULATION SUMMARY

Understanding the regulations and laws that affect the Installation Restoration Program (IRP) is necessary to effect installation restoration and efficiently implement the IRP. The following capsules of regulations pertinent to the IRP are provided as brief summaries for the reader's edification. Some are also summarized in Appendix K, the glossary.

CERCLA

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) 42 USC 9601
CERCLA, commonly referred to as Superfund, gave Federal agencies authority to respond to the release or the substantial threat of release of hazardous substances into the environment. It also extends to situations where pollutants and contaminants present imminent and substantial danger to public health or welfare. CERCLA authorized the establishment of a trust fund to be used in the cleanup and mitigation of emergency and long-term hazardous waste problems for non-DOD entities.

CERCLA/SARA requires that other Federal laws and more stringent state laws and regulations be considered when conducting response actions. Examples of laws which might be applied as Applicable and Relevant or Appropriate Requirements (ARARs) are Resource Conservation and Recovery Act (RCRA), The Toxic Substances Control Act (TSCA), and the Safe Drinking Water Act (SDWA).

SARA

Superfund Amendments and Reauthorization Act of 1986 (SARA)
Funding and authority under CERCLA extended only to 30 September 1985. SARA was passed as Public Law 99-499 on 17 October 1986 to reauthorize the fund and to amend the authorities and requirements of CERCLA and other associated laws. Congress extended the authorization of CERCLA in 1990 to 30 September 1994 since the program was far from being complete. SARA is divided into five major titles. Titles I and III are the most directly related to the IRP and the Defense Environmental Restoration Program (DERP). CERCLA is currently up for reauthorization.

- **Title I** - Response and Liability. The DERP and the IR Program are subject to the provisions of Section 120 under this Title. Congress established special funding, the Defense Environmental Restoration Account (DERA), to pay for the cost of DOD responses to hazardous waste sites.

- **Title III** - Established the Environmental Planning and Community Right to Know Act of 1986. Though this Title does not directly apply to Federal agencies, DOD policy is to comply with its provisions to the extent practicable within the constraints of national security and other considerations.
  Under this Title, installations are required to:

  - upgrade their Spill Prevention, Control, and Countermeasures (SPCC) Plans;
  - train personnel in hazardous substance spill response; and
  - notify local emergency response planners of the existence of hazardous substances on their facility.

CERFA

Community Environmental Response Facilitation Act of 1992 (CERFA)
This law amends CERCLA, and requires that the Federal Government identify real property on each facility which is not contaminated, and that offers the greatest opportunity for expedited reuse and redevelopment by the community. The identified parcels of real property must be either free from hazardous substances and petroleum products, or the remediation of contamination by those substances should be expedited to facilitate transfer to the public.

Parcels of real property free from contamination are those on which no hazardous substances and no petroleum products, aviation fuel, motor oil, or their derivatives were stored for over a year or parcels on which there are no known releases or disposals of the above substances.

In order to identify a parcel suitable for reuse, an investigation should consist of:

- A detailed search of Federal government records pertaining to the property
- Aerial photographs that could reflect prior uses of the property
- A recorded chain of title documents regarding the property
- A visual and physical inspection of the property adjacent to the real property
- Government records (Federal, State and local) of each adjacent facility where there has been a release of any hazardous substance, oil, or any petroleum product or derivative
- Interviews with current or former employees involved in operations on the property and
- Sampling, if appropriate

The law states that the findings must be concurred with by the EPA Administrator if a National Priorities List (NPL) site, or if non-NPL, then the appropriate State Official.

State concurrence is required for real property not on the NPL, whether BRAC or non-BRAC. State concurrence is considered to be obtained if, within 90 days after receiving a request from the federal agency, the State Official has not acted (by either agreeing or declining to agree) on the request for concurrence.

BRAC facilities must identify parcels and receive concurrence from the respective regulatory agency within 18 months after being designated a BRAC activity.

Non-BRAC facilities must identify parcels and receive concurrence from the respective regulatory agency at least six months before the cessation of operations on the property.

When the property is transferred, the government will still be responsible for any remediation or corrective action or any response action found to be necessary after the transfer date at a given property. Therefore, if the government has to carry out a response action or corrective action on adjoining property, a clause allowing access to the property must be added to the deed.

Long term monitoring (operations and maintenance, pump and treat operations) will not prevent the transfer of property, as long as all remedial action has been taken and the construction and installation of an approved remedial design has been completed, and the remedy has been demonstrated to the Administrator to be operating properly and successfully.

NCP

National Oil and Hazardous Substances Contingency Plan (NCP) 40 CFR Part 300

The NCP is the basic regulation that implements the statutory requirements of CERCLA and Section 311 of the Clean Water Act (CWA). DON must comply with this regulation as law.

The NCP "provides the organizational structure and procedures for preparing for and responding to discharges of oil and release of hazardous substances, pollutants, and contaminants." It also establishes initial response action and notification procedures for the release of a reportable quantity of a hazardous substance.

To implement the strategies of the NCP, the Plan established the National Response Team (NRT) which consists of representatives from numerous Federal agencies. The position of On-Scene Coordinator (OSC) was established by the NCP. The OSC has responsibilities during spill response and cleanup. The OSC also makes make notifications and develops their area's regional contingency plan.

RCRA

Resource Conservation and Recovery Act of 1976 (RCRA) 42 USC 6901

Congress enacted the Resource Conservation and Recovery Act (RCRA) in 1976 as amendments to the Solid Waste Disposal Act (SWDA) of 1984. Congress amended RCRA in 1980 and 1984. RCRA is the first comprehensive federal effort to deal with safe disposal of all types of hazardous wastes, and provides for "cradle to grave" tracking of hazardous wastes. RCRA requirements apply to those who generate, handle, transport, treat, store or dispose of hazardous waste. Various forms are used to document the chain of custody for hazardous wastes.

Permits are required for treatment, storage or disposal. Clean up of contamination (corrective action) from past as well as present operations may be a prerequisite to issuance of a permit. The 1984 amendments prohibit continued land disposal of untreated wastes.

Requirements for underground storage tanks (USTs) are also contained in RCRA. Owners and operators are required to register tanks, provide secondary containment, monitor tank integrity, and cleanup contamination from their tanks.

HSWA

Hazardous and Solid Waste Amendments of 1984 (HSWA) (PL 98-616)
RCRA was established to address the proper handling, tracking, storage, transportation, and disposal of hazardous wastes. It is applicable to all generators, transporters, storers, and disposers of hazardous wastes. "Cradle to grave" tracking under RCRA provides a means of ensuring safety for the public and the environment.

Corrective action authority under RCRA is intended to provide the Environmental Protection Agency (EPA), or the State which has primacy, with the ability to control all types of environmental pollution. This is accomplished by exercising the following statutes:

- Section 3004(u) which requires corrective action be included as a permit condition for releases of hazardous wastes at a treatment, storage, or disposal facility at the time of original application or renewal.

- Section 3008(h) which requires that corrective action is a precondition to obtaining a permit. (The waiver of sovereign immunity subjects the Federal Government to permitting requirements.)

CWA

Clean Water Act (CWA) of 1967 as amended by the Federal Water Pollution Control Act of 1972
This is the major legislation aimed at restoring and maintaining the quality of the nation's waters. The CWA originally established the NCP under Section 311 to permit the U.S. Coast Guard and EPA to clean up spills of oils and other hazardous substances when they were released into the navigable waters of the United States.

CAA

Clean Air Act of 1970 (CAA) as amended by the Clean Air Act Amendments of 1990 (PL 101-549)
The CAA requirements must be implemented as part of the IR Program in cases where response actions include the release of contaminants to the air.

The purpose of Clean Air Act is "to protect and enhance the quality of the Nation's air resources so as to promote public health and welfare and the productive capacity of its population..." The CAA requires EPA to set binding National Ambient Air Quality Standards (NAAQS), which define how clean the air must be. Standards have been set for six primary pollutants: carbon monoxide, lead, ozone, nitrogen dioxide, sulfur dioxide, and total suspended particulates. EPA also has developed New Source Performance Standards (NSPS), National Emission Standards for Hazardous Air Pollutants (NESHAP) and standards for mobile sources. Hazardous air pollutants are: asbestos, arsenic, benzene, beryllium, mercury, radionuclides, vinyl chloride and coke oven emissions.

Air quality standards are achieved by the states through State Implementation Plans (SIPs), which define how they will meet air quality standards. The plans specify emission limits and compliance schedules for pollution sources. SIPs are tailored to the needs of the different air quality control regions. A region not meeting air standards is said to be a 'non-attainment area,' and regulations for the area will generally place stricter requirements on sources of air pollution.

Navy installations are subject to federal, state and local air pollution control requirements. Permits are required to construct and to operate 'major' air pollution sources. Civil fines may be assessed by local air pollution control districts.

NEPA

National Environmental Policy Act (NEPA), 42 USC 4321
The National Environmental Policy Act (NEPA), was signed into law on 1 January 1970. The primary requirement of NEPA is for Federal agencies to consider the environmental impacts of proposed actions in their decision-making process.

According to Department of the Navy regulations revised in August 1990, the action proponent will determine the level or amount of NEPA documentation required. Major actions significantly affecting the environment require preparation of an Environmental Impact Statement (EIS). Actions for which impacts are not known or which may not be significant require an Environmental Assessment (EA). Notices in the federal register are required for EISs and EAs. NEPA requirements apply to all decisions, not just military construction.

If IRP actions follow the NCP and fulfill public participation requirements, then IRP is deemed to have complied with NEPA, and there is no need for separate documentation.

Agency decisions under NEPA are subject to review by the courts.

EXECUTIVE ORDERS

Executive Order (E.O.) 12088 (13 October 1978) and 12580 (23 January 1987)
These two Executive Orders require Federal agencies to clean up their facilities with regard to the environment. E.O. 12088 requires Federal compliance with applicable pollution control standards. E.O. 12580 delegated the President's authority under CERCLA and SARA to various Federal agencies, including DOD.

APPENDIX L
HISTORY OF THE ENVIRONMENTAL RESTORATION PROGRAM

The DON/DOD cleanup program began with the passage of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). In the early 1980's, the DON solicited information from each Navy and Marine Corps installation about activities conducted on their base. Of particular interest were industrial facilities, disposal areas, landfills, past operations, drinking water wells and other practices that could have resulted in hazardous waste disposal sites. After careful evaluation of the data, DON recommended 79 installations for further study.

At the inception of the DON cleanup program, CERCLA did not specifically apply to federal facilities. However, the DON intended to become a good steward of the environment. This led to the establishment of a similar, but slightly varied program called the Naval Assessment and Control of Installation Pollutants (NACIP). The DON conducted Initial Assessment Studies (IASs), Verification Studies, Confirmation Studies and Corrective Action Measures as part of the NACIP program. The Naval Facilities Engineering Service Center completed IASs at the 79 installations by 1984. Remedial Project Managers at Naval Facilities Engineering Command Engineering Field Divisions (EFDs) then conducted follow on phases of the NACIP.

Passage of the Superfund Amendments and Reauthorization Act (SARA) in 1986 brought all federal facilities under the umbrella of the CERCLA program. SARA required the DON to follow Environmental Protection Agency (EPA) rules and regulations and to have a program that was procedurally and substantively equivalent to the EPA's Superfund program. SARA also formalized the Defense Environmental Restoration Program (DERP) and provided separate funding to DOD for the cleanup program. Currently, Congress provides this separate funding, the Environmental Restoration, Navy (ER, N), directly to the DON.

Following passage of SARA, DOD and the services adopted the EPA's Superfund terminology. Building on information contained in the IASs, the DON initiated studies to confirm the presence and extent of contamination at all Navy and Marine Corps installations. The DON now uses EPA's Superfund guidance to conduct Preliminary Assessments/Site Investigations, Remedial Investigation/Feasibility Studies and Remedial Designs/Remedial Actions to determine hazardous waste site cleanup requirements.

In addition to CERCLA cleanup actions, DON uses ER, N funding to clean up sites under Resource Conservation and Recovery Act (RCRA) Corrective Action and RCRA Underground Storage Tank authority when these sites qualify for ER, N funding. Since the program began, funding has increased from $21 million in FY-84 and peaked at $407 million in FY-94. FY-97 funding stands at $288 million. The DON is well along in the study phase and is transitioning to a program marked by an increasing level of funding being dedicated to actual cleanups. Since FY-91, the level of funding attributed to actual cleanups has risen from 13% to 65% in FY-96.

APPENDIX M
SITE PHASES IN THE DON'S ENVIRONMENTAL RESTORATION PROGRAM

Site phases in the DON's Environmental Restoration Program include:

PRELIMINARY ASSESSMENT

The installation restoration process normally begins with a Preliminary Assessment (PA) which is accomplished by the Naval Facilities Engineering Command (NAVFACENGCOM). The purpose is to identify potentially contaminated sites at an installation. This step involves the collection and review of readily available, existing information on past hazardous waste disposal operations or hazardous material spills at Navy or Marine Corps installations. The information is studied to determine the potential for the presence of hazardous substances. It considers pathways of exposure and possible receptors, the source, nature and threat of any release, the magnitude of the potential threat and whether or not removal or treatment is necessary.

SITE INSPECTION

A Site Inspection (SI) is performed for sites identified in the PA as potentially contaminated. The purpose is to augment the data collected in the PA and to generate, if necessary, sampling and other field data to determine if further action or investigation is warranted. It consists of an on-site investigation to determine whether there is a release or potential release and the nature of the associated threats.

Information from the PA and SI are used by the Environmental Protection Agency (EPA) to determine if an installation should be proposed for inclusion on the National Priorities List (NPL). The NPL is a list of sites nationwide, both public and private, that pose the greatest threat to human health or the environment. EPA makes this determination through their Hazard Ranking System (HRS) which assesses the information provided on a site and calculates an HRS score. An HRS score of 28.5 or greater qualifies the site for the NPL. The DON, in accordance with DOD policy, enters into a Federal Facilities Agreement (FFA) with the cognizant EPA region as soon as possible after the installation is listed on the NPL. In many cases, states in which NPL installations are located are third parties to the FFA. The FFA specifies the roles and responsibilities of the regulatory agencies and the DON. It also establishes milestones for future cleanup actions.

REMEDIAL INVESTIGATION/FEASIBILITY STUDY

If a site is verified as contaminated in the SI, it then proceeds to a Remedial Investigation/ Feasibility Study (RI/FS). The purpose of the RI/FS is to determine the nature and extent of the threat presented by a release, and where appropriate, to evaluate proposed remedies. The RI is a detailed study that involves a variety of investigative sampling and analytical activities, including installation of monitoring wells, and geophysical studies. It also includes the collection of soil, air, water and other samples to determine contaminant characteristics, hazards and routes of exposure. When appropriate, a Human Health Risk Assessment and an Ecological Risk Assessment are conducted according to EPA guidelines. The FS uses information generated by the RI to identify potential cleanup actions. During the FS, a number of potential remedial alternatives are developed and screened to evaluate their ability to meet a range of factors including technical and regulatory requirements. After consideration of public and regulatory agency comments, the RI/FS is concluded by selection of the remedy, which may also include a recommendation of no further action. The selection is documented by a Record of Decision (ROD) for NPL sites and by a Decision Document for sites not listed on the NPL.

REMEDIAL DESIGN

A site identified in the RI/FS as requiring a cleanup action will then move into the Remedial Design (RD) phase. The goal of the RD is to prepare all technical drawings and specifications needed to implement the selected cleanup action. The Remedial Design begins the cleanup phase.

INTERIM REMEDIAL ACTIONS, REMOVALS, REMEDIAL ACTION

Interim Remedial Actions (IRAs) and removal actions may be undertaken at any point during the investigation or cleanup of a site to respond to a release that may present an imminent and substantial threat to human health or the environment, to reduce the overall risk of a site or to stabilize a site until the final cleanup action can be completed. On an increasing basis, the DON is using IRAs as a tool to quickly respond to site contamination, reduce study costs and accelerate the cleanup process.

The Remedial Action (RA) is the actual construction, operation and implementation of the selected final cleanup action.

The DON's overall goal for FY-96 was to allocate at least 65% of its DERA budget on cleanups.

RESPONSE COMPLETE

When the DON has completed all the necessary study and cleanup actions, and the DON considers all work completed, the site is designated Response Complete (RC). At this point, regulatory concurrence that all work is complete is sought from the appropriate agencies.

SITE CLOSEOUT

When no further actions under the IRP are considered by the DON to be appropriate because the site does not pose a threat to human health or the environment and consent from the regulators is obtained, the site is designated Site Close Out (SCO). At NPL installations, it is necessary for the EPA to concur with this decision. At non-NPL installations, state concurrence with SCO may be required, depending on the individual state policy. A site may be closed out at the end of the PA, SI, RI/FS or RA.

APPENDIX N
LIST OF ACRONYMS

A

ABL	Allegany Ballistics Lab
ACL	Alternate Concentration Limit
AD	Aircraft Division
AFFF	Aqueous Fire Fighting Foam
AFRC	Armed Forces Reserve Center
AIMD	Aircraft Intermediate Maintenance Department
ARAR	Applicable or Relevant and Appropriate Requirement
ASN	Assistant Secretary of the Navy
ASTROGRPDET	Astronautics Group Detachment
ASTM	American Society for Testing and Materials
ATSDR	Agency for Toxic Substances and Disease Registry
AWQC	Ambient Water Quality Criteria
AOC	Area of Concern

B

BCP	BRAC Cleanup Plan
BCT	BRAC Cleanup Team
BDDR	Building Demolition and Debris Removal
BEC	BRAC Environmental Coordinator
BEST	Building Economic Solutions Together
BNA	Base-Neutral and Acid Extractable Organic Compounds
BRA	Baseline Risk Assessment
BRAC	Base Realignment and Closure
BTEX	Benzene, Toulene, Ethylbenzene, Xylene
BUMED	Chief Bureau of Medicine and Surgery

C

CA	Corrective Action
CAA	Clean Air Act
CAMP	Corrective Action Management Plan
CAP	Corrective Action Plan
CB	Construction Battalion
CBC	Construction Battalion Center
CDAA	Circularly Disposed Antenna Array
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)
CERFA	Community Environmental Response Facilitation Act of 1992
CFC	Chlorofluorocarbon
CINCLANTFLT	Commander-in-Chief, Atlantic Fleet
CINCPACFLT	Commander-in-Chief, Pacific Fleet
CLEAN	Comprehensive Long-Term Environmental Action Navy
CLP	Contract Laboratory Program
CMC	Commandant of the Marine Corps
CMI	Corrective Measures Implementation
CMP	Corrective Measures Plan
CMS	Corrective Measures Study
CNET	Chief of Naval Education and Training
CNO	Chief of Naval Operations
CNR	Chief of Naval Research
COMNAVBASE	Commander, Naval Base

COMNAVDIST	Headquarters Naval District
COMNAVAIRSYSCOM	Commander, Naval Air Systems Command
COMNAVCOMTELCOM	Commander, Naval Computer and Telecommunications Command
COMNAVFACENGCOM	Commander, Naval Facilities Engineering Command
COMNAVMARIANAS	Commander, Naval Forces Marianas
COMNAVMETOCCOM	Commander, Naval Meteorology and Oceanography Command
COMNAVRESFOR	Commander, Naval Reserve Forces
COMNAVSECGRU	Commander, Naval Security Group
COMNAVSEASYSCOM	Commander, Naval Sea Systems Command
COMNAVSUPSYSCOM	Commander, Naval Supply Systems Command
COMSPAWARSYSCOM	Commander, Space and Naval Warfare Systems Command
CONUS	Continental United States
CORA	Cost of Remedial Action
CRP	Community Relations Plan
CS	Confirmation Study
CWA	Clean Water Act

D

DDT	Dichloro-diphenyl-trichloro-ethane
DEQPPM	Defense Environmental Quality Program Policy Memorandum
DEP	Department of Environmental Protection
DER	Department of Environmental Resources
DERA	Defense Environmental Restoration Account
DERP	Defense Environmental Restoration Program
DES	Design
DFM	Diesel Fuel Marine
DFSP	Defense Fuel Supply Point
DLA	Defense Logistics Agency
DNAPL	Dense Non-Aqueous Phase Liquid
DNT	Dinitro-toluene
DOD	Department of Defense
DOE	Department of Energy
DOI	Department of Interior
DON	Department of the Navy
DPDO	Defense Property Disposal Office
DPM	Defense Priority Model
DRMO	Defense Reutilization and Marketing Office
DSERTS	Defense Site Environmental Restoration Tracking System
DSMOA	Defense and State Memorandum of Agreement
DTSC	Department of Toxic Substances and Control
DUSD(ES)	Deputy Under Secretary of Defense (Environmental Security)
DWTP	Domestic Wastewater Treatment Plant

E

EA	Environmental Assessment
EBS	Environmental Baseline Survey
ECE	Environmental Compliance Evaluation
ECP	Environmental Condition of Property
EE/CA	Engineering Evaluation/Cost Analysis
EFA	Engineering Field Activity
EFACHES	Engineering Field Activity, Chesapeake, Naval Facilities Engineering Command
EFANW	Engineering Field Activity, Northwest, Naval Facilities Engineering Command
EFAWEST	Engineering Field Activity, West, Naval Facilities Engineering Command
EFD	Engineering Field Division
EIS	Environmental Impact Statement

EMR	Environmental Monitoring Report
ENGFLDACT	Engineering Field Activity
EO	Explosive Ordnance
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
EPIC	Environmental Photographic Interpretation Center
ER	Environmental Restoration
ERA	Ecological Risk Assessment
ESI	Extended Site Inspection

F

FASOTRAGRUPACDET	Fleet Aviation Specialized Operational Training Group Pacific Detachment
FASWTC	Fleet Antisubmarine Warfare Training Center
FCTC	Fleet Combat Training Center
FFA	Federal Facility Agreement
FFAAP	Federal Facility Agreement Assessment Program
FFCA	Federal Facilities Compliance Agreement
FFS	Focused Feasibility Study
FFSRA	Federal Facility Site Remediation Agreement
FI	Facility Investigation
FISC	Fleet and Industrial Supply Center
FLTMINEWARTRACEN	Fleet and Mine Warfare Training Center
FLTRGGRA	Fleet Training Group
FLTSURSPTCMD DET	Fleet Surveillance Support Command Detachment
FOSL	Findings of Suitability for Lease
FOST	Findings of Suitability for Transfer
FRA	Final Remedial Action
FS	Feasibility Study
FUDS	Formerly Used Defense Sites
FY	Fiscal Year

G

GAC	Granulated Activated Carbon
GEPA	Guam EPA
GIS	Geographic Information System
GOCO	Government Owned/Contractor Operated
GPM	Gallons per Minute
GPR	Ground Penetrating Radar
GSA	General Services Administration
GWTP	Ground Water Treatment Plant

H

HAZMIN	Hazardous Waste Minimization
HHRA	Human Health Risk Assessment
HRS	Hazard Ranking System
HSWA	Hazardous and Solid Waste Amendments
HW	Hazardous Waste

I

IAG	Interagency Agreement
IAS	Initial Assessment Study
IDW	Investigative Derived Waste
IM	Interim Measure
IMP	Implementation

INACTSHIPDET	Inactive Ship Maintenance Facility Detachment
INV	Investigation
IR	Installation Restoration
IRA	Interim Remedial Action
IRM	Interim Remedial Measure
IROD	Interim Record of Decision
IRP	Installation Restoration Program
IRTCG	Installation Restoration Technology Coordinating Group
IS	Inferred Source
IS	Investigative Set
ISC	Initial Site Characterization
ISV	In-Situ Volatilization
IWTP	Industrial Wastewater Treatment Plant

L

LANTDIV	Atlantic Division, Naval Facilities Engineering Command
LDL	Low Detection Limit
LNAPL	Light Non-Aqueous Phase Liquid
LRA	Local Redevelopment Authority
LTM	Long Term Monitoring
LTO	Long Term Operation

M

MCAGCC	Marine Corps Air Ground Combat Center
MCAS	Marine Corps Air Station
MCB	Marine Corps Base
MCCDC	Marine Corps Combat Development Command
MCL	Maximum Contaminant Level
MCLB	Marine Corps Logistics Base
MCMWTC	Marine Corps Mountain Warfare Training Center
MCRC	Marine Corps Reserve Center
MCRD	Marine Corps Recruit Depot
MCRTC	Marine Corps Reserve Training Center
MEK	Methyl Ethyl Ketone
MILCON	Military Construction
MOU	Memorandum of Understanding
MPS	Media Protection Standards

N

NACIP	Naval Assessment and Control of Installation Pollutants
NADC	Naval Air Development Center
NADEP	Naval Aviation Depot
NAEC	Naval Air Engineering Center
NAF	Naval Air Facility
NALF	Naval Auxiliary Landing Field
NAPC	Naval Air Propulsion Center
NARL	Naval Arctic Research Laboratory
NAS	Naval Air Station
NASO	Naval Aviation Supply Office
NATO	North Atlantic Treaty Organization
NAVFAC	Naval Facilities Engineering Command
NAVFACENGCOM	Naval Facilities Engineering Command
NAVAIRWARCEN	Naval Air Warfare Center
NAVBASE	Naval Base
NAVCAMS	Naval Communication Area Master Station

NAVCOMMU	Naval Communications Unit
NAVENPVNTMEDU	Navy Environmental and Preventive Medicine Unit
NAVEODTECHCEN	Naval Explosive Ordnance Disposal Technology Center
NAVHOSP	Naval Hospital
NAVMAG	Naval Magazine
NAVMARCORESCEN	Naval and Marine Corps Reserve Center
NAVMEDCOMNWREG	Naval Medical Command, Northwest Region
NAVPETOFF	Navy Petroleum Office
NAVPETRES	Naval Petroleum Reserve
NAVPHIBASE	Naval Amphibious Base
NAVRADSTA	Naval Radio Station
NAVRECCEN	Naval Recreation Center
NAVREGDENCEN	Naval Regional Dental Center
NAVRESCEN	Naval Reserve Center
NAVRESFAC	Naval Reserve Facility
NAVRESMAINTRAFAC	Naval Reserve Maintenance Training Facility
NAVSCSCOL	Naval Supply Corps School
NAVSECSTA	Naval Security Station
NAVSHIPREPFAC	Naval Ship Repair Facility
NAVSTAFO	Department of the Navy Staff Offices
NAVSURFWARCEN	Naval Surface Warfare Center
NAWC	Naval Air Warfare Center
NAWCAD	Naval Air Warfare Center Aircraft Division
NCBC	Naval Construction Battalion Center
NCCOSC	Naval Command Control and Ocean Surveillance Center (also NOSC)
NCEL	Naval Civil Engineering Laboratory
NCO	Non-Commissioned Officer
NCP	National Oil and Hazardous Substance Pollution Contingency Plan
NCS	Naval Communication Station
NCSS	Naval Coastal Systems Station
NCTAMS	Naval Computer and Telecommunciations Area Master Station
NCU	Naval Communication Unit
NEHC	Navy Environmental Health Center
NELP	Navy Environmental Leadership Program
NEPA	National Environmental Policy Act
NESEA	Naval Electronic Systems Engineering Activity
NESEC	Naval Electronic Systems Engineering Center
NETC	Naval Education and Training Center
NEX	Navy Exchange
NFA	No Further Action
NFD	Navy Fuel Depot
NFESC	Naval Facilities Engineering Service Center
NFRAP	No Further Response Action Planned
NIROP	Naval Industrial Reserve Ordnance Plant
NISE	Naval In-Service Engineering
NJDEP	New Jersey Department of Environmental Protection
NMCRC	Naval and Marine Corps Reserve Center
NOAA	National Oceanic and Atmospheric Administration
NORTHDIV	Northern Division, Naval Facilities Engineering Command
NOS	Naval Ordnance Station
NOSC	Naval Ocean Systems Center (also NCCOSC)
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
NPGS	Naval Post Graduate School
NPL	National Priorities List
NPPS	Navy Publishing and Printing Services
NPPSO	Navy Publishing and Printing Services Office

NPRO	Naval Plant Representative Office
NRC	Naval Reserve Center
NRDL	Navy Radiological Defense Laboratory
NRL	Naval Research Laboratory
NRL UWS REF DET	Naval Research Lab Underwater Sound Reference Detachment
NPR	Naval Priorities Reuse (Committee)
NRT	National Response Team
NRTF	Naval Radio Transmitting Facility
NS	Naval Station
NSA	Naval Support Activity
NSB	Naval Submarine Base
NSC	Naval Supply Center
NSD	Naval Supply Depot
NSFO	Navy Special Fuel Oil
NSGA	Naval Security Group Activity
NSWC	Naval Surface Warfare Center
NSY	Naval Shipyard
NTC	Naval Training Center
NTIC	Naval Technical Intelligence Center
NTTC	Naval Technical Training Center
NUSC	Naval Underwater Systems Center
NUWC	Naval Undersea Warfare Center
NUWES	Naval Undersea Warfare Engineering Station
NWC	Naval Weapons Center
NWIRP	Naval Weapons Industrial Reserve Plant
NWS	Naval Weapons Station
NWSC	Naval Weapons Support Center

O

O&M	Operations and Maintenance
O&M, MC	Operations and Maintenance, Marine Corps
O&M, N	Operations and Maintenance, Navy
ODASD(E)	Office of the Deputy Assistant Secretary of Defense (Environment)
OEW	Ordnance and Explosive Waste
OGC	Office of the General Counsel
OLF	Outlying Landing Field
OHW	Other Hazardous Waste
OMB	Office of Management and Budget
ONI	Director, Office of Naval Intelligence
OSC	On-Scene Coordinator
OSHA	Occupational Safety and Health Act
OU	Operable Unit
OWTP	Oily Wastewater Treatment Plant

P

PA	Preliminary Assessment
PACDIV	Pacific Division, Naval Facilities Engineering Command
PAH	Polynuclear Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PCE	Perchloroethylene
PCR	Pollution Control Report
PDO	Property Disposal Office
PEECP	Pilot Expedited Environmental Cleanup Program
PHC	Petroleum Hydrocarbons
PMRF	Pacific Missile Range Facility

PMTC	Pacific Missile Test Center
POA	Plan of Action
POLs	Petroleum, Oil, and Lubricants
PP	Proposed Plan
PPB	Parts per Billion
PPM	Parts per Million
PRAP	Proposed Remedial Action Plan
PRC	Primate Research Center
PREQB	Puerto Rican Environmental Quality Board
PRG	Preliminary Remedial Goals
PRP	Potentially Responsible Party
PR/VSI	Preliminary Records Search/Visual Site Inspection
PSC	Potential Sources of Contamination
PSEs	Preliminary Source Evaluations
PWC	Public Works Center

Q

QA	Quality Assurance
QC	Quality Control

R

RA	Remedial Action
RAB	Restoration Advisory Board
RAC	Remedial Action Contract
RACER	Remedial Action Cost Engineering and Requirements System
RADC	Radioactive Disposal Committee
RAP	Remedial Action Plan
RASO	Radiological Affairs Support Office
RASS	Remedial Action Subsite
RC	Response Complete
RCRA	Resource Conservation and Recovery Act of 1976
RD	Remedial Design
RDA	Redevelopment Authority
RD&D	Research, Development and Demonstration
RDS	Response Decision System
RDX	Royal Demolition Explosive (Cyclotrimethylenetrinitranine)
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
RIDEM	Rhode Island Department of Environmental Management
RIP	Remedy In Place
RIPA	Rhode Island Port Authority
RMIS	Restoration Management Information System
ROD	Record of Decision
ROICC	Resident Officer in Charge of Construction
RPM	Remedial Project Manager
RR	Rapid Response
RT&E	Research, Testing, and Evaluation
RWQCB	Regional Water Quality Control Board

S

SA	Study Area
SARA	Superfund Amendments and Reauthorization Act
SASE	Study Area Screening Evaluation
SCDHEC	South Carolina Department of Health and Environmental Control

SDWA	Safe Drinking Water Act
SCO	Site Closeout
SI	Site Inspection
SIP	State Implementation Plan
SIMA	Shore Intermediate Maintenance Activity
SMP	Site Management Plan
SOUTHDIV	Southern Division, Naval Facilities Engineering Command
SOUTHWESTDIV	Southwestern Division, Naval Facilities Engineering Command
SPCC	Spill Prevention, Control, and Countermeasures
SSOW	Site Scope of Work
SSP	Director, Strategic Systems Programs
STM	Short Term Measure
STRM	Short Term Remediation Measure
SUPSHIP	Supervisor of Shipbuilding, Conversion, and Repair
SVOC	Semi-volatile Organic Compound
SWMU	Solid Waste Management Unit

T

TAG	Technical Assistance Grant
TCA	Trichloroethane
TCE	Trichloroethylene
TCLP	Toxicity Characteristics Leaching Procedure
TCRA	Time Critical Removal Action
TDS	Total Dissolved Solids
TM	Technical Memorandum
TNT	Trinitrotoluene
TOC	Total Organic Carbon
TOX	Total Organic Halides
TQL	Total Quality Leadership
TPH	Total Petroleum Hydrocarbons
TRC	Technical Review Committee
TS	Treatability Study
TSCA	Toxic Substances Control Act
TSDF	Treatment, Storage, and/or Disposal Facility

U

USCG	United States Coast Guard
USCGS	United States Coastal and Geodetic Survey
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground Storage Tank
UXO	Unexploded Ordnance

V

VP	Verification Phase
VS	Verification Study
VOA	Volatile Organic Aromatic
VOC	Volatile Organic Compound

W

WW II	World War II
WWTP	Waste Water Treatment Plant

APPENDIX O
GLOSSARY

A

Administrative Record. Section 113K of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA) requires the establishment of an administrative record which forms the basis for the selection of a response action. The administrative record should include the final documents which are a part of the Department of the Navy's (DON's) decision-making process.

Applicable or Relevant and Appropriate Requirement (ARAR). Requirements, including cleanup standards, standards of control, and other substantive environmental protection requirements and criteria for hazardous substances as specified under Federal and state law and regulations, that must be met when complying with CERCLA/SARA.

Aquifer. A geologic formation or structure that is capable of yielding water in usable quantities.

C

Characterization. Facility or site sampling, monitoring, and analysis activities to determine the extent and nature of the release. Characterization provides the basis for acquiring the necessary technical information to develop, screen, analyze, and select appropriate cleanup techniques.

Clean Air Act (CAA). The CAA was passed in 1970 as amendments to 42 USC 7401, and was amended in 1990. Its purpose is to "protect and enhance the quality of the Nation's air resources." Its primary application is through Prevention of Significant Deterioration permits to regulate new potentially polluting facilities. Of increasing importance are the National Emissions Standards for Hazardous Air Pollutants.

Clean Water Act of 1977 (CWA). The CWA amended the Federal Water Pollution Control Act first passed in 1956. Its objective is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The Act's major enforcement tool is the National Pollutant Discharge Elimination System permit.

Closure Plan. Documentation prepared to guide the deactivation, stabilization, and surveillance of a waste management unit or facility under the Resource Conservation and Recovery Act (RCRA).

Community Environmental Response Facilitation Act of 1992 (CERFA). This law amends CERCLA, and requires that the Federal Government identify real property which is not contaminated, and that offers the greatest opportunity for expedited reuse and redevelopment by the community on each facility. The identified parcels of real property must be either free from hazardous substances and petroleum products, including aviation fuel and motor oil, and their derivatives, or the remediation of contamination by those substances should be expedited to facilitate transfer to the public.

Community Relations Plan (CRP). A CRP must be developed and implemented for removal and remedial actions at all Installation Restoration (IR) sites, except in the case of an emergency response. This plan shall consist of (but not be limited to) community relations activities to be used to meet stated objectives, and a mailing list of the appropriate agencies and persons.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Federal statute (also known as Superfund), enacted in 1980 and reauthorized in 1986, that provides the statutory authority for cleanup of hazardous substances that could endanger public health, welfare, or the environment.

Corrective Action Plan (CAP). This plan is associated with the Underground Storage Tank (UST) Program and describes the appropriate corrective measures to be implemented at the site. Equivalent to a CERCLA Feasibility Study (FS).

Corrective Measures Implementation (CMI). Corrective Measures Implementation (CMI) is the RCRA Corrective Action phase during which the selected cleanup technology is constructed, installed, implemented and/or operated until confirmatory sampling and analysis indicate that cleanup levels have been reached. Equivalent to a CERCLA Remedial Action (RA).

Corrective Measures Study (CMS). The Corrective Measures Study (CMS) evaluates the alternatives for cleanup technology in terms of the specific site characteristics such as contaminants, soil conditions and hydrogeologic conditions in a RCRA Corrective Action cleanup. Equivalent to a CERCLA Remedial Investigation (RI).

D

Defense Site Environmental Restoration Tracking System (DSERTS). A microcomputer based system used to track environmental restoration activities at active installations. The system collects and maintains site related information about environmental remediation and provides reports that detail the information at the DOD Component level. Data gathered by DSERTS will be submitted to RMIS for DOD processing and will be used as the principal source of information for each DOD component in the Annual Report to Congress.

Drinking Water Standard. Concentration limits for certain elements and pollutants that may occur in drinking water; established by the Safe Drinking Water Act.

E

Environmental Restoration. Cleanup and restoration of sites contaminated with hazardous substances during past production or disposal activities.

F

Feasibility Study (FS). A step in the environmental restoration process specified by CERCLA. The objectives of the FS are to identify the alternatives for remediation and to select and describe a remedial action that satisfies the applicable or relevant and appropriate requirements for mitigating confirmed environmental contamination. Successful completion of the FS should result in unimpeded subsequent development of a remedial design for implementation of the selected remedial actions.

Federal Facility Agreement (FFA). An FFA is a legal agreement between the Navy and the EPA regarding the cleanup of sites on the National Priorities List (NPL). This agreement is intended to establish roles, responsibilities, and schedules, and improve communications between all parties. An FFA will become an Interagency Agreement (IAG) when the statutory requirements are incorporated after the Record of Decision (ROD).

Formerly Used Defense Sites (FUDS). The FUDS process parallels the IR Program process phases, but the program structure is different. FUDS has two major components, inventory and remediation. In the inventory phase, projects are investigated to determine if the site is eligible. The remediation phase includes all of the components of the IR Program, Preliminary Assessment/Site Inspection (PA/SI), RI/FS, ROD, and Remedial Design/Remedial Action (RD/RA). The FUDS program is implemented by the Army Corps of Engineers.

G

Groundwater. Water beneath the earth's surface in the interstices between soil grains, in fractures, or in porous formations.

Groundwater Remediation. Treatment of groundwater to remove pollutants.

H

Hazardous Waste. As defined in RCRA, a solid waste or combination of solid wastes that, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may cause or significantly contribute to an increase in mortality or an increase in serious, irreversible, or incapacitating reversible illness or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. Hazardous wastes may be *listed* (named on a list within a regulation) or *characteristic* (exhibits one of the four characteristics: corrosive, toxic, ignitable, or reactive).

I

Information Repository. During removal and remedial actions at hazardous waste sites, the cognizant installation shall establish and maintain an information repository available to the public at or near the site of the response action. The repository should contain a copy of items that are made available to the public, i.e., brochures or fact sheets, releases, documents in the administrative record, information on the IR program, and the applicable laws.

Initial Site Characterization (ISC). After discovery of a release from an Underground Storage Tank (UST) and after any initial abatement measures and the site check have been completed, an Initial Site Characterization (ISC) must be done under the RCRA UST program. The ISC should assemble collected information into a report on the site such as the nature and estimated quantity of release; surrounding populations; water quality, use and well locations; storm water/wastewater systems; climatology; land use; results of the site check and initial abatement measures; and results of any free product removals. Equivalent to a CERCLA Preliminary Assessment (PA).

Interagency Agreement (IAG). A formal document in which two or more Federal agencies agree to cooperate. For any installation listed on the NPL, CERCLA, Section 120(e) requires the Environmental Protection Agency (EPA) to review the results of the RI/FS. Within 180 days of this review, the DON must enter into an IAG which will identify all necessary remedial actions required at a NPL site.

Interim Remedial Action (IRA). An IRA can be implemented at any time in the restoration process. It is only expected to be an interim measure designed to abate a contamination situation until the final remedial action can be implemented.

L

Long Term Monitoring (LTM). This is the comprehensive evaluation of a site or sites through physical and/or electronic sampling and analysis for either of two reasons. First, LTM is used to demonstrate that a particular remedial action has worked and is continuing to work. Second, LTM can be used to show a continuing low-level concentration of contaminants that does not (at the present time) warrant nor require remedial action.

N

National Priorities List (NPL). Formal listing of the Nation's worst hazardous waste sites, as established by CERCLA.

Neutralization. Treatment of corrosive hazardous wastes to yield a pH near 7.

No Further Action (NFA). This phrase applies to any site where the possibility of contamination no longer exists and, therefore, will require no additional remedial action.

No Further Response Action Planned (NFRAP). NFRAP refers to sites where EPA or the governing authority decides moving further in the site evaluation process is not warranted.

O

Off-Base Contamination. Contaminants found to be migrating off the installation or coming onto the installation from off-base sources.

Operable Unit (OU). An OU is a grouping of sites for one of several reasons, such as when the sites will employ the same response actions on the same approximate time schedule, or the sites are geographically connected, or have a similar characteristic, contaminant, or media.

P

Preliminary Assessment (PA). Initial study phase as required by CERCLA. A Preliminary Assessment (PA) identifies potential areas of contamination for further investigation which will confirm the existence (or non-existence) of contamination. The PA is developed from past records, aerial photographs, employee interviews, and site visits.

R

RCRA Facility Assessment (RFA). The initial RCRA process to determine whether corrective action for a RCRA past practice unit is warranted or to define what additional data must be gathered to make this determination; equivalent to a CERCLA Preliminary Assessment.

RCRA Facility Investigation (RFI). The RCRA process of determining the extent of hazardous waste contamination; equivalent to the CERCLA Remedial Investigation.

RCRA Part A Permit. The first part of a RCRA permit application that identifies treatment, storage, and disposal units within a to-be-permitted facility.

RCRA Part B Permit. The detailed second part of a RCRA permit application that describes wastes managed, quantities, and facilities.

Record of Decision (ROD). This document contains the final decision and agreement between the installation, state, and EPA concerning the selection of the remedial action at a site or group of sites.

Remedial Action (RA). Remedial Action (RA) is the CERCLA phase in which the selected cleanup technology is constructed, installed, implemented and/or operated until confirmatory sampling and analysis indicate that cleanup levels have been reached.

Remedial Design (RD). Remedial Design is the CERCLA phase during which construction parameters and equipment specifications are defined for the selected cleanup technology based on the unique characteristics of the site.

Remedial Investigation (RI). The CERCLA process of determining the extent of hazardous substance contamination and, as appropriate, conducting treatability investigations. The RI provides site-specific information for the FS.

Remedial Project Managers (RPMs). RPMs shall be assigned by the Naval Facilities Engineering Command to manage remedial or other response actions being taken (or needed) at sites in the Installation Restoration Program (IRP). The RPM is responsible for coordinating, directing, and reviewing the IRP work; assuring compliance with the National Contingency Plan (NCP); and recommending action for decisions.

Remedy in Place (RIP). Remedy in Place indicates that a final remedial action has been constructed, implemented, and is operating according to the Remedial Design. An example of this would be a pump and treat system that is installed, operating as designed, and will continue to operate until cleanup levels have been attained. Since operation is on-going, the site cannot be considered as Response Complete (RC).

Removal Action. A removal action is part of the response process and can often be the first response to a release or threatened release. A removal action will employ any means necessary to abate, minimize, stabilize, mitigate, or eliminate the release or threat of release. A removal action is noted as an "IRA" in RMIS.

Response Complete (RC). RC means that the IRP actions are deemed complete and the site is not a threat to public health or the environment. It also can mean that the DOD component is satisfied the IRP at that site is complete and the proper authorities have been or are being notified, where necessary, of this decision.

Restoration Advisory Board (RAB). A Restoration Advisory Board (RAB) is an advisory group for the restoration process with members from the public, the Navy, and the regulatory agencies. The purpose of RABs is to gain effective input from stakeholders on cleanup activities and increase installation responsiveness to community environmental restoration concerns.

Restoration Management Information System (RMIS). RMIS is a database designed to manage information concerning the IRP. As a management tool, key personnel can track progress and funding expenditures throughout the entire restoration process for any given site on any installation.

S

Sanitary Waste. Wastes, such as garbage, that are generated by normal housekeeping activities and that are not hazardous or radioactive.

Site. A specific location where a hazardous substance was deposited or stored and which is found to have a potential to release contaminants that could endanger human health and safety, and/or the environment.

Site Closeout (SCO). This is the final step for IR sites. Site Closeout is reached when no further response actions under the IRP are appropriate or anticipated and the regulatory agencies concur. For NPL sites, this step will include following the proper procedure for deletion from the NPL according to the NCP (40 CFR 300.425). Actual site closeout is the date that the deletion appears in the Federal Register. It is only under unusual circumstances that a site that has been closed out will be reopened.

Site Inspection (SI). The process under CERCLA to acquire the necessary data to confirm the existence of environmental contamination at identified potential sites and to assess the associated potential risks to human health, welfare, and the environment. The data collected at each site must be sufficient to support the decision for either continuing with an RI/FS or for removing the site from further investigation.

Sole-Source Aquifer. As defined by the Safe Drinking Water Act, an aquifer that is the only source or potential source of drinking water in an area.

Solid Waste Management Unit (SWMU). Any unit at a facility from which hazardous constituents might migrate, irrespective of whether the unit was intended for management of solid and/or hazardous waste. This includes, but is not limited to, container storage areas, tanks, surface impoundments, waste piles, land treatment units, landfills, incinerators, injection wells, recycling operations, miscellaneous units, and releases from such units.

T

Technical Assistance Grants (TAGs). Specific allotments (up to $50,000 for a single grant recipient) are made available by the Office of the President to any group of individuals which may be affected by a release or threatened release at any installation which is listed on the NPL under the NCP. Such grants may be used to obtain technical assistance in interpreting information with regard to the nature of the hazard, RI/FS, ROD, RD, selection and construction of the RA, operation and maintenance, or removal action at such facility.

Technical Review Committee (TRC). The TRC is a group of technically cognizant individuals responsible for reviewing technical reports and data for a site. This assemblage should be established after a release or threat of a release has been confirmed at an installation, normally at the end of a PA or SI. A TRC shall be established at all installations, whether NPL or non-NPL for the purpose of reviewing and commenting on actions and proposed actions concerning releases or threatened releases at the installation. The TRC shall consist of (but not be limited to) at least one representative from the installation and cognizant Engineering Field Division (EFD), EPA, appropriate state and local authorities, and a public representative of the community involved. It should be noted that the TRC is not an advisory group nor a decision-making body. DON policy is to convert all TRCs to Restoration Advisory Boards (RABs).

V

Vadose Zone. The unsaturated soil zone (as opposed to the saturated or water-bearing soil zone), located above the water table.

Vitrification. The process of immobilizing waste that produces a glass-like solid that permanently captures the contaminants.

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