FOREWORD

The Department of Defense (DoD) is pleased to provide the Congress with this report on the progress and accomplishments of the Defense Environmental Restoration Program for fiscal year (FY) 1994.

In last year's edition, we were especially proud to report that the Department is devoting more resources to the actual cleanup of contaminated sites rather than to investigations and analyses. During 1994, the Department remained on this path and continues to spend a higher proportion of its restoration dollars on cleaning up sites rather than investigating and analyzing them.

During FY94, the Environmental Restoration program launched several initiatives including the establishment of Restoration Advisory Boards; the continued implementation of the Fast-Track Cleanup program at closing bases; and the integration of the relative risk concept into our restoration program. These initiatives, coupled with strong working relationships with the Congress, states, the public, and other federal agencies are assisting us with our goal of restoring our sites more quickly, and in the case of closure bases, transferring land back to the community.

Over the last few years, the environmental restoration program has received a significant amount of attention and scrutiny from both the Congress and the public. The question some members of Congress are asking is — should the Department of Defense be in the business of environmental restoration? The answer quite simply is yes. The contamination at our installations occurred directly as the result of military activities during the Cold War. Many benefits were reaped as a result of our military efforts, including the end of communism and the birth of several new democracies. Nonetheless, there was an environmental cost associated with these momentous victories, the extent and nature of which is still being determined. However, what we do know is that we have a variety of environmental problems on DoD properties from the presence of fuels and solvents to industrial waste to landfills to unexploded ordnance. The Department of Defense has the personnel and the expertise to address these environmental problems at thousands of sites. We are successfully performing environmental restoration work at military installations in each one of our 50 states and 6 territories.

Readiness and its relationship to Environmental Security is another area in which many have expressed interest. The Department's ability to maintain a well-equipped, well-trained military is our number one priority. Environmental Security enhances readiness by preserving access to the air, land, and water necessary for training and testing. In addition, by maintaining a safe, healthful, and environmentally sound place to work, the Department can maintain a high quality of life for our 2.6 million men and women who work and live on our military installations. It is their duty to protect our national security—it is our duty to protect them.

Using This Report

Following are guidelines for using the sections of this report, meant to supplement both the table of contents and the index.

Introduction (page 1)

This section provides a general overview of the Department of Defense Environmental Restoration Program's challenges and the progress the program has made in meeting those challenges.

A Common Sense Approach - The Relative Risk Site Evaluation Framework (page 3)

This section describes DoD's common sense approach to directing necessary resources to sites that pose the greatest risk to human health and the environment.

Fast-Track Cleanup (page 5)

This section discusses the Fast-Track Cleanup initiative and features the key elements of the program. The successes DoD has had with establishing Base Realignment and Closure (BRAC) Cleanup Teams, developing BRAC Cleanup Plans, and accelerating analysis under the National Environmental Policy Act are just a few of the highlights provided in this section.

Accelerating Cleanup (page 9)

This section highlights DoD's efforts to accelerate cleanup by using more interim actions, thereby reducing and eliminating risk; improving site management and contracting procedures; and improving relationships with stakeholders. Descriptions of actions taken at the following installations are provided to illustrate real success in the acceleration of cleanup:

- Naval Air Weapons Station Point Mugu, California
- Former Camp Elliot, California
- Pearl City Junction, Hawaii
- Headquarters Pacific Air Force, Johnston Atoll
- Former Nebraska Ordnance Plant, Nebraska
- Pacific Ocean Division, U.S. Army Corps of Engineers, Hawaii

Building Partnerships (page 19)

This section of the report describes how DoD has cultivated partnerships in order to optimize the success of the restoration program. The section includes the success some installations have had in building partner-

meeting the demanding requirements of environmental restoration. A real-life story of providing opportunity to local business at the Nome Area Sites, Alaska concludes this section.

Characterizing the Cleanup Effort (page 63)

This section provides the background for understanding how DoD characterizes site types and site categories, and provides data on the total numbers of sites in each of the categories.

Funding the Work (page 65)

This section presents information on the amount of funding Congress provided in FY94, and provides informative analysis on where that funding was spent. Funding for both the Defense Environmental Restoration Account and BRAC is discussed. This section also presents historic funding data since FY84, funding trends through FY97, and distribution of DERA and BRAC funding by state.

Status of the Program (page 71)

This section is a brief overview of the number of installations and Formerly Used Defense Sites (FUDS), and the number of sites on those installations in the different phases of environmental restoration: investigation, interim action, design, and cleanup.

Progress in FY94 (page 73)

This section builds on the previous section by providing additional analytical information on the progress DoD has made in conducting studies, interim actions, designs, and cleanups at the sites described in the Status section.

Appendices

Appendix A - National Priorities List (NPL), Proposed NPL, and Base Closure Installation Narrative Summaries (page A-1)

Appendix A is divided into two sections. The first section is a table that lists each installation in alphabetical order by DoD Component. The table serves as a quick reference guide by listing the installations on the NPL, proposed for the NPL, and a majority of installations slated for base closure. The table is followed by narratives, arranged alphabetically, on each installation.

The narratives provide an overview of environmental restoration activity that was performed in previous years, progress in FY94, and the plan of action for the future. Measurements of project accomplishments are graphically depicted for those installations on the NPL or proposed for the NPL. For installations which were slated for base closure, a graphic depicts the percentage of acreage available for transfer, the percentage proposed as

Appendix C - Executing the Program (page C-1)

Appendix C is a brief summary of how restoration programs are regulated, including a comparison of, and terminology, for the CERCLA, RCRA, and Underground Storage Tank (UST) programs. The appendix explains the strategies for restoration, from site discovery to response complete, and includes definitions of terminology commonly used in the BRAC program. The appendix also includes a section describing how the work is executed (for example, basic contracting strategies).

Appendix D - Site Types Definitions (page D-1)

Appendix D is a useful tool for understanding site category groupings and site type definitions, and includes a listing of primary contaminants usually found in each site type. The appendix also includes a table listing numbers of site types by component and DoD.

Appendix E - List of Acronyms (page E-1)

Appendix E is a thorough list of acronyms to assist the reader in understanding both the text and the data provided in the report.

Appendix F - Summary of Reporting Requirements (page F-1)

Appendix F summarizes the reporting requirements mandated by law. This appendix also includes the progress made in FY94 in reaching Interagency Agreements; the status of public health assessments prepared by the Agency for Toxic Sustances and Disease Registry; the status of Defense and State Memoranda of Agreement (DSMOA) and Cooperative Agreements (CA); and the status of the Pilot Expedited Environmental Cleanup Program.

Appendix G - Base Closure Identification List (page G-1)

Appendix G is a list installations included on the BRAC 1988, 1991, and 1993 listings, useful as a cross-reference tool while reading the installation narratives and the "B-Tables."

Appendix H - List of States with DSMOA/CA (page H-1)

Appendix H is a list of states with DSMOAs and CAs. The list is organized by state and provides dates DSMOAs and CAs were signed, as well as points of contact.

Appendix I - List of Defense Fuel Installations (page I-1)

Appendix I lists the Defense Fuel Installations identified in Table B-1 that are not funded by DERA .

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I. List of Defense Fuels Installations I-1

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Appendix J - Who to Contact (page J-1)

Appendix J provides a list of points of contact for the Office of the Deputy Under Secretary of Defense (Environmental Security/Cleanup Office) and all of the Components. The appendix illustrates the organization of the Components through the use of organizational charts. The appendix also lists who to contact at the Components regarding small business contracts.

CERFA clean, and the percentage of CERFA clean acreage that has been concurred upon by the regulatory agencies. The introduction to Appendix A describes the elements of the narratives and guides the reader through sample graphics.

Appendix B - Program Status Tables (page B-1)

Appendix B provides summary status tables, which convey data, as of September 30, 1994, from the installations in a variety of ways. The introduction to Appendix B describes the elements of the B-Tables in detail and guides the reader through a sample table. The appendix also includes a matrix that serves as a cross-referencing tool for the tables.

- **Table B-1** is organized by state and component and provides the status of installations with more than two sites, and FY95 to completion cost estimates greater than $1 million; the table includes all BRAC and NPL installations.

- **Table B-2** is organized by state and component and provides the costs incurred through FY94, and FY95 to completion costs for installations with two sites or less, and FY95 to completion cost estimates less than $1 million.

- **Table B-3** is organized by state and component and includes installations with response complete at all sites and the costs incurred through FY94 at those sites.

- **Table B-4** is organized by state and component and includes locations with potentially responsible party (PRP) obligations. A threshold value of greater than $100,000 for costs incurred through FY94 is used.

- **Table B-5** is organized alphabetically by state and includes totals for DoD and FUDS in the 50 states and six U.S. territories.

- **Table B-6** presents DoD totals, including all operational and BRAC installations.

- **Table B-7** presents component totals, including all operational and BRAC installations.

- **Table B-8** includes DoD totals for operational installations (those not included on BRAC 1988, 1991, or 1993 listings).

- **Table B-9** includes totals by component for operational installations (those not included on BRAC 1988, 1991, or 1993 listings).

- **Table B-10** includes DoD totals for closing installations.

- **Table B-11** includes totals by component for closing installations.

- **Table B-12** includes DoD totals by BRAC Commission (1988, 1991, and 1993) for closing installations.

ships with the public, regulatory agencies, Native Americans, and other federal agencies at the following installations:

- Wright Patterson Air Force Base, Ohio
- Fort Wingate Army Depot, New Mexico
- Marine Corps Air Station Cherry Point, North Carolina
- Former Schilling Air Force Base, Kansas

Promoting Environmental Technology (page 29)

This section of the report outlines DoD's strategy to meet their environmental restoration demands by fostering the development and deployment of better, cheaper, and faster environmental technologies. The strategy is supported through a "real-life" story at Naval Air Station North Island, California. The section then lays out the successes DoD has had in the environmental technology arena at the following installations:

- Twin Cities Army Ammunition Plant, Minnesota
- Naval Communication Station, Stockton, California
- Defense Distribution Region West, Tracy, California
- Marine Corps Air-Ground Combat Center, Twentynine Palms, California
- Dover Air Force Base, Delaware
- MCAS Yuma, Arizona and Army Corps of Engineers, Minnesota

Involving the Community and the Public (page 45)

This section features the methods DoD is taking to meet the requirements of the public involvement policy established by the Federal Facilities Environmental Restoration Dialogue Committee. The section presents the approach DoD is taking to form Restoration Advisory Boards (RAB), and provides an outline of the proposed Environmental Justice strategy. The RAB initiative is supported by a "real-life" story of public involvement activities conducted at the Charleston Naval Base, South Carolina. The section then presents three relevant success stories:

- Port Hueneme and Point Mugu, California
- Rocky Mountain Arsenal, Colorado
- Brunswick Naval Air Station, Maine

Training (page 55)

This section focuses on the training programs DoD has initiated to provide a highly qualified, well-trained environmental work force. Summaries of such training work as the BRAC Cleanup Team workshops and the RAB workshops are presented to illustrate the progress made in this area.

Small Business Opportunities (page 59)

This section describes progress DoD has made in structuring contracts and improving communication and outreach mechanisms to ensure equity in opportunities for small and small disadvantaged businesses, while

Taking responsibility and restoring our sites is not just a moral or ethical decision. The Department is legally bound to do so based on legal requirements mandated by laws passed by Congress and the states, and implemented through agreements with federal and state regulators. During FY94, the Department began evaluating our sites based on the relative risk model. By employing relative risk, the Department along with the states, the public, and the regulators will work as a team to prioritize our sites. This prioritization will enable the Department to focus scarce resources on those sites that pose the most risk to human health and the environment. The relative risk concept is a common sense approach, and we will continue to apply this methodology throughout our restoration program.

As the largest industrial organization in the United States, the Department of Defense must mirror our private sector counterparts by integrating environmental concerns into our day-to-day business practices. By acting now to clean up our sites, we will decrease future costs for defending our Nation. This collective "we" is not just the Department of Defense or the Congress, but those whom we in the public sector serve and are ultimately accountable to—the American taxpayer. This is not a responsibility we take grudgingly, but one we are thoroughly committed to honor until the job of environmental restoration is done.

William J. Perry
Secretary of Defense

INTRODUCTION

As Air Force Chief of Staff Thomas White stated more than 30 years ago, *"The mission of the Department of Defense is more than aircraft, guns, and missiles. Part of the defense job is protecting the land, waters, timber, and wildlife—the priceless natural resources that make this great nation of ours worth defending."* This visionary precept has been embraced both Republican and Democratic administrations and the Department of Defense (DoD). We recognize the risks of environmental degradation to the nation, to the men and women in uniform, and to our military readiness in general.

DoD is tackling many of the same environmental challenges that confront our nation's industrial and commercial sectors. We also have the urgent task of cleaning up closing military bases so that we can speed up property transfer to local communities for economic revitalization. DoD is doing all of these things while steadfastly attending to our overall number-one priority—maintaining the best-trained, best-equipped, most ready and effective military forces in the world.

These challenges are formidable. In the area of environmental restoration we need to continue to do better, recognizing at the same time that we are faced with limited resources. DoD's environmental programs are not immune from the overall downward pressure on the defense budget. We must do more with less, and we are challenged to make some tough choices. We will make these tough decisions by working with the regulatory agencies and other stakeholders to streamline and find economies and efficiencies in the restoration process.

Due to legal mandates, much of DoD's past efforts in environmental restoration were devoted to investigating the problem. In fiscal year (FY) 1993, we reported that we had truly begun to shift our focus to actual cleanup and reducing real environmental risks. This means using more interim actions to remove sources of contamination and reduce immediate threats; better prioritizing site cleanup efforts; balancing cleanup levels against expected future land use and life cycle costs; promoting technologies to target our most pressing needs; identifying better management and contracting approaches; and overcoming regulatory or statutory impediments to successful execution of the restoration program.

"We need to shift our focus to cleanup and reducing real environmental risks . . . more interim measures . . . better prioritizing site cleanup efforts . . . using innovative technologies . . . identifying better management approaches . . . all will lead to successful cleanup programs."

— Sherri W. Goodman
Deputy Under Secretary of Defense/Environmental Security

We believe that the Fast-Track Cleanup Program represents our new approach to environmental restoration. This program recognizes that environmental policies must take their cues from economic realities and real-world needs, not just regulation. Through Fast-Track Cleanup, DoD is fundamentally shifting environmental policy by encouraging more flexibility in the regulatory process and more emphasis on achieving measurable performance-based goals. In the restoration arena, we need to take another look at our base cleanup schedules and the relative risk of each site on an installation. We need to sit down with EPA, states, and the public and review the prioritization process. Again, the real answer is to bring everyone with a stake in the restoration program into the process.

Clearly, we need to incorporate a risk-based approach when prioritizing sites, if we are to meet our restoration commitments. Over the past five years, DoD has entered into many agreements with state and federal regulatory agencies. Most of these agreements set forth the same overall cleanup timeline for the entire installation, regardless of whether the individual sites on the installation are a high or low risk to human health or the environment. The result of this blanket approach is that we are not able to use our cleanup dollars or time in the most prudent and cost-effective manner.

In working toward using a risk management approach, DoD has identified cleanup standards, remedy selection, and no further action determinations as particularly significant issues for consideration. We believe it is important to tie decisions on these issues to risk, reasonable anticipated future land use, cost effectiveness, speed of cleanup, and early and meaningful public participation. These efforts streamline the restoration process and form the basis for major cost avoidances.

By reaching out to the public, working in partnership with state and federal regulatory agencies, emphasizing action over investigation, and promoting innovative technology, DoD is seizing its environmental responsibilities and achieving results.

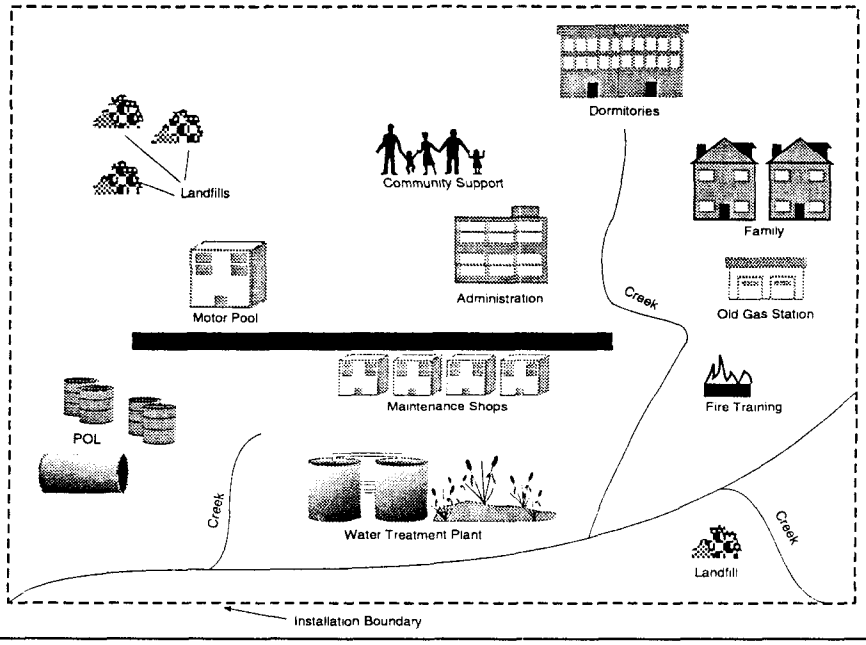
A Common Sense Approach

The Relative Risk Site Evaluation Framework

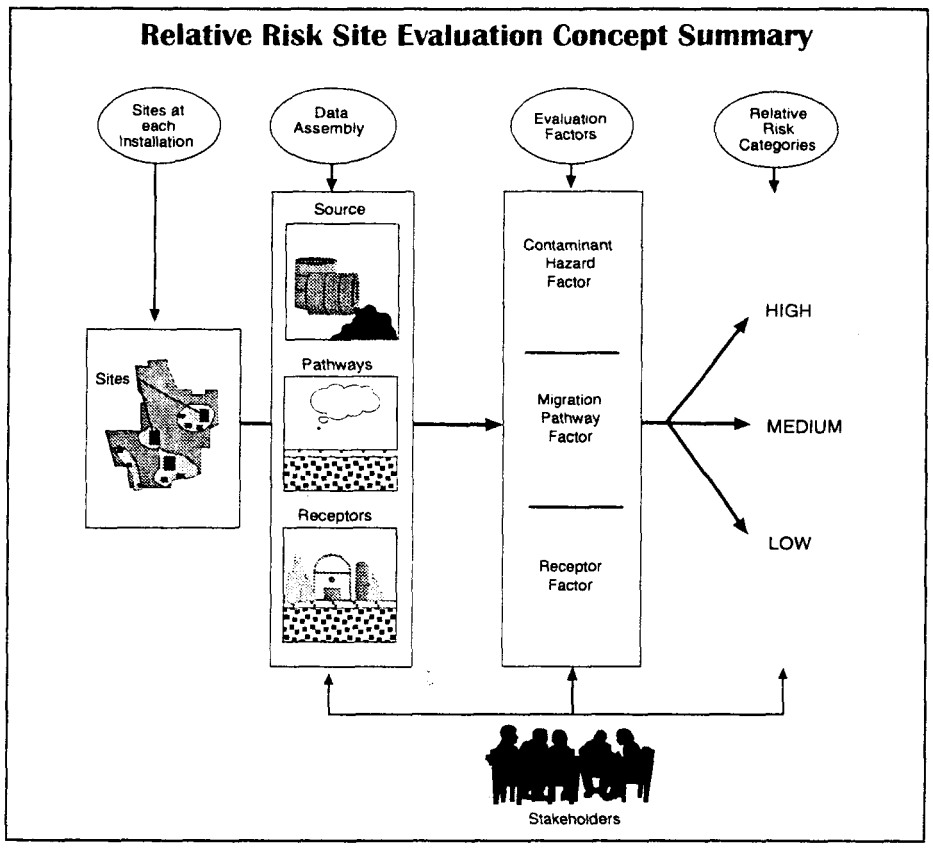
DoD is committed to protecting human health and the environment from risks posed by contaminated sites. In view of our challenge to do more with less, it is crucial that DoD be able to direct necessary resources to sites that are posing the greatest risk. Given this common sense mandate, the Department has developed and is working toward the use of a viable, consistent risk-based approach to categorize sites and help prioritize the sequence of work within the context of regulatory agreements. This approach, known as the relative risk site evaluation framework, has been developed by an interservice working group to provide a common method across installations for categorizing sites by relative risk.

There is a mix of high, medium, and low relative risk sites across DoD installations and at each installation, whether or not the installation is on the National Priorities List. The relative risk site evaluation framework is used

Typical Installation and Sites



to assign a high, medium, or low relative risk categorization at each potentially contaminated site. It is based on three key factors that provide for a relative assessment of contaminant hazards, migration pathways, and human and ecological receptors associated with a specific site, using information available to date. In other words, at a point in time, the framework evaluates relative risk based on the following factors and their relationship: How much contamination is there? Is the contamination moving or will it move? and, are there humans or sensitive environments nearby?



The framework is not an absolute expression of risk or a substitute for a baseline risk assessment or health assessment. The framework is simply a common sense method that serves as a basis for discussing the relative risk of sites with involved stakeholders, particularly with Restoration Advisory Boards. A site's categorization may change as new or additional information is collected from investigations and analysis or through input from participating and knowledgeable members of the public and the regulatory agencies.

Relative risk is only one of the priority setting factors to be considered for programming and sequencing work at and across DoD installations. Equally important factors are program, economic, and stakeholder considerations. Regulator and public involvement, as always, are key to the successful implementation of the relative risk concept. The relative risk site evaluation framework has been presented to a wide audience of interested and affected parties, including members of the Federal Facilities Environmental Restoration Dialogue Committee, congressional staff, federal and state regulators, environmental interest groups, public health officials, restoration contractors, and remedial projects managers. Through this dialogue with the various stakeholders, DoD is promoting the relative risk concept and is seeking dialogue with stakeholders to maximize protection of human health and the environment.

Patricia A. Rivers, Assistant Deputy Under Secretary of Defense (Envronmental Cleanup) stated, *"The Relative Risk Site Evaluation model will help DoD get the most protection for human health and the environment from every restoration dollar spent."*

FAST TRACK CLEANUP

The Fast-Track Cleanup Initiative represents the cutting edge of DoD's new approach to environmental restoration. This program is part of a five-part plan that aims to speed the economic recovery of communities where bases are scheduled to close. The five-part plan integrates economic development, transition assistance, and environmental restoration to allow timely reuse of the base's assets. The primary elements of the program announced by President Clinton on July 2, 1993 are:

- Jobs centered property disposal that puts local economic redevelopment first
- Transition coordinators at bases slated for closure
- Easy access to transition and redevelopment help for workers and communities
- Larger economic development planning grants to base closure communities
- Fast-Track Cleanup that removes needless delays while protecting human health and the environment

DoD immediately began implementing the five-part program with a strategy issued on July 15, 1993. The strategy outlined the key elements of a "common sense" approach to cleaning up contamination at military installations slated to close. Those elements specific to the Fast-Track Cleanup Initiative include establishing a team of DoD, EPA, and state representatives at each installation who are empowered to execute the environmental restoration program; conducting "bottom-up" reviews of all cleanup schedules and plans to identify opportunities to speed the planning, construction, and operation of cleanup remedies, and preparing and implementing an action plan to make it happen; offering the citizens surrounding each installation opportunities to exchange information and provide input to the restoration process; quickly identifying and making available for transfer parcels of land or properties with no contamination or with contamination below cleanup levels; and establishing a process to identify and document parcels of land or properties which are environmentally suitable for lease or transfer.

Emphasizing the need for a sharp departure from "business as usual" the Deputy Secretary of Defense issued a policy memorandum on September 9, 1993, that provided specific guidance on implementing the Fast-Track Cleanup Initiative outlined in the plan and the strategy. The following presents the key elements of the Fast-Track Cleanup Initiative in greater detail.

"Fast-Track Cleanup is an ambitious program to assist communities affected by base closure. We are applying the lessons learned here throughout the entire cleanup program in areas such as community involvement, partnering with regulators, and streamlining the cleanup process."

Patricia A. Rivers, P.E.
Assistant Deputy Under Secretary of Defense (Envronmental Cleanup)

Establishing Base Realignment and Closure (BRAC) Cleanup Teams

A BRAC Cleanup Team (BCT) was established at DoD installations slated for closure (at which property will be available for transfer to the community) in order to enhance environmental decision making at those installations. The September 9, 1993, policy memorandum explained the organization, roles, responsibility, and coordination required of the BCT. Each BCT is comprised of a representative from the installation, a representative from state environmental regulatory agency, and a representative from the EPA regional office. BCT members are empowered with the authority, responsibility, and accountability for environmental restoration programs at those installations, emphasizing actions which are necessary to facilitate reuse and redevelopment.

Conducting the "Bottom-Up" Review and Preparing the BRAC Cleanup Plans

Another key element of the September 9, 1993, policy memorandum was the conduct of a "bottom-up review" of past and ongoing cleanup activities executed under multiple environmental programs at an installation and the preparation of a BRAC Cleanup Plan (BCP). The BCP serves as a comprehensive and consolidated status and strategy for expedited cleanup of the installation so that timely reuse and redevelopment by the community can be accomplished. The BCT is responsible for undertaking this effort. The policy memorandum, along with a DoD BRAC Cleanup Plan Guidebook issued in the Fall of 1993, outlined the procedures for undertaking the "bottom-up review", the content of the BCP, and the process to be used in developing the BCP. Seventy-nine BCP's representing BRAC 1988, 1991, and 1993 installations were prepared and submitted to DoD on April 29, 1994. Each installation is now implementing its BCP, which is intended to be a living document and to undergo continuous update and refinement.

Establishing Restoration Advisory Boards

Restoration Advisory Boards (RAB) were established in response to the September 9, 1993, policy memorandum. RABs are intended to bring together people who reflect the diverse interests within the community, enabling the early and continual flow of information between the affected community, the installation, and the state and federal regulatory agencies. By creating RABs, DoD is ensuring that all stakeholders have a voice and can actively participate in a timely and thorough manner in the review of cleanup documents. RAB community members provide advice to the decision-makers on cleanup issues. It is a forum to be used for the expression and careful consideration of diverse points of view. The RAB compliments other community involvement efforts, but it does not replace them. Each closing installation continues to be responsible for fulfilling all statutory mandated public involvement requirements. As a model for interagency cooperation, DoD and EPA jointly issued guidelines for implementing RABs on September 27, 1994, which provides recommended procedures for establishing and operating RABs. The guidelines are intended to be a resource for installation, EPA, and state personnel and citizens who participate in RABs.

Identifying Uncontaminated Parcels of Land or Properties

Starting in 1993, the military departments were faced with meeting the statutory mandate of the Community Environmental Response Facilitation Act (CERFA) to identify uncontaminated parcels of land or property that can quickly be turned over to the community for economic reuse. On October 19, 1992, the President signed CERFA, amending the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) for identifying and documenting all uncontaminated parcels of land or property at installations undergoing closure. A timeframe of 18 months was established for identifying and concurring on uncontaminated properties. Each closing installation has initiated the development of an Environmental Baseline Survey (EBS) to meet the requirements of CERFA, primarily to identify uncontaminated parcels of land or properties. The departments of the Army, the Navy, and the Air Force completed all CERFA EBSs for BRAC 1988 and BRAC 1991 installations in December 1993, before the April 19, 1994 deadline. The deadline for the CERFA process for BRAC 1993 installations is April 1995.

Accelerating the Analyses Required Under the National Environmental Policy Act

Another key element for closing installations is to implement measures to ensure that the final Environmental Impact Statement (EIS), or other environmental analysis required under the National Environmental Policy Act (NEPA), is completed within 12 months from the date the affected community submits its final reuse plan. To accomplish this goal, each installation is striving to obtain an understanding of the community's planning efforts, the reasonableness of the proposed options for reuse, and the final decision on disposal of the property. A key factor in the success of this effort is communication between the installation, state and federal regulatory agencies, and the local redevelopment authority or entity so that the community reuse plan is reasonable and acceptable. DoD recognizes increased efforts will be necessary to successfully complete this element to fast-track cleanup. The installations may need to evaluate all reasonable reuse scenarios or alternatives based on its experience and judgement and prepare an EIS to meet the schedule for base closure. Again, this effort will necessitate that close coordination among all parties be maintained throughout the entire base closure process.

Assessing the Suitability of Parcels of Land or Property for Lease or Transfer

Rounding out the September 9, 1993, policy memorandum, along with additional guidance issued on June 1, 1994, is the need to assess and determine whether parcels of land are suitable for lease or transfer to the community for reuse. The CERFA and Finding of Suitability to Transfer guidances facilitate the clean property identification and transfer process.

DoD believes that fast-track cleanup should be the model for all DoD restoration activities, at both operational and closing bases. The fast-track cleanup initiative demonstrates that cleanup can be done in a way that optimizes DoD's goals of protecting human health and the environment, speeding the restoration process, and making the program cost effective.

ACCELERATING CLEANUP

Many acceleration initiatives, such as greater use of interim actions, more judicious and flexible site management strategies and contracting approaches, and closer working relationships with the regulatory agencies and the public, are all part of the day-to-day business of executing DoD's restoration program.

The use of interim actions continues to be a key strategy in accelerating cleanup. Such actions result in the stabilization or removal of contamination sources and thereby reduce or eliminate immediate risks to human health and the environment.

The timely reduction and elimination of risk has always been the focus of DoD's restoration program. On April 14, 1994, the Deputy Under Secretary of Defense (Environmental Security) issued management guidance that began to integrate this focus more into the advance planning and development of the program by introducing the relative risk site evaluation framework. This common sense approach, discussed earlier in this report, will enable DoD to make smarter programming, planning, and site management decisions. Site management strategies and contracting approaches can be formulated and resources directed at accelerating work and cleanup at the highest risk sites.

The Department has made considerable efforts to improve site management in other areas as well. For example, during the site categorization phase, new site investigation techniques are used commonly to accelerate the investigation phase and move more quickly, often with better information, to the cleanup phase. An example includes the use of a cone penetrometer with laser technology to accelerate the location and testing of contamination in sediments and groundwater. Many site investigations include the use of on-site labs. These labs can supply real-time data and reduce or replace the need for costly laboratory analysis.

DoD has sought to increase its use of generic or presumptive remedies to accelerate cleanup. A generic remedies matrix developed by the California EPA has been widely distributed. The expanded use of innovative technologies for interim actions and final cleanups is also a key strategy for achieving more timely and effective cleanup actions.

The success of these acceleration initiatives is directly tied to better communication with the regulatory agencies and the public. Many of these efforts would not be possible without the partnering arrangements that have been instituted throughout the program. Such arrangements allow the involved agencies to combine expertise to design effective cleanup strategies, develop goals and cleanup plans collectively, and divide responsibilities so that activities can progress more quickly and effectively than would be possible if each agency were working independently.

The following examples illustrate how DoD is achieving real results by implementing these acceleration initiatives.

Naval Air Weapons Station Point Mugu, California

To protect the natural habitat of endangered species nesting at Naval Air Weapons Station (NAWS) Point Mugu, the Navy implemented an emergency Removal Action. The cleanup was initiated and completed within 15 days.

NAWS Point Mugu contains an extensive lagoon and salt marsh that is one of the largest coastal wetlands ecosystems in California. The area provides a unique natural habitat for a wide variety of plant and animal life, including six listed, one proposed, and 15 candidate state or federal threatened or endangered species. In May 1994, the Navy received preliminary investigative data indicating high concentrations of heavy metals near two former plating waste pits. During the same month, an annual census was completed that indicated a pair of federally listed endangered California light-footed clapper rail were nesting near the former pits. The clapper-rail has not been identified as breeding in the site area since the late 1980s, so its return to the area is ecologically significant.

As soon as the Navy received the census data, the project manager quickly arranged a conference call with the following stakeholders: California Department of Toxic Substances Control, California Regional Water Quality Control Board, California Department of Fish and Game, and U.S. Fish and Wildlife Service. After some discussion, all stakeholders concurred with the decision to conduct the emergency cleanup.

Because the Navy had worked steadily with regulatory agencies and natural resource trustees during the planning of the Remedial Investigation, working relationships had already been established, and the effort went smoothly for all stakeholders.

The Navy contracting office was alerted to the urgency of the situation and put contracting mechanisms into action, allowing contractors to mobilize personnel and equipment to the site within days. About 80 cubic yards of contaminated soil were removed in one day despite the fact that all work had to be accomplished at low tide and could not interfere with day-to-day installation runway operations.

While the area is still involved in a final restoration process, the emergency action removed the immediate ecological threat. The success of the cleanup within such a short timeframe demonstrates the value of continuous and effective communication with all interested stakeholders.

"This cleanup will be extremely beneficial in the long run. These birds [clapper-rail] are very low on the food chain, so any contaminants removed from the soil will immediately help their survival."

— Tom Keeny, Installation Ecologist

"Removing the ordnance was only part of the Corps and Contractor's responsibility during the project. Particular attention was paid to environmental concerns, and monitoring was exercised to preserve endangered species, which included the San Diego Mesa Mint and the California gnatcatcher."

—NEWSCASTLE, July-Aug, 1994

Former Camp Elliot, California

The Army Corps of Engineers (COE) successfully completed one of the first removals of military ordnance from public lands in the country. By the time the cleanup effort was completed, the COE removed 4,000 small arms pieces, 28,000 pounds of ordnance explosive waste, and 171,000 pounds of non-explosive scrap from a suburban community.

Tierrasanta, Mission Trails Regional Park and East Elliott were once part of Camp Elliott, an installation that operated as an artillery training range during World War II and the Korean War. Today more than 10,000 homes occupy this community, a suburb of San Diego, California.

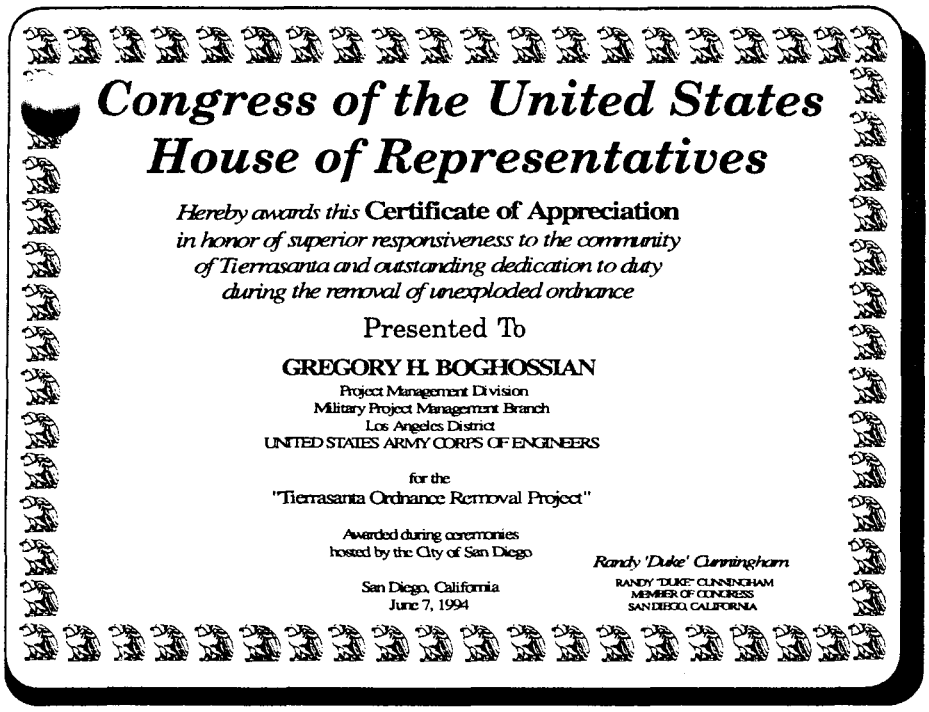
On December 10, 1983, three young boys were playing in the open space at the end of a cul-de-sac in Tierrasanta, when they discovered what appeared to be a rusty piece of metal. Two of the boys were killed when they attempted to knock the top off this 37-millimeter high explosive shell. The public reacted angrily, and community organizations and elected officials wanted to know how it happened and if it could happen again.

The Navy immediately responded to this incident by removing ordnance at the surface, and conducting preliminary investigations of the area. The COE took over the project to conduct a Feasibility Study to determine cleanup alternatives. The COE developed a comprehensive environmental protection plan to guide the cleanup. The plan demonstrated sensitivity to community concerns regarding aesthetics and habitat conservation, in addition to providing protection for sensitive species.

Sensitive species protection was a major issue in this cleanup because of the number of endangered and threatened species in the area. The Tierrasanta Ordnance Removal Project incorporated the protection of the California gnatcatcher into its work plan two years before it was placed on the threatened species list by the U.S. Fish and Wildlife Service. The project team made a great effort to protect the habitats, including stopping work in the gnatcatcher's nesting areas during their breeding period from March to July.

The COE also conducted an outreach campaign consisting of several public meetings and workshops designed to inform and involve the community about the ongoing cleanup project and how it could affect them.

Monthly project updates are given at the town council meetings, which also provide ample opportunities for the public to ask questions. A public information meeting is also held twice a year to allow the media to ask questions. Congressional representatives Randy "Duke" Cunningham and Lynn Schenk were very involved in the cleanup process and presented congressional awards to the project managers at the completion ceremony on June 7, 1994.



Congress of the United States
House of Representatives

Hereby awards this **Certificate of Appreciation**
in honor of superior responsiveness to the community
of Tierrasanta and outstanding dedication to duty
during the removal of unexploded ordnance

Presented To

GREGORY H. BOGHOSSIAN
Project Management Division
Military Project Management Branch
Los Angeles District
UNITED STATES ARMY CORPS OF ENGINEERS

for the
"Tierrasanta Ordnance Removal Project"

Awarded during ceremonies
hosted by the City of San Diego

San Diego, California
June 7, 1994

Randy 'Duke' Cunningham
RANDY "DUKE" CUNNINGHAM
MEMBER OF CONGRESS
SAN DIEGO, CALIFORNIA

In June 1994, the Tierrasanta Ordnance Removal Action project was completed. The COE began focusing its cleanup efforts on Mission Trails Regional Park, adjacent to the Tierrasanta site, which is home to several endangered and threatened species, and the largest urban park west of the Mississippi.

Pearl City Junction, Hawaii

By implementing an innovative field investigation, field screening techniques, and public involvement at Pearl City Junction, a portion of the Pearl Harbor Naval Complex, the Navy was able to complete a cleanup in three years that would normally have taken five to seven years.

In November 1990, the Navy announced that it intended to sell the property to the State of Hawaii, which planned to later transfer the property to the City of Honolulu. However, the Navy had to remove soil contaminated with PCBs and Dieldrin, a common pesticide, before the property could be transferred.

To expedite the cleanup effort, the Navy performed an interim action by conducting an Engineering Evaluation and Cost Analysis and a Removal Action, rather than a Remedial Investigation and Feasibility Study. This approach allowed the Navy to use existing analytical data to characterize site conditions without necessarily performing extensive field investigations, therefore meeting the time constraints of the required cleanup. The Navy estimates that by eliminating the extensive field investigation, the project schedule and timeframe were reduced by at least two years.

For already ongoing field investigations, the Navy employed field screening techniques. After determining that PCBs and Dieldrin were the main contaminants, the Navy decided to use a bioassay field screening method to determine the extent of contamination. The bioassay field test reduced the number of samples that had to be sent to a laboratory on the mainland, reducing analytical costs for the project. In addition, the field tests allowed the contractor to work continuously, significantly decreasing contractor downtime and mobilization charges. The bioassay test also eliminated the need for a phased approach to the field investigation, further accelerating the project schedule.

In addition to innovative investigative techniques, the Navy implemented a proactive public outreach program to assist the restoration process. A strong public involvement program was critical to the Navy's success in educating an already wary community about the sale of Pearl City Junction. In order to avoid any misunderstandings with the public about the sale, the Navy shared information with the public during each step of the restoration process. The Navy conducted regular public technical review meetings, distributed flyers to the surrounding community, and encouraged local residents to call the information officer at the installation to voice concerns or ask questions. Because of these outreach efforts, the community posed little opposition to the sale of the property because it was informed of the cleanup progress every step of the way.

STAR BULLETIN *November 13, 1993*

Navy will excavate contaminated soil

The Navy plans to begin cleaning contaminated property in Pearl City that the city has agreed to buy.

The 14-acre Pearl City Junction, adjacent the Navy's Manana Storage Area, is contaminated with dieldrin, a cancer-causing insecticide. The cleaning will begin next week.

About 6,000 cubic feet of soil are to be excavated, bagged and sent to a mainland hazardous-waste facility for disposal, according to a Navy spokesman.

In August the city signed a $109 million agreement to buy both the junction and neighboring 109-acre Manana property. The deal is contingent on the Navy cleaning up the properties by May.

Another contingency relates to Navy plans to build a causeway from the Pearl City peninsula to Ford Island in order to build military housing.

If proceeds from the land sale won't cover construction costs, the deal is off, the spokesman said. A $15 million down payment made by the city in September is to pay for a feasibility study to determine if the bridge can be built within the budget.

By combining a unique approach to the actual field investigation, innovative field screening techniques, and a proactive public involvement program, the Navy completed an environmental cleanup program in almost half the normal time.

To immediately stabilize the threat to an endangered species community, the Air Force implemented a cost-effective interim action that not only removed imminent dangers and stabilized the situation, but allowed the stakeholders sufficient time to plan the final cleanup.

Mr. Jeffrey Zelikson, Director of EPA Region 9 Hazardous Waste Management Division stated, *"I would like to express my satisfaction with the fact that stabilization measures at some of the most significant Solid Waste Management Units (SWMU) [including the pile at Johnston Atoll] have been expeditiously implemented. The Defense Nuclear Agency and Air Force have shown a progressive attitude in investigating all the SWMUs..."*

Former Nebraska Ordnance Plant, Nebraska

In a period of just eight months, the Kansas City District of the Army Corps of Engineers (COE) was able to procure a contract, conduct a field investigation, and remove approximately 1,250 tons of PCB-contaminated soil at the Former Nebraska Ordnance Plant.

The Army Corps of Engineers removes PCB - contaminated transformer pad while measuring air emissions from concrete dust.

The Nebraska Ordnance Plant operated from 1942 to the mid-1950s, producing bombs, boosters, and shells. In the mid-1950s, the plant was decommissioned, and in 1962 the property was sold to the University of Nebraska. In 1992, the university determined that PCB contamination of on-site soils was too extensive to clean up without assistance.

The site attracted great public attention, and its cleanup became a political issue for all stakeholders involved. The university contacted the COE for assistance, and the Rapid Response Program allowed the COE to completely remediate the site within two years.

ERS PACIFIC AIR FORCE, JOHNSTON ATOLL

ers Pacific Air Force took immediate action to stabilize a
a 10,000 cubic yard ash pile containing lead above accept-
to the national wildlife refuge on Johnston Atoll. The interim
ok only two days to implement, stopped contaminants from
nearby lagoon, which is a habitat for endangered species.

in the ash were approaching ecological risk screening
gion 9 wanted timely action to remediate the ash pile. The
ildlife Service (USFWS) wanted to remediate the pile by
d out of the ash, at a cost of $10 million. The Air Force,
ed to research alternative solutions to address the immediate
final cleanup was negotiated.

action was selected within a few weeks to effectively freeze
minimal cost and to reduce the risks posed by the contami-
erim action involved spraying the ash pile with a liquid
st of $10,000 over a two-day period. As a result, the polymer
ontaining the contaminants in the ash pile. Preliminary
that the polymer withstood Hurricane John in August, 1994,
ubstantial damage to the surrounding area.

ng the interim action created sufficient time for project
ree on the final cleanup. The Air Force, Defense Nuclear
, and the National Oceanic and Atmospheric Administration
solidification, a lower cost generic remedy, coupled with the
erim action is the best cleanup option. Compared to the
up option of lead smelting, the combined interim action and
presents over a $6 million dollars cost savings.

Force sprays a 10,000 cubic yard ash pile with a liquid polymer.

from clay to fractured bedrock; and depth to groundwater varied from 3 to 600 feet. The USTs were constructed of various materials, such as steel or concrete, and were typically World War II vintage, ranging in size from 250 to 200,000 gallons.

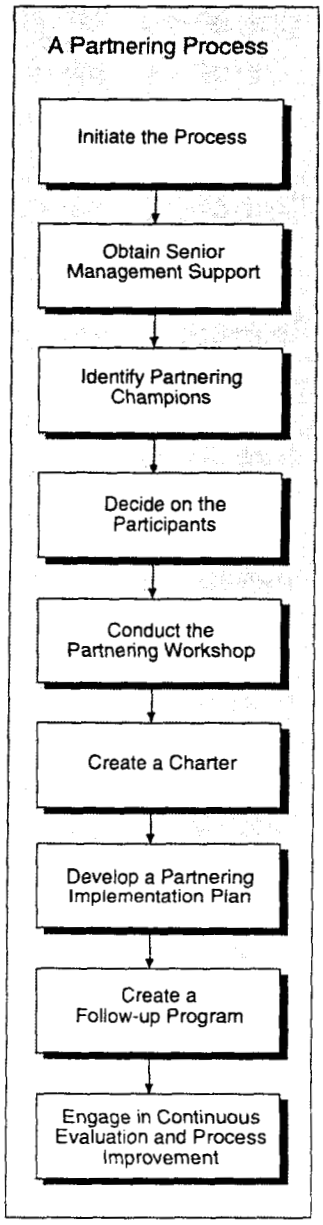
50,000 gallon abandoned underground storage tank located at Dillingham Military Reservation

To overcome logistical and site condition difficulties, POD, Department of Health, Department of Public Works, and COE contractor representatives visited various site locations and decided the cleanup steps to be taken. The COE contractor adopted a cleanup methodology based on this 10-day survey, and developed a proposal that addressed the physical and logistical characteristics of the sites and the regulatory agency concerns. POD also partnered with regulatory agencies to omit unnecessary work, such as removing long sections of pipeline associated with USTs at Wheeler Army Airfield on Oahu.

By implementing innovative field work and contracting strategies, POD completed the project in only one year, at a reduced cost of $6.2 million (a 20 percent cost savings).

BUILDING PARTNERSHIPS

Partnering is a critical ingredient in optimizing the DoD restoration program. DoD is currently working in a variety of ways to cultivate the types of relationships that build mutual trust and cooperation to ensure the success of its partnering program. DoD's partnering commitment at all levels of the program is illustrated by the following examples.



Source: Guide to Partnering for Environmental Projects: Naval Facilities Engineering Command

DoD is a member of the Federal Facilities Environmental Restoration Dialogue Committee charged with developing consensus recommendations to improve the federal facility restoration decision-making process and ensuring that the priorities and concerns of all stakeholders are represented.

The Defense Environmental Response Task Force (DERTF), whose membership includes representatives from DoD, EPA, Department of Justice, General Services Administration, National Governor's Association, National Association of Attorneys General, and public interest groups, continued its important efforts in FY94. The goal of the DERTF is to examine environmental issues associated with the restoration and reuse of closing military installations and to identify and recommend ways to expedite and improve environmental response actions at those installations. The success of the President's five-part program to revitalize communities affected by closure of installations depends very much on the partnerships represented by this diverse group.

DoD began a cooperative initiative in FY94 with the Association of State and Territorial Solid Waste Management Officials to review DoD's implementation of the Formerly Used Defense sites program, the Defense and State Memorandum of Agreement program, and cleanup at closing bases.

DoD established a partnership in FY94 with the Agency for Toxic Substances and Disease Registry and the National Oceanic and Atmospheric Administration to ensure DoD's compliance with public health and ecological stewardship responsibilities.

Regional and installation-specific partnering initiatives are taking place all across the U.S. Examples of these initiatives include:

- EPA Region 3 and the Navy utilized the partnering concept during the negotiation of federal facility agreements (FFA) for Naval Weapons Station Yorktown and Naval Surface Warfare Center Dahlgren. The partnering approach allowed both the Navy and EPA to meet outside the bounds of the normal work environment, outside the office, on neutral ground, with no set goal other than attempting to understand each respective party's position on issues related to the FFA. By understanding what motivates each other's decisions and opening the session to frank and open discussion of issues and disagreements, the level of trust between the Navy and EPA increased, resulting in productive negotiations.

- Additionally, EPA Region 3 and the Army have begun the partnering process at the West Virginia Ordnance Works (WVOW) NPL site, a formerly used defense site. Partnering at WVOW is designed to bring the working-level project managers and senior managers from both the Army and EPA together to create an environment where the expectations of both agencies are fully explained to all stakeholders involved in the ongoing restoration program. The partnering meetings for WVOW should bridge any communication gaps between the Army and EPA, and will provide an arena for open discussion that would not be available through written communication. Similar partnering meetings are also planned between the Defense Logistics Agency and EPA Region 3 at the Defense General Supply Center, an NPL site in Richmond, Virginia.

- The Atlantic Division of the Naval Facilities Engineering Command has produced a partnering video entitled "American Challenge: Build Bridges." The purpose of the video is to promote partnering. The video includes various interviews with environmental partnering participants and champions of the partnering concept both within DoD and outside DoD.

- The Naval Facilities Engineering Command (NAVFAC) also has produced a booklet entitled "Guide to Partnering for Environmental Projects" which discusses the history, guiding principles, elements, and advantages of partnering, and provides a partnering implementation plan. In the foreword to the guidebook, Mr. William Quade, Director of Environment for NAVFAC, convincingly states: *"We cannot accomplish the ... mission to clean up our bases without working closely with the Environmental Protection Agency, the States, and the individual communities. Partnering is the process to bring us together; teamwork is the result. Because each member brings a commitment to the table, partnering has to be relatively formal to increase the chance of success. Ultimately we want partnering to be the preferred method for everything [we do]."*

The stories that follow provide further insight into the benefits and successes of DoD's partnering efforts.

"DoD is deeply committed to environmental compliance and protection, but we cannot - and should not - work alone. There is power in numbers, and DoD is drawing on the best minds, the best ideas, and the benefits of cooperation to fulfill its environmental responsibilites."

— William J. Perry
Secretary of Defense, 1994

Wright Patterson AFB, Ohio

To open communication and encourage dialogue between the stakeholders involved with the installation restoration program, Wright Patterson Air Force Base (WPAFB) held the first ever Federal Facilities Forum. The Federal Facilities Forum brought together representatives from EPA, Ohio EPA, and DoD and Department of Energy facilities in Ohio. By undertaking this initiative, WPAFB is striving to accelerate the restoration process through strengthening working relationships, potentially saving millions of dollars.

SKYWRIGHTER *September 23, 1994*

Don Schregardus, above, addressed the first-ever Ohio Federal Facilities Forum

Base-sponsored forum opens dialogue among Ohio environmental agencies

Ohio Environmental Protection Agency Director Don Schregardus addressed participants in the first-ever Ohio Federal Facilities Forum. The event, sponsored by the base Environmental Management office, took place this week at the Area C Conference Center.

Monday, representatives from Ohio's federal facilities, including Wright-Patterson, Fernald and the Mound, and state and federal Environmental regulators gathered to discuss common issues, success stories and new technologies.

Schregardus praised the group for working to improve the dialogue between federal environmental managers and environmental regulators.

"Teamwork is the key," Schregardus said, "Our goal is to clean up federal facilities in the most health protective and cost effective manner."

At the forum, representatives discussed success stories, lessons learned, and program areas considered problematic. More importantly, the forum also offered the stakeholders an understanding of how the various organizations work and the driving forces behind the various stakeholders actions.

In addition to the forum, periodic partnering meetings are hosted alternatively by the different stakeholders. These meetings have allowed for open communication to resolve complicated issues and formalize agreements to accelerate the cleanup.

The first meeting hosted by WPAFB focused on understanding the perceptions of the various stakeholders by identifying problems and issues. By encouraging open communications, this initial meeting eased frustrations experienced in the earlier stages of the WPAFB restoration process. Mixed work groups consisting of representatives of each organization were established to begin addressing specific problem areas. Positive outcomes of the first meeting included the following: standardizing site-specific project plans, identifying contract management issues, and issuing Memorandums of Understanding for Interagency Agreements and State Consent Orders.

EPA Region 5 hosted the second meeting which continued to develop solutions to problems and issues identified earlier. The meeting successfully streamlined the investigation and analysis process when the parties agreed to make the final sampling round optional. The work groups also streamlined the investigative process by establishing Consensus Statements, which are papers that explain the intent, rationale, criteria, and application of specific methods or techniques to be used at the installation. In this particular instance, Consensus Statements delineated a groundwater operable unit that allowed a regional approach to investigating groundwater contamination, rather than a site-specific approach. The Consensus Statements also defined a basewide Removal Action Plan for landfill capping, thereby allowing the use of generic remedies at WPAFB landfills.

OEPA will host a third meeting to address outstanding issues which are impeding the restoration process. The parties will address disposal of waste derived from investigatory drilling activities and risk-based funding.

The improved overall restoration process and the time and money savings realized at WPAFB continue to prove that the partnering efforts and the Federal Facilities Forums are critical to the environmental restoration efforts.

Fort Wingate Army Depot, New Mexico

The Fort Wingate Army Depot sits among the red rocks along U.S. Interstate 40, next to the reservations of the Navajo Nation and the Zuni Pueblo Tribe in New Mexico. According to the Navajo and Zuni, Fort Wingate is an ancestral home of both tribes. In 1918, the Army established a munitions-depot around an old cavalry post. From 1918 until its closure in 1993, the 22,000-acre installation stored and demolished ammunition.

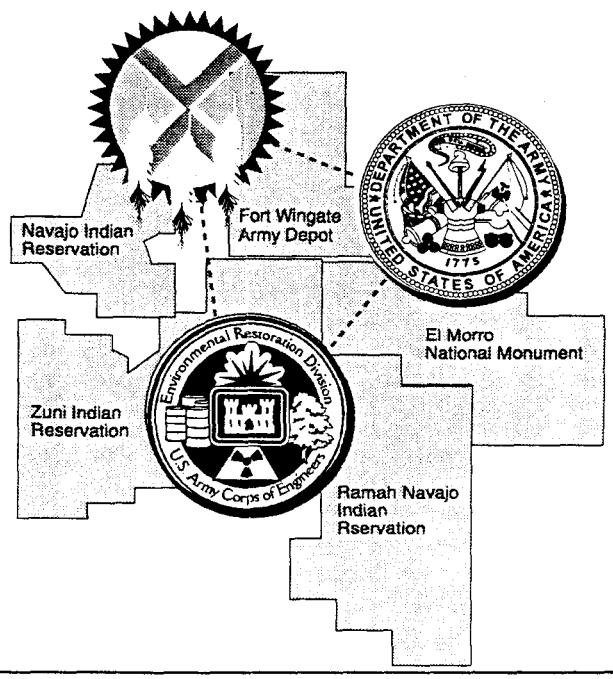
Fort Wingate contains sites rich in cultural heritage and historical significance. Over 200 Navajo ruins were discovered on the property, as well as several modern earth-covered dwellings called "hogans". The

property served for centuries as a hunting and gathering area for the Zunis. Over 600 archeological sites were recorded by surveyors, including an additional 200 ruins traceable to the Anasazi, ancestors of the Zuni.

Efforts to clean up the property have focused on the removal of exploded and unexploded ordnance. Given the cultural and historical significance of Fort Wingate, the first step of the restoration process involved identifying the numerous cultural and historic resources affected by the cleanup and disposal of the property.

Corps Of Engineers (COE) project managers recognized early that efforts to identify sites of cultural and historical significance would face possible resistance from the Navajo and Zuni. For many members of the tribes, divulging locations of religious and other sacred areas diminishes the sites' sacred nature.

Building Partnerships Between DoD and Native Americans



Archaeologists and ethnologists working with the COE had to convince the tribes that although the Army needed to find sacred sites, it did not want to know the type and nature of the sites. In addition, project scientists had to overcome a legacy of more than 100 years of mistrust. Mistrust, unfortunately, was created by researchers who repeatedly violated the trust of the Native Americans by divulging the location of sacred sites and the nature of religious ceremonies.

The Army wrote a Memorandum of Agreement (MOA) to ensure that they received the information necessary to conduct restoration activities while respecting the concerns of the two tribes. Signatories to the MOA included representatives from the Army, Department of the Interior, Advisory Council on Historic Preservation, New Mexico State Historic Preservation Office, the Navajo Nation, and the Zuni Pueblo Tribe.

Throughout the project, the COE took unprecedented steps not only to secure information needed to complete the project, but to ensure the privacy of the data. Any information revealed about the type or nature of the site would remain confidential between the researcher and the tribe. To ensure the privacy of information specific to each tribe, COE issued a main report

supported with two appendices—one cataloguing sites for each tribe. The Army will not publish the appendices as part of the main report. Further, access to the information is restricted from Freedom of Information Act requirements. In keeping with recent archaeology reporting standards, each tribe was allowed to review the main report and its respective appendix prior to the COE's peer review process.

The Army divided the investigation to identify cultural and historical sites as follows: an archaeological survey of remains left on or in the ground, and a survey of traditional cultural properties based on interviews with tribal representatives. The traditional cultural properties investigations consisted of on-site inspections and ethnographic interviews with tribal members of three chapters of the Navajo Nation and a cultural team of the Zuni Pueblo Tribe.

The Navajo and the Zuni participated in a process in which their concerns were recognized as legitimate. The process also reestablished the tribes' connection to areas of exceptional cultural significance. Each tribe can now respond to restoration efforts from a more informed position that balances tribal cultural needs with the cleanup requirements.

The COE believes that its efforts to balance the concerns of the local community with the scientific needs of the restoration process furthered its goal of building trust in the process. COE's work at Fort Wingate provides a remarkable example of diverse organizations and people cooperating to achieve a mutual goal.

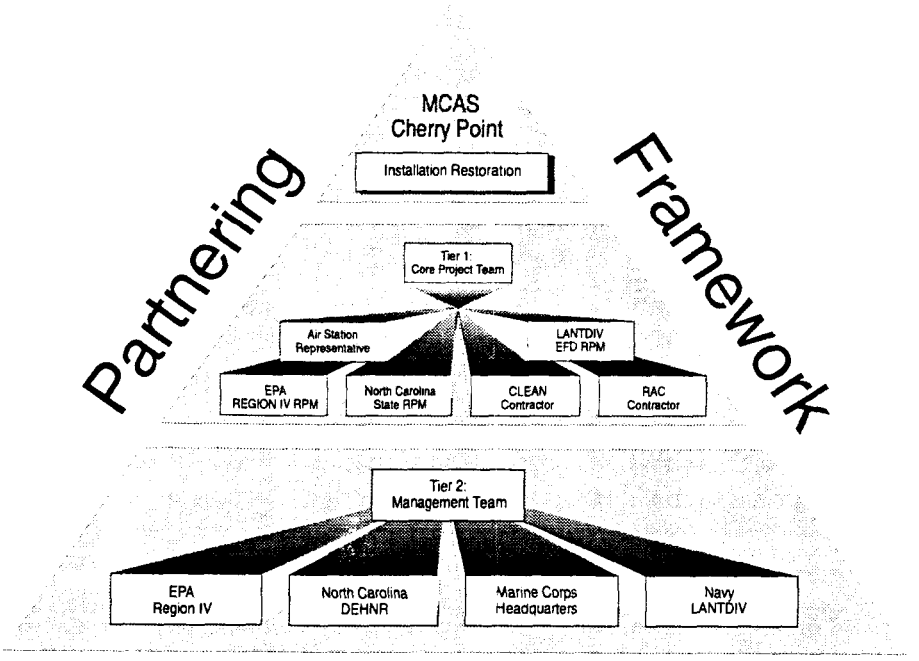
Marine Corps Air Station Cherry Point, North Carolina

The Navy and regulatory agencies have teamed together at Marine Corps Air Station (MCAS) Cherry Point, North Carolina in an innovative partnering agreement that directs both environmental restoration and base realignment activities. By forming a single vision for both programs, money and time have been saved.

The newly formed partnering team consists of members representing MCAS Cherry Point; Atlantic Division, Naval Facilities Engineering Command; EPA Region 4; and North Carolina Department of Environment, Health, and Natural Resources (DEHNR). The partnering team moved from an informal partnering to a facilitated team that developed a charter with a set of bylaws and a mission statement, *"...to identify and restore [installation restoration] sites at MCAS Cherry Point in a technically sound, timely, and cost effective manner according to the law."* Each team member has agency support and empowerment.

Partnering is a process that brings key players together to work as a team. MCAS Cherry Point has taken partnering to the next level by establishing a two-tiered process. The partnering team consists of Tier I, which is the working level and Tier II, which is the management support level. Each Tier I representative has an associated representative at Tier II. A Tier II team member is consulted when an impasse occurs at the working level, or if guidance and additional regulatory agency approval are necessary. At the

working level, each member understands the value of listening and appreciating the perspective and loyalty of each member and how it benefits the common goal.



The MCAS Cherry Point partnering team is attempting to overcome difficulties typical to partnering arrangements, such as high personnel turnover. Each new partnering team member receives a planning orientation package providing the partnering ground rules. Past meeting minutes become part of the Administrative Record, so new members respect old team member decisions.

In FY94, the Navy realized the success of the partnering team through the development of a $2.5 million abbreviated work plan for the investigation of four operable units (OU). Partnering not only allowed for the development of this comprehensive work plan, but also saved an estimated $300,000 and cut at least one year off the restoration schedule. The work plan, which involves studying groundwater, surface water, soil, and sediment, and installing groundwater monitoring wells, is evidence that MCAS Cherry Point accelerated the decision-making process by obtaining consensus among the partnering team members to shorten the work plan review time.

The partnering team is significantly reducing environmental restoration costs associated with construction activities near the four OUs. Installation expansion due to realignment require the construction and rehabilitation of aircraft support facilities, and runway and taxi-way construction and maintenance. Environmental restoration related to the construction is saving time and money because the partnering team is addressing the risks

associated with removing soils near the OUs. The environmental cleanup plans are incorporated into the construction plans, allowing for concurrent removal and construction activities.

The innovative two-tier approach, and the problem-solving mentality of the MCAS Cherry Point partnering team is expected to continue the accelerating cleanup at the installation.

Former Schilling Air Force Base, Kansas

To eliminate risks posed by underground storage tanks (UST) and to meet a need to expand onto the property, the U.S. Army Corp of Engineers (COE) used an informal partnering approach to accelerate the cleanup at the former Shilling Air Force Base. Partnering is allowing the COE to substantially reduce costs and surpass its environmental restoration schedule by one and a half years.

Schilling Air Force Base in Salina, Kansas, ceased operations in 1965. A portion of the property once occupied by the base has been partly transferred to the Salina Airport Authority (SAA) through a base redevelopment plan. As with many formerly used defense sites, communities are anxious to redevelop the land. An obstacle often faced by communities is existing contamination of the property. At Schilling, contamination associated with USTs needed to be addressed.

To help expedite the restoration schedule, COE held an initial partnering session with the COE Fort Riley Resident Office (the construction oversight representative), SAA, the Kansas Department of Health and Environment, and the design firm. Additional informal partnering meetings, held at the office and the field level, were attended by all parties.

The partnering meetings provided a forum to exchange ideas and develop strong working relationships between all parties involved. The following specific partnering actions led to an accelerated schedule:

- COE provided the removal action contractor with copies of advance designs.
- Review comments were made before construction proposal submission so that the various parties understood each other's expectations.
- Information was exchanged during the development phase (for example, computer-aided design [CAD] files were shared among the parties involved).
- Discussions addressed and resolved on-site problems in the field before the design was completed.

"The Kansas City District has done an outstanding job designing and implementing the UST removal project at the Salina Municipal Airport [the former Schilling AFB]. All district staff members who have worked on the project are to be commended for their efforts."

— Timothy F. Rogers, Executive Director, Salina Airport Authority

"We have made a successful transition from dependence on a major military installation to attracting private industry. The businesses located here have made excellent use of the existing buildings. When this project is finished, we'll have an even more attractive facility for current and future tenants."

— Timothy F. Rogers, Executive Director, Salina Airport Authority

The initial phase of the investigation revealed that the project involved much more than a "routine tank pull." The work involved is quite complex because it requires removing 36 large, 50,000-gallon USTs at an active airport, all of which must be conducted in strict accordance with Federal Aviation Administration regulations.

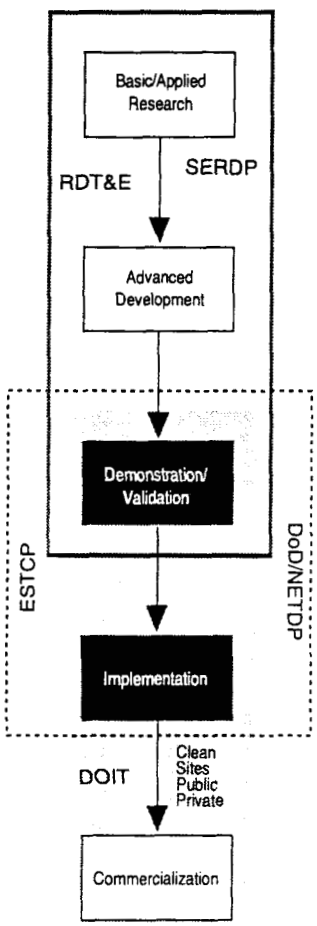
To ensure the success of this complex effort, the stakeholders gained an understanding of the partnering process and developed a trusting working relationship. The benefits of this relationship were evident when the stakeholders solved the need for finished designs by having all parties agree to use the 95 percent design markup, which resulted in a cost savings of about $50,000.

This successful partnering effort was due to each party's and each individual's committed effort and positive attitude toward sharing information, establishing trust, and making the process work.

PROMOTING ENVIRONMENTAL TECHNOLOGY

Technological innovation is the key to more efficiently and effectively meeting the environmental restoration demands facing DoD. To facilitate the development and deployment of better, less costly, and faster environmental technologies, DoD developed and has implemented a strategy that is designed to foster technologies that address real DoD environmental needs, identify technologies with the highest payback, overcome the barriers to the application of technology, expedite commercialization, engage in partnerships, and enhance U.S. competitiveness in the global market.

DoD designed its strategy using a methodology for technology development that is supported by the integrated efforts of the DoD components and coordinated through the Office of the Secretary of Defense. These efforts seek to leverage resources through partnerships and predominantly focus on demonstrating and validating the cost and performance of new technologies that address the assessment, remediation, and monitoring needs at DoD installations.



To support the basic and applied research and development of environmental technologies to meet DoD's cleanup and commercial goals, DoD is using programs outside of DERA and BRAC, such as the Strategic Environmental Research and Development Program (SERDP) and the services' Research, Development, Testing, and Evaluation (RDT&E) programs. Through SERDP, DoD recently established the DoD National Environmental Technology Demonstration Program (DoD/NETDP). Under the DoD/NETDP, the components and EPA are selecting characterized sites with appropriate contaminants to serve as test locations; developing common Quality Assurance and Quality Control (QA/QC) procedures; and developing coordinated dissemination mechanisms for reporting results of technology demonstrations and evaluations. The components and EPA will establish partnerships with government and private interests to carry out technology demonstrations at the selected sites and will provide researchers and developers with technical and field support. The following sites in the DoD/NETDP already have been identified:

- Port Hueneme Naval Construction Battalion Center sites for technologies for fuel hydrocarbon remediation
- Volunteer Army Ammunition Plant sites for demonstrations involving technologies for the remediation of energetics and heavy metals contamination
- Wurtsmith Air Force Base for development and testing of integrated biological/physiochemical processes and evaluation of innovative monitoring and measurement technologies
- McClellan Air Force Base sites for demonstrating technologies for solvent remediation
- Dover Air Force Base to house the Groundwater Remediation Field Laboratory

In addition, DoD's Environmental Security Technology Certification Program (ESTCP) is designed to move promising new technologies that address DoD specific environmental problems from DoD laboratories to military installations for demonstration and validation. DoD shares these technologies with other federal agencies, and bring them to the commercial market. The goal is to expedite cleanup of DoD installations and to get an economic payoff from the R&D investments that DoD has made. DoD has received, reviewed, and currently is selecting technologies to fund for demonstration. DoD expects to fund up to 40 technology demonstrations, the majority of which will feature cleanup technologies.

"We must move rapidly to develop, demonstrate, commercialize, and then quickly apply the technologies that can save our society billions of clean-up dollars."

— Vice President Al Gore

To maximize the potential for technology transfer through partnering, DoD is working with the Western Governor's Association's to accelerate deployment of new and more efficient technologies to clean up contaminated sites in the West by developing protocols that can be shared across state boundaries. The program, known as Demonstrate On-Site Technologies (DOIT), brings everyone with a stake in new environmental technologies - government, the public, regulators and industry - into the development process. This innovative program:

- Encourages cleanup managers to consider testing new approaches
- Collects much needed standard cost and performance data
- Improves interstate/interagency permitting reciprocity
- Streamlines regulatory agency approvals

DoD and the EPA also launched the Clean Sites Public Private Initiative to explore the development of innovative technologies at DoD sites using the expertise of Fortune 500 firms which share similar restoration problems. This program gives major private sector companies an opportunity to implement new technologies at a site with the DoD assuming the risk if the cleanup doesn't meet acceptable standards.

To facilitate the exchange of environmental technology information and to share resources, DoD initiated or participated in numerous technology transfer activities with Federal and state agencies and the private sector. Through the Federal Remediation Technologies Roundtable, DoD continued transfer of technology cost and performance data with other Federal agencies to foster the application of innovative treatment technologies. Through the Environmental Security Technology Committee, DoD developed a compendium of technology information that combines a number of Federal remediation technology documents into a single, easy-to-use compendium to assist site cleanup managers and supporting contractors in selecting remedial technologies.

In an effort to integrate Federal agency cleanup technology, DoD has initiated joint projects with the Department of Energy's (DOE) Environmental Management Office. This effort, started under the aegis of the Interagency Environmental Technology Office (IETO), is now being organized as part of the ESTCP. Joint projects will be initiated this year where technolo-

gies developed by DOE will be demonstrated and validated at DoD sites. A coordinating committee, the Joint-agency Environmental Technology Leadership Advisory Group, is also looking at the possibility of additional interagency cooperation. DoD has played a unique and instrumental role in bringing the results of its technology demonstrations on military bases to the rest of the Government.

Promoting Environmental Technology — A Real Life Story

NAVAL AIR STATION NORTH ISLAND, CALIFORNIA

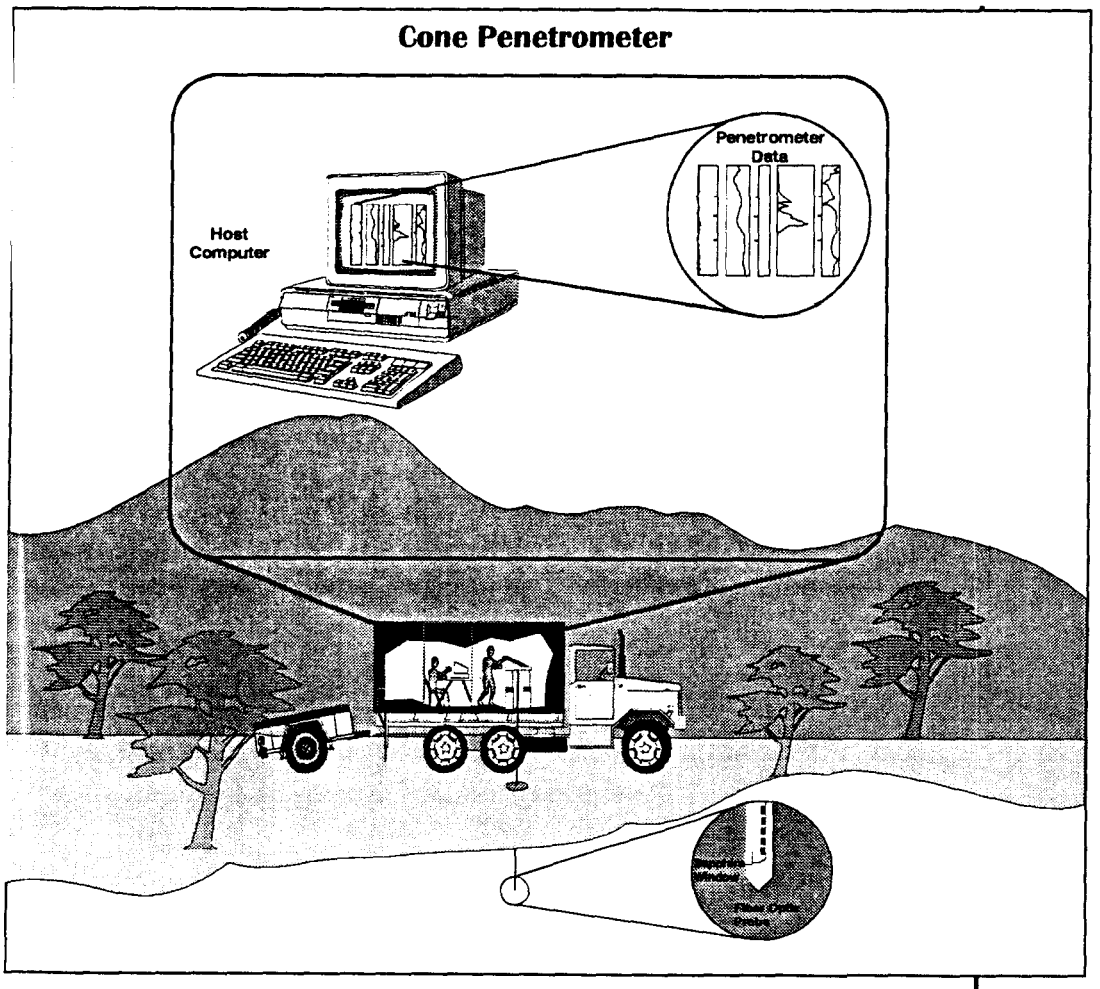
Naval Air Station (NAS) North Island, California was selected as one of two installations to participate in the Naval Environmental Leadership Program (NELP). The purpose of NELP is to select and implement innovative technologies in an effort to conduct better, faster, and less costly cleanups.

As a result of its involvement with the NELP, the Navy is successfully applying an emerging solvent washing technology on five tons of PCB-contaminated soils. Based on promising preliminary results, the Navy began a full-scale implementation of the solvent washing technology to expedite the cleanup of another site contaminated with PCBs.

The cone penetrometer test (CPT) is another innovative technology being used to characterize the extent of contamination at an industrial waste treatment plant at NAS North Island. The CPT technology enabled the Navy to construct a thorough stratigraphic picture of the subsurface. Without this technology, the Navy could not adequately characterize the site because conventional drilling and sampling techiques could not obtain complete subsurface stratigraphic information.

The CPT technology minimizes wastewater, eliminates waste soil, facilitates the determination of sample sites, and alleviates the need for groundwater monitoring wells. When compared to the more conventional drilling methods that use a hollow-stem auger, CPT is more cost-effective and can be mobilized more rapidly. The CPT produced results in one day, whereas conventional drilling and sampling methods may take up to five days for the same results.

The successful identification and potential application of the solvent washing and the CPT technology at the installation is one example of the innovative and cost-effective measures promoted by NELP. NAS North Island is coordinating closely with the other NELP prototype activity, Naval Station Mayport in Florida, to share information and lessons learned.



This figure illustrates the cone penetrometer test (CPT) technology implemented at NAS North Island. The CPT is used to characterize the subsurface stratigraphic conditions of the site.

Under NELP, NAS North Island continues to seek out new approaches for expediting environmental restoration and sharing this information with other installations.

The success stories that follow showcase various environmental technology efforts.

Twin Cities Army Ammunition Plant, Minnesota

For the first time in the United States, Twin Cities Army Ammunition Plant (TCAAP) in Minnesota, successfully used a new innovative cleanup technology to remove metal contamination from soil.

The lead extraction technology uses soil leaching supplemented by soil washing. This technology costs less than conventional cleanup technologies for metals that either contain or transfer the contamination. In the innovative treatment process, metals are recovered and recycled at a smelter,

Scrap casings, like the ones picutred above, were buried in ten trenches at TCAAP, and contributed to the heavy metal soil contamination

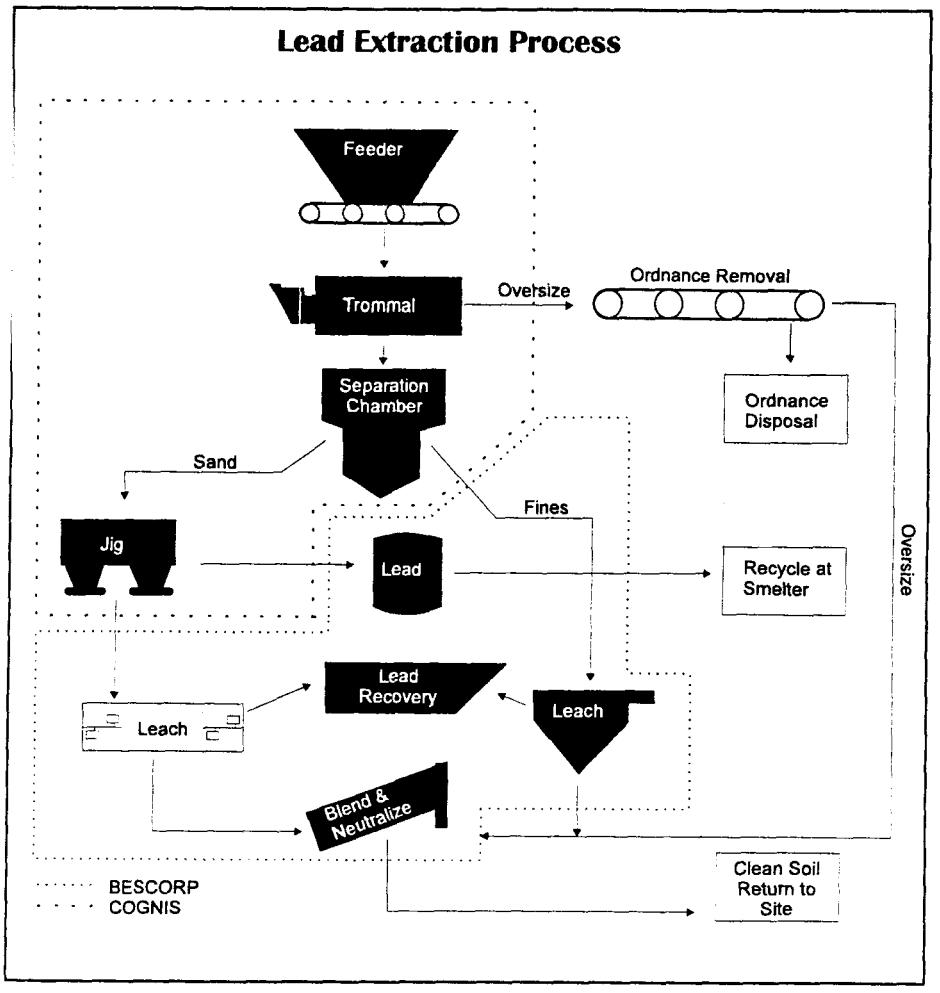
eliminating the long-term liability associated with existing metals cleanup alternatives such as landfilling, solidification, or stabilization.

The EPA Superfund Innovative Technology Evaluation (SITE) demonstration program evaluated the TCAAP lead extraction process. Soil washing is a physical separation process that removes large metallic particles from soil (based on density); the process ultimately results in a reduction of soil volume. Soil leaching is a chemical process that involves adding an acid to the soil to remove metals by dissolving the remaining smaller metallic particles and ionic metals.

Site F is an isolated 10-acre area that was used to burn scrap ammunition and powder and to bury scrap casings. TCAAP dumped ash and residue generated from burning materials on the surface and buried the casings in trenches. Environmental investigations revealed that sixteen disposal trenches contain heavy metal contamination up to 10 feet deep.

The investigation of Site F was expedited by using an x-ray fluorescence (XRF) field instrument. By using XRF, field personnel could determine how much soil to excavate, which provided an up-front characterization of contamination, and eliminated the need for investigative sampling. Money was saved and time reduced because a full-blown investigation to characterize the nature and extent of contamination was not necessary.

Before this project began at Site F, no established technologies existed to remove heavy metals from soil. TCAAP, EPA, and the Minnesota Pollution Control Agency are successfully remediating the contamination rather than containing it at Site F or transferring it to a landfill. Because of this success-



This figure illustrates the lead extraction process implemented at TCAAP. Soil washing and soil leaching technologies are combined to create this process.

ful use of technology and the partnering effort, the Army is eliminating potential risks to human health. Costly long-term monitoring will not be required, and the site will be made available for use with no restrictions.

As of August 1994, approximately 7,100 tons of contaminated soil from TCAAP's Site F was treated by the lead extraction process. When the project is complete in summer of 1995, an estimated 15,000 tons of soil will have been treated.

Naval Communication Station, Stockton, California

As a result of DDT-contaminated surface soil at Naval Communication Station (NCS) Stockton, California, the Navy chose to aggressively mitigate the contamination and help develop innovative technologies for application in the marketplace. At the time the DDT contamination was discovered, cost-effective treatment options for DDT had not been developed. However, the Navy proved that solvent extraction can remove DDT from clay soil, with on-site treatment at a cost savings of approximately $2,000 per ton.

NCS Stockton is located within the ecologically sensitive Sacramento-San Joaquin Delta of California. The San Joaquin Delta lies at the confluence of two major California rivers, is the largest source of drinking water in California, and is home to several threatened and endangered species. In order to preserve the endangered species habitat, the Navy chose to excavate DDT-contaminated soil, characterize the lateral and vertical extent of DDT by using innovative immunoassay field screening methods, and evaluate innovative technologies to remove DDT.

When DDT mitigation started at NCS Stockton, the most common technology for removal of DDT in soil was incineration. To solve the DDT problem at NCS Stockton, the Navy chose to conduct treatability studies for evaluating innovative treatment technologies. The treatability studies were designed to evaluate bench-scale treatment followed by pilot-scale demonstration if bench-scale treatment was successful. If the pilot-scale demonstration was successful, then a technology was developed with the capability of on-site treatment of DDT-contaminated soil.

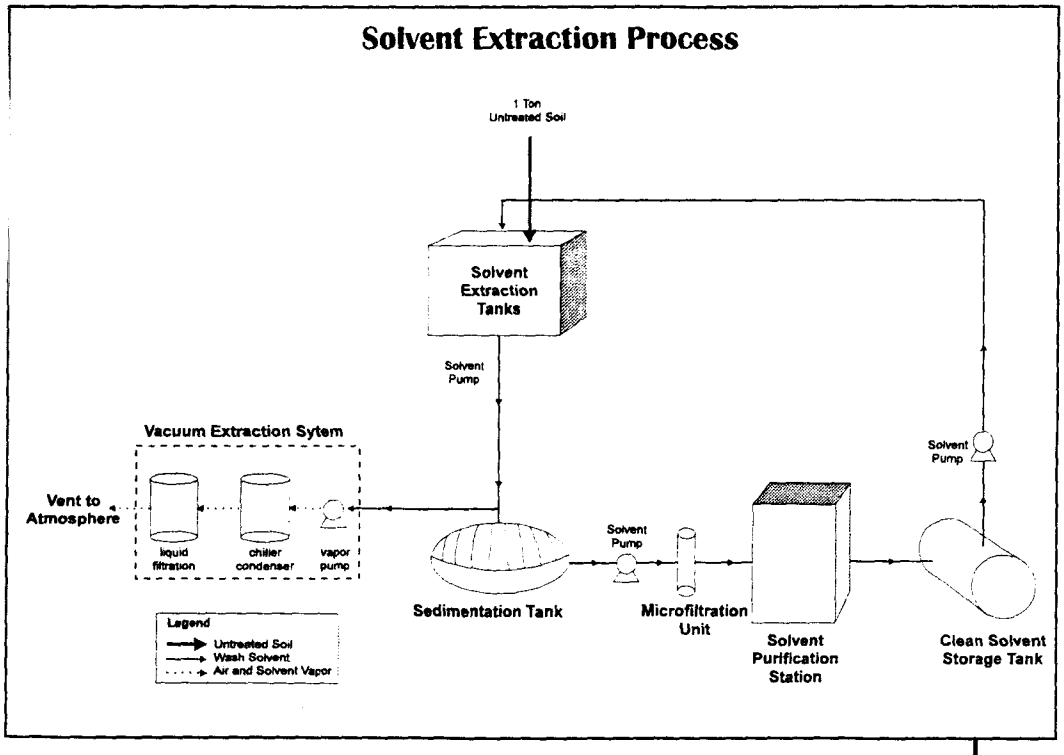
Contaminated soils at three sites at NCS Stockton were excavated to remove DDT contamination above background levels. Prior to excavation, the Navy applied newly developed immunoassay field screening methods to identify the lateral and vertical extent of DDT-contaminated soil. The Navy verified the accuracy of the field screening method by comparing field screening results to laboratory analytical results of the same samples. Use of the on-site screening method saved approximately $60,000 in laboratory analytical costs.

Solvent extraction and chemical oxidation treatment technologies were evaluated. Chemical oxidation successfully removed 88 percent of DDT in soil at the bench scale.

The solvent extraction process involves saturating soil with a nonhazardous organic solvent blend. The solvent blend removes DDT from the soil and is then drained from the soil. After draining, residual solvent must be removed from the soil so that the soil may be disposed of or used as clean fill. Removing residual solvent from the clay soil was overcome by using a combination of soil vapor extraction, hot air injection, and bioremediation. The solvent blend drains freely from sandy soil.

The solvent extraction process removed 99.9 percent of DDT from contaminated

The Navy removes contaminated soil for treatment at NCS, Stocton.



This figure illustrates the solvent extraction process implemented at NCS, Stocton. This process was combined with chemical oxidation to remove DDT contamination in soil.

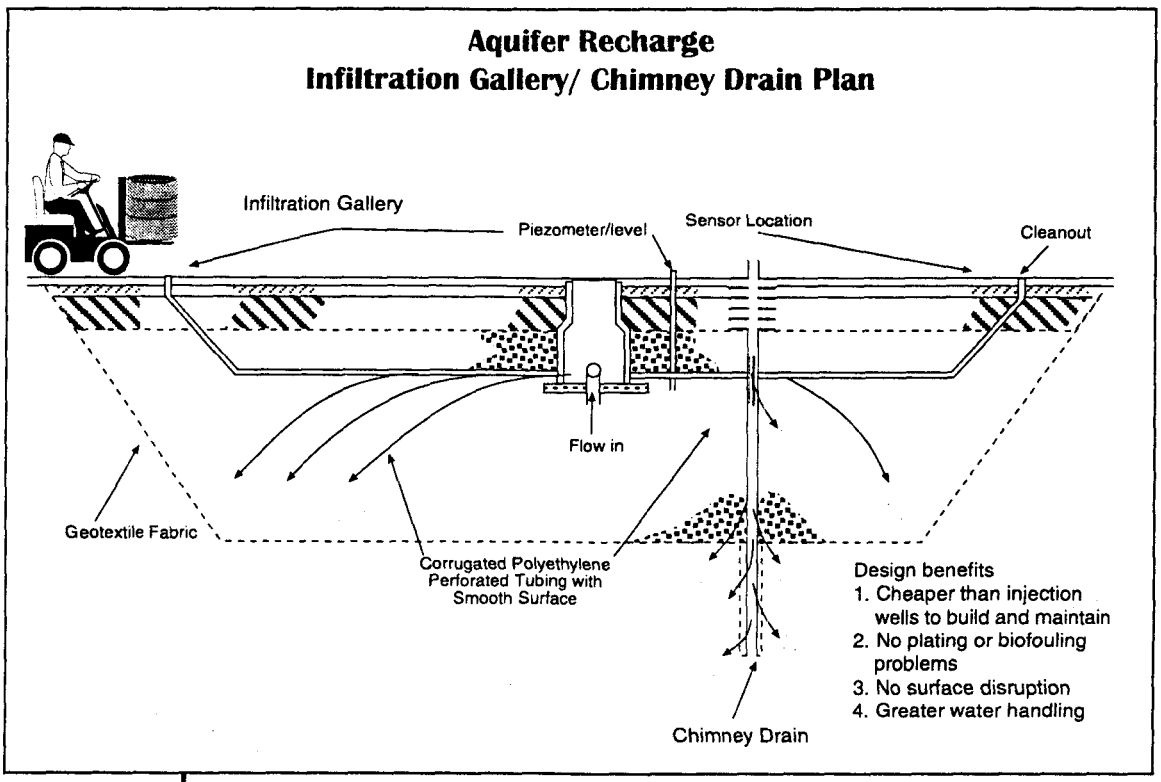
clay soil at NCS Stockton. This removal efficiency met the cleanup goal for DDT, and as a result, a pilot-scale demonstration was performed. Solvent extraction is now a proven technology for on-site treatment of DDT-contaminated soil.

The Navy's aggressive approach was developed as a way to attain accelerated cleanup at high risk sites with little characterization information. By using two innovative technologies: immunoassay field screening for DDT and a solvent extraction process to remove DDT from soil, the Navy completed characterization and treatment activities in six months. The Navy has verified that immunoassay field screening for DDT is a reliable, cost-effective, and time saving technology for site characterization.

Defense Distribution Region West, Tracy, California

Defense Distribution Region West (DDRW), Tracy, California, began interim actions with an innovative groundwater treatment system designed to save cleanup time and costs while efficiently treating groundwater contaminated with two cancer causing agents, trichloroethene and tetrachloroethene.

Prior to installing the new groundwater treatment system, DDRW utilized six groundwater extraction wells to remove the groundwater, an air stripper to treat the groundwater, and three gravity-fed groundwater



This figure illustrates the infiltration treatment system at DDRW, Tracy. Treated water enters the infiltration gallery/chimney drain via pipeline from the air stripper. The treated water reenters the aquifer via percolation through a geotextile fabric.

injection wells. Due to physical changes in the treated water caused by the air stripping process, DDRW chose to implement an innovative infiltration galleries treatment process.

The existing system was replaced with two infiltration galleries equipped with a chimney drain. This innovative process offers the following advantages over the old system:

- Greatly reduced construction costs
- Lower maintenance costs
- Increased surface area for discharge, resulting in a greater discharge capacity
- Improved resistance to biofouling and scaling problems

Treated water from the system is routed to the infiltration galleries through independent discharge lines. Discharge flow rates and line pressures are monitored by a computer at a central station. Daily operation and performance testing has shown that these two galleries are capable of handling the entire system output capability with a 20 percent reserve capacity.

A "low-flow" sampling study is also being conducted to supplement the quarterly groundwater monitoring program. This study will develop alternate technologies for purging and sampling groundwater monitoring

wells. The Depot currently has 148 monitoring wells, 30 of which are part of this study. As part of the study, wells are purged and sampled at slow rates, minimizing the amount of turbidity, degassing, and volatilization of contaminants that often result from the excessive draw of traditional well sampling methods.

Current testing indicates this system is capable of reducing the amount of monitoring well purge water by one or two orders of magnitude and producing better quality samples by reducing the amount of turbidity, degassing and volatilization of contaminants that result from traditional sampling methods.

This innovative project will greatly reduce monitoring well installation and sampling program costs because of lower disposal costs for purge water; reduced sampling frequency and cost; and improved overall quality and accuracy of groundwater samples.

Twentynine Palms, California

In order to meet the goals of Pilot Expedited Environmental Cleanup Program (PEECP), the Marine Corps Air-Ground Combat Center began implementing a combination of innovative approaches and techniques. As a result of these techniques, the center has completed environmental investigations at sites covering 3,500 acres within 11 months, with no disruption of the installation's mission. An estimated $9 million in cost savings and a two-year reduction in the project schedule have been achieved over the past three years.

The purpose of the PEECP is to safely accelerate environmental restoration and reduce costs. By departing from the traditional approach to restoration, where investigation and cleanup proceed through clearly separate phases, the PEECP aims to use time and resources more efficiently, while ensuring that both investigation and cleanup strategies are technically sound and meet regulatory agency requirements.

The center implemented innovative technologies, generic remedy selection, a modified observational method, real-time sample analysis, and value engineering to help increase the flexibility and streamline the restoration activities.

Bioventing is one innovative technology being employed at the center. Bioventing uses either mechanical pumps, wind, or natural fluctuations in barometric pressure to inject air into the soil. A bioventing demonstration project is underway to simultaneously remediate petroleum hydrocarbon contamination of groundwater and soil. The advantages of bioventing include minimal capital investment and operational costs and no disruption of regular activities at the site. In addition, bioventing technology can be implemented during the investigation and analysis phase.

Heap bioremediation is another environmental technology being applied. Since 1985, the installation removed petroleum-contaminated soils from numerous locations. Instead of disposing the contaminated soil off-site, the Navy designed and built a bioheap facility capable of treating 3,000

cubic yards of petroleum-contaminated soil in a single batch. The treated soil is used as a daily cover at the installation's landfill. The bioheap treatment approach is estimated to save the Navy approximately $150,000 per batch of soil compared to off-site disposal costs. The bioheap facility is a prototype for developing a standard design and operations package, and based on the results, bioheap technology is currently being tested further at several other DoD installations.

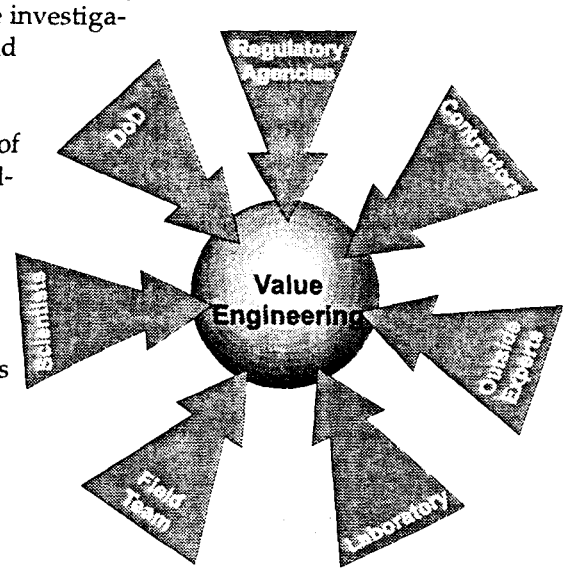
Heap bioremediation process is illustrated in the above photo. This bioheap facility can treat 3,000 cubic yards in a single batch.

In addition to employing innovative technologies, generic remedy selection was applied before initiating the investigation and analysis phase in order to limit the range of potential cleanup alternatives. The installation employed this process by limiting the alternatives for remediating fuel spill areas to vapor extraction alone or in conjunction with steam injection, or bioventing. This strategy focused resources on data collection and analysis. Generic remedy selection avoids excessive sampling, and in some cases, selected cleanup techniques can be implemented concurrently with the investigation, avoiding considerable costs.

The efficiency level through generic remedy selection is raised because of the modified observational method applied in the actual investigation. The observational method is an engineering technique used to develop a design when site conditions are uncertain. This observational method has been developed to limit the number of sampling rounds and prevent redundant or unnecessary sampling.

Samples are typically taken from locations where contamination is expected, and the results are used to determine whether additional sampling is required. If additional sampling is necessary, a flexible sampling approach is developed based on indications from the sample analysis. By keeping sample collection as accurate and efficient as possible, extensive data can be gathered to correctly characterize the contamination.

The observational method clearly depends on reliable and real-time sample analysis. At the center, use of an on-site mobile analytical laboratory, approved by the state of California, allows samples to be analyzed within hours of collection. Because of this rapid turnaround, critical decisions about how to direct the evolving investigation can be made within 24 hours of sampling, and the investigation can be adapted to respond quickly to new information.



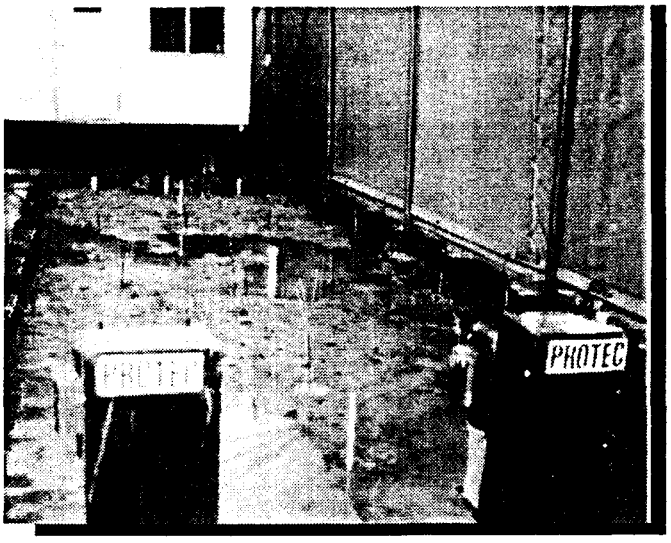
Another technical aspect of the restoration program developed is the value engineering process. Value engineering involves technical experts from diverse scientific and engineering disciplines who periodically review and assess the installation restoration program. Because these experts are not directly involved in the restoration process, their independent review and input provides a more objective evaluation. Because value engineering can reveal potential technical problems early in the process, it can help to foresee and avoid costly delays or the use of resources to correct problems after they occur.

As a result of the PEECP initiatives, the center has used time and resources more efficiently, while ensuring that both investigation and cleanup strategies are technically sound and meet regulatory agency requirements. The installation estimates that all investigation activities will be completed by March 1995, and final cleanup will be completed before 1997.

Dover Air Force Base, Delaware

Dover Air Force Base is one of the first installations in the U.S. to successfully apply isolated innovative treatment technology test cells. The cells work by isolating a portion of the aquifer to determine the efficiencies of individual treatment processes. Four innovative treatment technologies are being applied: soil vapor extraction (SVE), aquifer air sparging (air sparging), accelerated anaerobic biodegradation, and cometabolic bioventing. The Air Force estimates that the testing and operation of these four treatment technologies will lower cleanup costs to $5 million from previous estimates as high as $100 million. Cleanup time will also be reduced significantly through the use of these treatment technologies.

One of the four technologies, air sparging with SVE, is producing favorable results. In only six months of operation, this process recovered over 20 pounds of chlorinated solvents from the groundwater plume. At this recovery rate, the major "hot spots" will be reduced by 90 percent in 3 years.



The above photo illustrates one of the innovative treatment technology test cells used at Dover Air Force Base.

Air sparging involves injecting air into the saturated zone, (the part of the subsurface that is soaked with groundwater) to remove hazardous contaminants. Air is injected into the contaminated area, forming air bubbles that dislodge trapped contaminants, vaporize dissolved contaminants, and carry them up to the unsaturated zone (the part of the subsurface above the groundwater). SVE is used in conjunction with air sparging because it removes and treats the chlorinated solvents from the unsaturated zone.

The effective use of air sparging is just one of several accomplishments by the Dover environmental management staff. In 1994, Dover AFB was selected as a National Test Center under the National Environmental Technology Demonstration Program. As a National Test Site, Dover AFB will continue to serve a key role in the testing and improvement of innovative treatment technologies. The ground-breaking ceremony for the National Test Site Dover AFB is scheduled for April 21, 1995.

In addition to the use of innovative treatment technologies and the establishment of the Air Force's National Test Center, sound partnering relationships between Dover AFB, state and federal regulatory agencies, universities, and the private sector are expected to make Dover AFB's ambitious restoration goals a reality.

MCAS Yuma, Arizona and Army Corps of Engineers, Minnesota

Faced with tight budgets and the need for expeditious results, both the Marine Corps Air Station, Yuma and the U.S. Army Corps of Engineers (COE) used similar innovative investigative techniques to accelerate each of their restoration programs.

Cone Penetrometer Testing

In January 1994, the Marine Corps Air Station (MCAS) Yuma Project Team met to develop an approach to assist a restoration program that was 18 months behind schedule. The project team included representatives of Southwest Division, Naval Facilities Engineering Command, San Diego;

MCAS Yuma; EPA Region 9; and the Arizona Department of Environmental Quality. The team decided to use cone penetrometer testing (CPT) paired with four on-site mobile laboratories to generate real-time data for soil and groundwater samples.

The CPT system consists of a cone penetrometer with an integrated fluorescent spectrometer that is capable of providing real time measurement of petroleum products in-situ.

By providing analytical data in such a short time, a phased investigation approach was not needed. A phased approach often causes the long delays associated with typical 60-day off-site laboratory turnaround periods and work plan submittal and approval periods.

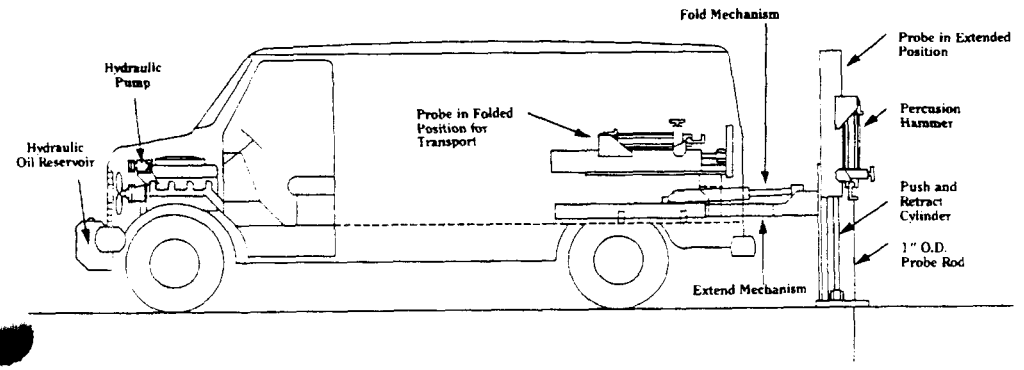
Site samples were analyzed for VOCs, petroleum hydrocarbons, and metals. On-site laboratory analytical results were available in two days, with ten percent of the samples analyzed by an off-site laboratory to confirm the on-site results.

The MCAS Yuma Project Team was able to delineate the extent of contamination by the October 1994 deadline. Approximately 3,000 samples were collected during four months of the investigation at a cost of $6 million. The Navy achieved real cost savings of $4.6 million by using CPT (a savings of $500,000 in drilling cost and $500,000 in waste disposal cost), and on-site mobile laboratories (at a cost of $300 per sample compared to off-site laboratory cost of $1,500 per sample, saving approximately $3.6 million).

Geoprobe

The St. Paul District COE has also realized time and cost savings by using a geoprobe and mobile laboratory at four leaking underground storage tank sites in Minnesota and Wisconsin. The geoprobe consists of a drill rig and mobile laboratory that can collect a large number of samples in a short time period, moving easily from one sampling location to another.

Geoprobe Schematic



The geoprobe's flexibility, combined with the mobile laboratory's ability to provide analytical results in 30 to 40 minutes, eliminates contractor downtime and other schedule delays and cuts costs by reducing the number of samples that have to be analyzed.

By using the geoprobe as a screening tool to determine monitoring well locations, COE was better able to identify, track, and study groundwater plumes. Because the geoprobe provides real-time data, appropriate cleanup alternatives are identified at a much earlier stage in the process.

COE realizes that much of any project's cost is tied up in the investigation and analysis phase. By using an innovative technology to save time and money during the field investigation, COE ultimately reduced project costs overall.

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Involving the Community and the Public

For the past several years, DoD has participated in the Federal Facilities Environmental Restoration Dialogue Committee (FFERDC), more commonly know as the "Keystone Dialogue." As a result of efforts to examine how and who should set priorities for restoration at federal facilities, the FFERDC recommended that the role of the community be expanded to ensure that restoration decisions reflect the concerns of all stakeholders. Members of the FFERDC include representatives from federal agencies; tribal and state governments; public policy and industrial trade associations; and local and national environmental, community, and labor organizations.

DoD considered the FFERDC recommendations carefully, and in response, updated its community involvement efforts for its environmental restoration program. The major aspects of the new policy require each installation to:

- Establish a Restoration Advisory Board (RAB) where there is sufficient, sustained community interest to act as a forum for discussion and input of ideas
- Develop a strategy for community participation in the environmental cleanup program—a Community Relations Plan (CRP) that identifies local concerns, key individuals within the community, and environmental justice issues, if any
- Designate a point of contact to provide restoration information, and a second point of contact at higher headquarters to resolve problems in obtaining information
- Provide information to the public on program activities, including draft and final plans, technical documents and status reports
- Solicit and consider public comments on restoration activities before plans and documents are finalized
- Establish and make available to the public an administrative record that documents restoration activities and decisions

"RABs illustrate the Department's new approach towards environemental restoration. It is good common sense to involve the community in the decision making process. These are the very people who will be most affected by our actions. Communities can no longer be just an afterthought. Their concerns must be incorporated into and installation's cleanup plan, if we are to be successful in this effort."

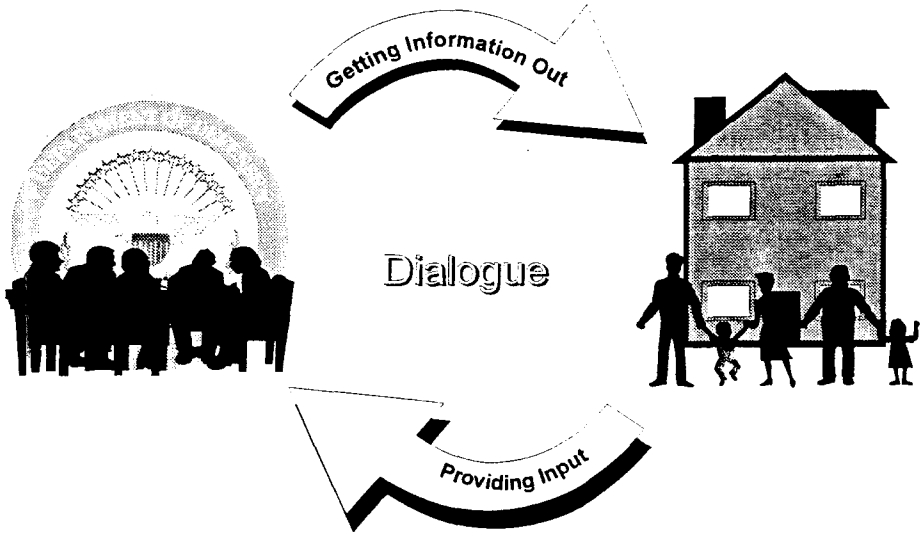
— Sherri W. Goodman, Deputy Under Secretary of Defense for Environmental Security

Restoration Advisory Boards

RABs serve as the cornerstone of DoD's enhanced approach to increase public participation in its restoration program. They provide a forum for the exchange of information among members of the community and representatives of the installation; EPA; and state, local, and tribal governments. By working together in partnership and incorporating the concerns of all stakeholders into decisions early in the restoration process, DoD believes that this process will be improved.

In 1994, DoD recognized a need to refine its basic community involvement policy that had been formulated for both closing and operational bases. DoD also recognized that it had to quickly communicate the new policy and procedures to the very people charged with its implementation at the installation level. To facilitate these efforts and to foster coordination between the DoD Components, a joint DoD and EPA working group was formed to develop guidelines for implementing the policy and to identify the role each stakeholder would play in the RAB. Over the course of several months, the working group drafted guidelines that retained the fundamental concepts recommended by the FFERDC and which encouraged each installation to build a RAB that reflected the individual concerns of its local communities. In addition, the working group designed and developed a training workshop to communicate the policy.

RABs: Part of DoD's New Policy on Community Involvement



The new DoD policy requires that RABs be established at installations where there is "sufficient, sustained community interest" in the cleanup program. At least one of the following criteria must be met for determining sufficient, sustained community interest:

- Installation closure involves transfer of property to the community
- At least 50 citizens petition for an advisory board
- Federal, state, or local government requests formation of an advisory board
- The installation determines the need for an advisory board

It is important to note that efforts to identify the level of community interest do not end there. As part of its periodic update of the CRP, an installation must reassess current community interest in the restoration program and in establishing and supporting a RAB.

"Call it a military experiment in democracy. After decades of handling environmental waste behind closed gates—with only the government agencies looking over its shoulder—the military is now giving the public a chance to weigh in."

—Fort Carson, Colorado newspaper commentary about Restoration Advisory Board initiative

Although RABs reflect a change in DoD's approach to community involvement, the Technical Review Committee (TRC), established before RABs, fostered two-way communication between a community and an installation in the cleanup program. TRCs were established at over 200 DoD installations. Through the TRCs, many installations moved beyond traditional community relations efforts to achieve a high level of public involvement.

RABs were not designed to replace TRCs, but rather to enhance them by drawing on the experience and teamwork of their members. While TRCs were a mechanism for informing citizens and soliciting their comments on restoration documents, RABs expand that effort in the following ways:

- By increasing the number of community members, RABs incorporate the diverse needs and concerns of the community directly affected by cleanup activities
- With a chairmanship of the RAB shared between the installation and the community, RABs promote partnerships between the two, and reflect a strong commitment to incorporate the community's concerns into the decision-making process

From inception to implementation, RABs signify DoD's new approach to increasing community involvement in environmental restoration. Although many RABs are just beginning, there are lessons to be learned and shared about achieving full public participation in restoration decisions. Installations which have not yet formed a RAB are reviewing their public outreach programs to determine if there is enough interest from the local community to provide input in the restoration decisions. Several installations are consulting with their TRCs to determine what steps are needed to convert them to RABs.

RABs embody the philosophy that "teamwork is the key to success." Through them, DoD will continue to seek new ways to involve the public in the on-going effort to improve and accelerate environmental restoration.

Restoration Advisory Boards — A Real Life Story

Charleston Naval Base, South Carolina

Faced with the impending closure of Charleston Naval Base, an economic cornerstone in Charleston, South Carolina for decades, many residents were filled with uncertainties and questions about the future of their community. The establishment of a Restoration Advisory Board (RAB) in March 1994 provided a much needed communication link between the installation, the community, and representatives of state and federal regulatory agencies to answer questions about the cleanup efforts at the installation.

Forming the RAB proved to be a more challenging task than the stakeholders anticipated. Initially, representatives of regulatory agencies who were members of the original Technical Review Committee at the installa-

tion were reluctant to participate in a citizen oriented advisory board. They were skeptical about discussing technical issues with members of the community who may not possess the technical expertise to make informed restoration decisions. Resistance to the RAB was overcome quickly, when the role of regulatory agencies was clearly defined through implementation guidance issued by DoD.

To date, the RAB includes 22 members, 10 of whom represent the Charleston community and the rest who represent the Navy, and a variety of state and federal regulatory agencies. Since the inception of the RAB, citizen membership has become more diverse and includes representatives from local churches, homeowner associations, and neighborhood groups. The RAB serves as a network for the exchange of information between its members and the community.

The obstacles encountered at Charleston Naval Base with forming a RAB are not all that unusual. The Department recognizes that increased public involvement will take some adjusting for all stakeholders. Though still early in the process, DoD is confident that RABs will foster meaningful public participation that will lead to an overall improvement of the environmental restoration program.

"The RAB advises the BCT on environmental cleanup of the installation from the community's perspective and acts as a liaison between the Navy and the community."

— Jennifer C. Metts, reporter
The Military Engineer

Environmental Justice

The President issued Executive Order 12898 on Environmental Justice on February 11, 1994. The order and its accompanying Presidential memorandum mark a significant step toward focusing the attention of federal agencies on concerns of environmental justice. To meet the goals of the Executive Order, DoD established an Environmental Justice Committee as a working group under the Defense Environmental Security Council. The Committee has been tasked to review the policies, instructions, posture, funding, and objectives of DoD related to environmental safety and health and to make recommendations for implementing the goals of the Executive Order.

Because the Executive Order is far-reaching and includes civil rights and contracting procedures as well as environmental and health concerns, the Committee includes members from across DoD and its components.

On August 11, 1994, DoD submitted an outline of its strategy to the Interagency Working Group on Environmental Justice and continued developing its draft strategy document. DoD's strategy for implementing the provisions under the Executive Order is broad-based and emphasizes objectives that address five basic areas:

- *Implementation:* Ensure effective implementation of the provisions of Executive Order 12898
- *Environmental Equity*: Ensure that no community or segment of the population bears disproportionately high or adverse human health or environmental effects from DoD policies, programs, and activities

"It is stakeholders such as the public who will determine the success of cleanup"

— Elliot Laws
U.S. EPA Assistant Administrator

- *Public Participation:* Promote partnerships with all stakeholders by ensuring their early involvement in DoD environmental activities and educating and empowering them to ensure quality public participation in and quality access to information on human and environmental issues

- *Nondiscrimination*: Foster nondiscrimination in DoD-funded programs or activities that substantially affect human health or the environment

- *National Performance Review*: Promote the principles set forth in the Report of the National Performance Review in the planning, development, and implementation of DoD's response to Executive Order 12898

DoD's proposed strategy on environmental justice addresses the distribution of environmental benefits and burdens and provides minority and low-income communities with an opportunity to participate meaningfully in the development, implementation, compliance, and enforcement of federal laws, regulations, and policies affecting human health and the environment. Within DoD, considerations of environmental justice will be examined in the context of DoD's current and future programs, policies, and activities. At DoD installations, considerations of environmental justice will be examined in the context of restoration activities, including their relationship to plans for reuse of land and community redevelopment initiatives.

The stories that follow showcase the progress being made in informing and involving the public in cleanup efforts.

Brunswick Naval Air Station, Maine

According to Commander L'Abbe at Brunswick Naval Air Station (NAS), *"public participation is a big factor in the decision-making process."* Coupled with a proactive, and solution-oriented approach to restoration, public outreach efforts have reduced conflicts, enhanced community understanding of the cleanup process, and expedited cleanup.

Strong public activism was evident when a local citizen group opposed the Navy's plan to cap and leave contaminated material in place, because citizen groups did not want long-term site restrictions and controls. Their concerns prompted the Navy to develop and implement an alternative plan that turned out to be both practical and economical. Consequently, potential delays were avoided because all parties responded positively to the public's concerns.

Brunswick NAS contains 13 former landfills and hazardous waste sites and a large plume of groundwater contamination. Public interest in cleanup at the installation intensified during 1989 when local community members began questioning the availability of information on the cleanup activities. In addition, the migration of the plume prompted additional concerns about the safety of public and private drinking water wells.

Responding to public concerns, Brunswick NAS made a commitment to keep the community informed about restoration activities. The installation has held a series of public workshops to present and analyze information on the restoration program. The installation hosted tours of the various sites and established a mailing list of individuals interested in receiving press releases and progress reports. Brunswick also established a Technical Review Committee that included residents from the towns surrounding the installation. EPA awarded a technical assistance grant to a local citizen's group, the Brunswick Area Citizens for a Safe Environment, and the group hired an independent consultant to assist them in interpreting technical documents.

In addition to these traditional approaches to community relations, the installation sought to improve cooperation and communication through a stronger dialogue with the community. They worked not only to aggressively keep the community informed about progress, but to ensure that concerns of the community were considered when making decisions.

The Brunswick example demonstrates that communities can make significant contributions to the restoration decision-making process. In the Brunswick case, community input prompted a change in the selection of a preferred remedy. More importantly, it demonstrated the willingness of the government agencies to consider community concerns in decision-making.

"To make this all work, and not spend forever, it was imperative that the Navy, EPA, and state officials work together. And it was important that we involve local citizens from the beginning."

-- Capt. Robert Rachor
Commanding Officer

Rocky Mountain Arsenal, Colorado

The cleanup of a wastewater lagoon and chemical manufacturing basins at Rocky Mountain Arsenal (RMA) was successful due to a combination of different restoration initiatives. To accomplish the cleanup, the Army determined that an incinerator was the best option. Nonetheless, building and operating a hazardous waste incinerator in the greater metropolitan area of Denver, Colorado would be no easy task. By combining elements of meaningful public and regulatory agency involvement the Army gained support from the surrounding community while exceeding the installation restoration goals.

The communities surrounding RMA needed to be informed about the importance and function of an incinerator in order for the cleanup to commence. The Army conducted workshops; presented outreach programs to schools, chambers of commerce, activists, and the news media; hosted over 80 public meetings; and distributed reports and fact sheets on incinerators and the RMA restoration program. The Army also informed the public of developments throughout the planning and implementation phases of the restoration effort.

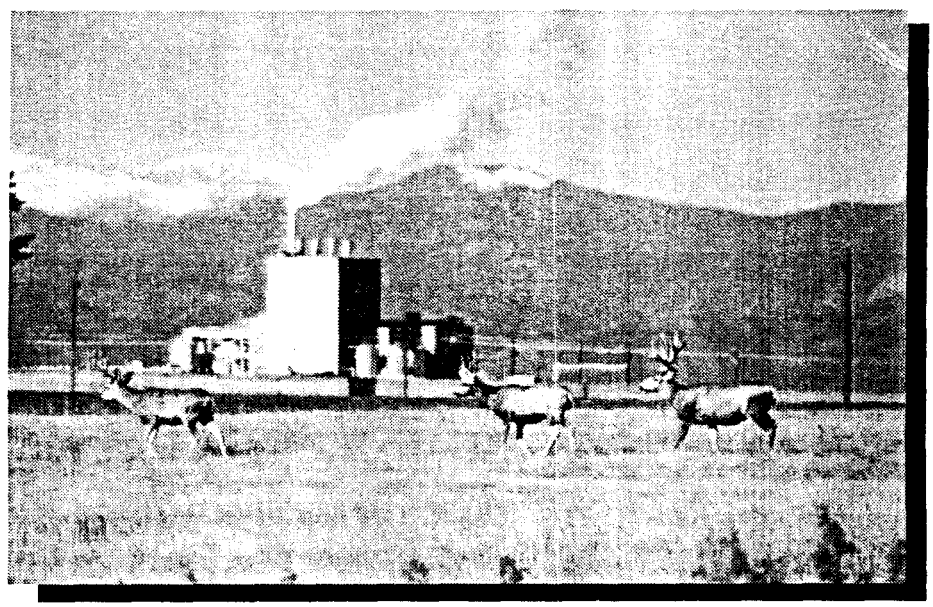
In 1988, in cooperation with the EPA, the Army initiated removal actions at a wastewater lagoon, known as Basin F. Past operations of the basin had resulted in volatile organic compound groundwater contamination and off-site agricultural damage. The Army removed a total of 10.5 million gallons of wastewater, and about 488,000 cubic yards of contaminated basin liner, sediments, and subsurface soils.

After the removal action, the next step in the process was to evaluate available cleanup technologies. The Army initially reviewed over 40 different cleanup technologies before reducing the list to five. Of these five, submerged quench incineration (SQI) was selected because it was safest and could be readily implemented. The SQI incorporates two air scrubbing systems that limit emissions to the atmosphere. As a result, SQI can operate during episodes of high air pollution in the city of Denver.

During implementation of the cleanup, drying solids in the basin generated a tremendous odor problem. To address the discomfort of local residents, the Army distributed air purifiers to households in the affected communities.

The Army developed the most innovative aspects of their public outreach program as the incinerator came on line. Once the incinerator construction was completed, the Army invited the public to tour the facility. The Army established a local telephone number that allowed callers to hear a recorded message, which was updated daily to explain SQI operations and progress. Callers were invited to leave messages or ask questions, which installation representatives then answered. In addition, computer monitors were set up so that the EPA, state and local regulatory agencies, and any member of the public could observe real-time data on stack emission constituents. These actions reassured the community that SQI was safe and that RMA could be trusted to work with the community.

The unique challenges at RMA required implementing an innovative public outreach program, with the cornerstone being channels for two-way communication between citizens and installation staff.



Rocky Mountain Arsenal submerged quench incinerator in operation.

Port Hueneme, and Point Mugu, California

During 1994, the Navy became a leader in implementing a proactive public outreach program by forming one of the first three-way Restoration Advisory Boards (RAB) in the country. In Port Hueneme, California, the Oxnard Plain RAB serves as the focal point for dialogue between the extended community, the Navy, and regulatory agencies regarding base closure and restoration issues at three Navy installations.

The Oxnard Plain RAB was created to serve the communities surrounding the Naval Facilities Engineering Service Center and Naval Construction Battalion Center, both in Port Hueneme, California, a city located about 40 miles up the Pacific coast from Los Angeles. The Oxnard Plain RAB is unique because it consolidates public participation and environmental restoration activities for three installations into one central board, rather than creating separate boards to deal with each installation. Although the Naval Air Weapons Station at Point Mugu lies in a rural area about 10 miles southeast of Port Hueneme, the Navy believed that the installation should be a part of the overall effort to coordinate restoration for all sites on the Oxnard Plain in a timely and cost-effective manner.

To further facilitate dialogue and to ensure that restoration decisions reflect issues unique to each installation, the Oxnard Plain RAB established four subgroups: one to address administrative issues and one for each of the three installations. Each subgroup meets regularly to discuss issues and report its findings and outcomes back to the main RAB. These subgroups have allowed the community members of the RAB to become familiar with the three installations in a short period of time, and have resulted in increased understanding of the restoration process by the community in general.

OXNARD PLAIN RESTORATION ADVISORY BOARD (RAB)

ission Statement

The RAB is a forum for open and candid two way communication between the community, the Navy, and regulatory agencies to ensure consideration of all community concerns on the Oxnard Plain regarding the:

- Installation Restoration (IR) Program
- Base Realignment and Closure (BRAC)
- National Test Site

The RAB will serve the community by soliciting ideas and identifying concerns for presentation to the Navy and regulatory agencies.

The RAB is not a decision making body, but is a conduit for the solicitation and dissemination of community concerns and information.

As individuals and as members, our actions are based upon the foundation of openness, trust, and commitment to diverse representation with concern for public health, the environment, and social and fiscal responsibility.

ision Statement

The RAB insures that community concerns are actively considered enabling the Navy and regualtory agencies to complete cleanup at all sites within the Oxnard Plain in a timely and cost effective manner. Innovative technologies, including the RAB process, are demonstrated and evaluated with community input for nationwide implementation.

The community is aware, supportive, participative, and educated about the work of the RAB. High trust exists among stakeholders. The RAB is the model for community participation.

The regualtory agencies value and actively seek RAB advice and give it key consideration in making new policies and interpretation of current regulations.

The advantages of the consolidated RAB are:

- provides community members with information from a central source rather than from multiple sources;
- increases efficiency by pooling resources;
- minimizes costs because duplicate administrative and logistical efforts are eliminated;
- allows representatives of regulatory agencies to maximize their role for all three installations;
- provides a coordinated and consistent approach to similar activities and issues; and
- allows lessons learned at each installation to be shared easily.

In June 1994, the Navy hosted an open house to launch the RAB endeavor and brought members of the community, and representatives of the state regulatory agencies and the three installations together to discuss the restoration programs. The California state regulatory agencies praised the Navy for a well-organized and effective open house. Since the open house, the RAB has assisted in reviews of installation restoration documents. The installation-specific subgroups sponsor drive-through tours of each installation and discuss cleanup objectives and project status.

With the Oxnard Plain RAB, the Navy is demonstrating how members of a community, various regulatory agencies, and the Navy can benefit from the transfer of knowledge and lessons learned about multiple installations. The RAB serves as a model of how installations can work together to share resources and encourage the participation of members of communities, while still reflecting the unique nature of each installation. The three-way RAB also can be an example of how RAB activities may be shared across DoD components or across federal agencies.

TRAINING

Education is the foundation of DoD's environmental security programs. To maintain a highly qualified, well-trained environmental work force, in 1994 DoD established the Inter-Service Environmental Education Review Board (ISEERB). It will integrate the disparate DoD environmental education and training programs, eliminate duplication, and improve the quality of courses.

As awareness of environmental issues grew through the years, DoD increased its efforts to prepare personnel for meeting the challenges of environmental cleanup. The DoD Components developed several technical courses on diverse topics ranging from regulatory training, to site management, to the technical aspects of the cleanup program. DoD created the ISEERB to ensure the efficient and effective delivery of such environmental courses as these to all DoD Components. The ISEERB consists of functional and school representatives from each service, the Defense Logistics Agency, and the U.S. Coast Guard.

Members of the ISEERB met in FY94 to compare environmental training initiatives. The members analyzed ways in which they could foster cooperative environmental education and training, applied interservice and interagency approaches, and leveraged limited education and training resources by using creative and innovative methods of instruction. As a result of the ISEERB meetings, 14 courses were approved for consolidation and standardization. The ISEERB designated lead services for specific areas of instruction. The Army has the lead for conservation and for acquisition related pollution prevention, the Navy has the lead for compliance, and the Air Force has the lead for installation pollution prevention and for cleanup.

Several focused training initiatives took place in FY94 that had a large impact on DoD personnel and the communities affected by such pressing issues as base realignment and closure, accelerated cleanup, and property transfer. DoD's efforts in training personnel on the procedures for implementing BRAC cleanup teams and Restoration Advisory Boards effectively and efficiently reached thousands of people to help smoothly implement new and aggressive programs.

BRAC Cleanup Team Training Workshops

In FY94, DoD prepared and delivered three national training workshops to launch the establishment of BRAC cleanup teams (BCT) and the development of BRAC cleanup plans (BCP) by the newly established teams. The workshops assisted the BCTs at closing military installations in implementing fast-track cleanups of environmental problems encountered at the closing installations. Faster cleanups allow for timely transfer of the installations to the local community for reuse. Approximately 800 personnel representing all the DoD Components, the U.S. Environmental Protection Agency (EPA), and state regulators attended the workshops, which were held in Virginia; California; and Georgia. Each three-day workshop covered

SUMMARY OF WORKSHOP PARTICIPANTS IN 1994

	Army	Navy	Air Force	DLA	EPA	State	Citizen	Other	Total
Denver,CO May 26-27	34	0	39	5	8	18	1	3	108
Atlanta, GA June 15-16	42	40	46	0	21	13	2	0	164
Seattle, WA July 13-14	43	27	46	5	27	32	9	6	195
Washington, DC August 4-5	66	48	16	9	19	21	14	11	204
San Francisco, CA August 15-16	45	38	51	2	16	29	27	1	209
San Diego, CA August 18-19	36	42	83	0	11	32	9	3	216
Boston, MA August 24-25	51	45	39	1	19	30	9	2	196
TOTAL	317	240	320	22	121	175	71	26	1,292

The suggestions and issues raised by these 1,300 participants have allowed members of the interservice working group to identify strategies that will make the RAB process more effective and will strengthen the DoD guidelines on implementing RABs. In addition, the recommendations made by participants have allowed DoD to identify new directions upon which to take the dynamic RAB initiative.

Small Business Opportunities

DoD recognizes that contracts must be structured and communication mechanisms must be improved to ensure equity in contracting opportunities for small and small disadvantaged businesses (SDB).

Small business has played a significant role in assisting DoD in the environmental restoration program. DoD continues to seek new ways to bring more small businesses into partnership with DoD contracting agencies and larger contractors involved in the restoration program.

The contracts DoD awards to small business are impressive and substantive. DoD hopes to continue this trend and to simplify dealings with the Department by combining and consolidating environmental contracting information.

Since congressional action in 1987, DoD has taken several progressive steps to increase the share of contracts awarded by the military to SDBs. In FY 1994, small businesses received $24.8 billion, or 22.7 percent of all DoD contract dollars, and SDBs received $6.1 billion, or 5.5 percent of the total. Women-owned businesses received approximately $1.9 billion, or 1.7 percent of the total. Though DoD awards small businesses billions of dollars in contracts, the Department continues to seek new ways to improve their participation in DoD environmental programs. The Deputy Under Secretary of Defense (Environmental Security) and the Director of the Small and Disadvantaged Business Utilization (SADBU) Office work together to exchange ideas and explore various options to make DoD's environmental cleanup program more accessible to small business.

Though DoD continues to meet or exceed the set-aside amounts for SDBs, critics maintain that more opportunities should be created by the Department for small businesses and SDBs, especially in the environmental area. DoD has accepted this challenge. In June 1994, the Department formed an environmental small business work group which includes representatives from Environmental Security, SADBU, and small business experts from the Army, Navy, and Air Force. Together they are working to identify existing programs within DoD that may be improved or expanded to meet small business needs, and to make information about cleanup contracts easier to identify and obtain. The work group has set its sights on three goals:

- Establish an environmental electronic bulletin board featuring contract information for the Army, Navy, and Air Force, as well as environmental brochures and notices on the Internet
- Promote the Small Business Administration's Procurement Automated Source System (PASS) database
- Adopt an environmental procurement code

"SDBs continue to do well at DoD. While overall defense spending continues to decline, the value of contracts awarded to small, small disadvantaged, and women-owned businesses continues to rise."

— Set-Aside Alert, a publication of Small Business Press

The electronic bulletin board will consolidate long range acquisition estimates provided by the Army, Navy, and Air Force. Presently, the Defense Technical Information Center is overseeing this effort, which will provide small business entrepreneurs with the information tools to identify existing and future cleanup contracts at the installation level. The electronic bulletin board will be implemented in three phases. Phase 1 will create the database for contracting information which will also feature environmental publications and announcements. Users will be able to download the entire database. Phase 2 efforts will make the system more sophisticated and user-friendly, allowing the user to conduct specific searches within the database. Phase 3 will provide e-mail and question and answer capabilities. Users will be able to communicate with each other and with other DoD components.

The PASS is a database managed by the Small Business Administration (SBA) that features 250,000 small business contracts. Prime contractors who are seeking small business subcontractors are charged a nominal fee to access the PASS, although there is no charge to be listed on the database. Since DoD does not maintain a central database for its contractors, the environmental small business work group decided that the PASS could effectively serve this purpose. Subsequently, work group members met with SBA and are working with their field offices across the country to better promote the PASS. As a result, the two agencies have developed a good working relationship that will help make government more efficient and better able to serve the small business community.

The adoption of environmental procurement reporting codes will enable DoD to specifically identify the amount of environmental work awarded to small and SDBs. With the increase in environmental contracts, there is a real need to improve the existing reporting system to capture the amount of work being awarded in this area. Central to this is the establishment of a specific environmental contracting code. The Army has been successful in this endeavor and began collecting data as of October 1, 1994. The Navy and the Air Force are expected to adopt a similar system in the near future.

In addition to these efforts, small businesses interested in performing environmental work for DoD and unfamiliar with the intricacies of contracting, will soon have another valuable information tool. A *Guide to Department of Defense Environmental Procurements: Making the Most of Your Opportunities* will explain how the cleanup program operates; how work is funded; how the DoD Components execute the program; skills needed to perform environmental work; relevant environmental laws; risks and liabilities of environmental contracting; other government sources for procurement opportunities; and, most importantly, names and telephone numbers of DoD personnel responsible for environmental restoration contracts. A guide of this scope and magnitude has never been published before. For the first time, environmental restoration contracting information has been compiled in one source. This reflects DoD's basic philosophy of making it easier for small businesses to access information and work with the federal government. When published, copies can be purchased from the Government Printing Office by telephoning (202) 512-1800.

"Environmental restoration continues to be a growth industry for small business. The economic opportunities are only half the story. Cleaning up a contaminated site provides an invaluable service that benefits DoD and the entire surrounding community."

— Daniel R. Gill, Director, Office of Small and Disadvantaged Business Utilization Office of the Secretary of Defense

In addition to these DoD initiatives, the White House, through Executive Order 12928, dated September 16, 1994, calls for all federal agencies to assist SDBs, Historically Black Colleges and Universities, and minority institutions so that they may compete on an equal basis in the mainstream of the American economy. In response to the Executive Order, DoD is examining existing programs where small business needs may be integrated. One such program is Mentor-Protegee, which pairs established, more experienced prime contractors with SDBs. The mentor provides guidance, direction, technical and financial resources, and leadership to their protegees. The program has produced many successes and continues to serve as a model for other programs designed to help small businesses.

DoD is also required by the FY94 Defense Authorization Act, when entering into contracts associated with base closure or realignment, to give preference, to the greatest extent practicable, to qualified businesses located in the vicinity of the installation and to small and SBDs. Local businesses often provided added knowledge and insight of site conditions and characteristics of the surrounding areas. The following "real life story" provides an example where this is happening:

Small Business Opportunities - A Real Life Story

Nome Area Sites, Alaska

The Nome Area Sites project located on the Seward Peninsula in Nome, Alaska involves the restoration of 14 remote sites. Restoration efforts administered by the Alaska District of the U.S. Army Corps of Engineers (COE), began on December 21, 1993. The project includes areas in and around towns and villages that cover a remote wilderness area with many locations accessible only by air and water. The work involves the removal of debris, removal or remediation of contaminated soils, and the removal and disposal of containerized liquids at 14 separate sites.

Since initiation of the project, COE directed its contractor to set up an office in the Nome area, hire local employees, procure equipment from local businesses, and initiate training in restoration techniques to local residents. Gil Guiterrez of the Kawerak, Inc. tribal employment rights office said, *"Our people are driving trucks, working as both laborers and operators. They've done an excellent job working with the unions to provide jobs to people who were trained locally."*

The COE continues to increase the number of local employees to support the restoration effort. As of summer 1994, over half of the employees, including both operators and laborers, were from the Bering Strait region. COE anticipates that the ratio of local workers will rise to 70 percent of the company's total work force when the operation reaches its peak. Furthermore, qualified local workers will be promoted into supervisory positions as they become available. In addition, COE hopes to replace supervisors with people from the region. As a result of the FY94 restoration effort, COE has helped create over $3.5 million in local payroll income to the Nome area.

The knowledge that local employees have brought to the restoration work has contributed to the project's steady progress and ultimate success. Since many of the sites are not easily accessible, ingenuity and experience derived from being a resident of the area turned out to be the key to success. The logistics of providing basic needs such as food, fuel, and tools requires knowledge of area conditions and landscapes. The employees who are native to the region continue to provide insight and solutions to problems that would otherwise be insurmountable.

The restoration effort at the Nome Area Sites has produced surprising and successful results, and continues to provide DoD new ways to approach the restoration challenge.

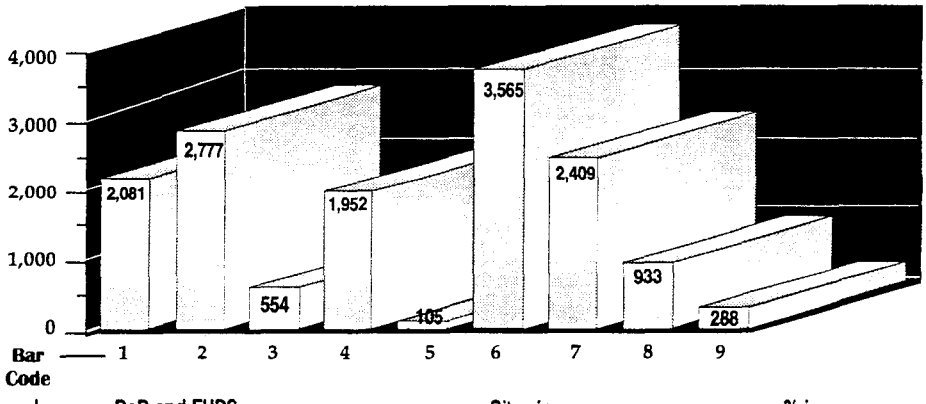
CHARACTERIZING THE CLEANUP EFFORT

Forty-four site types are used to categorize DoD sites. This number was expanded from 25 to better characterize and account for the types of sites, and progress at these sites. The site types are divided into nine general categories: base operations; storage tanks; industrial operations; training areas; radioactive areas; surface discharge areas; subsurface disposal areas; contaminated media; and other. Appendix D of this report further describes each of the site types.

The majority of sites are associated with past practices involving the use of fuels and solvents for operation and maintenance activities at military installations. Spills or leaks occuring as a result of these activities may have affected the immediate surface or subsurface areas around the site. In some cases, the substance of concern may have been transported or spread to other areas by surface or subsurface transport mechanisms, such as stormwater runoff or groundwater movement. Many sites are former treatment, storage, or disposal areas, such as landfills and wastewater treatment facilities. There are a few site types that are relatively unique to DoD such as: ordnance disposal areas, where munitions have been used; fire fighting training areas, where fuels and other flammable substances have been burned; and low-level radioactive waste areas, where common aircraft dials and other slightly radioactive instruments have been disposed.

DoD (including FUDS) site type categories are presented in the accompanying charts and table. Appendix D of this report includes total numbers of site types by Component and DoD (including FUDS).

Site Type Categories (In Progress Sites)

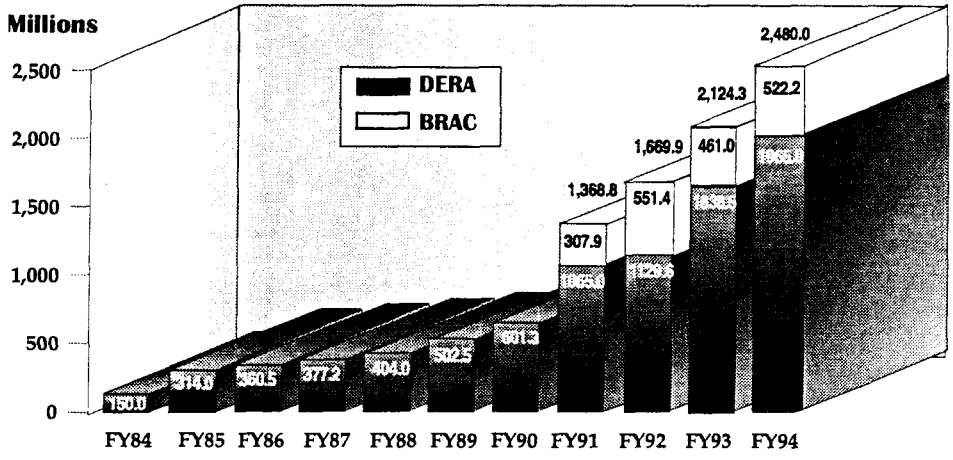


Bar Code	DoD and FUDS Site Type Category	Sites in Progress	% in Progress
1	Base Operations	2,081	14%
2	Storage Tanks	2,777	19%
3	Industrial Operations	554	4%
4	Training Areas	1,952	13%
5	Radioactive Areas	105	1%
6	Surface Discharge Areas	3,565	24%
7	Subsurface Disposal Areas	2,409	16%
8	Contaminated Media	933	7%
9	Other	288	2%
	Total	**14,664**	**100%**

FUNDING THE WORK

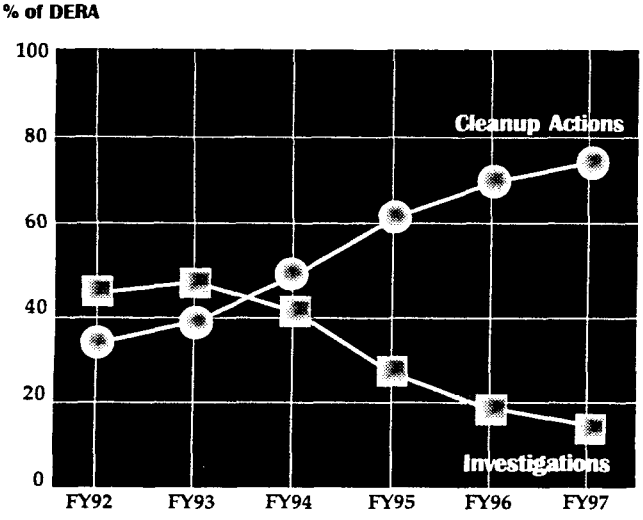
Through FY94, over $10.3 billion has been invested in the program. Congress has provided funds in two accounts: approximately $8.5 billion in the Environmental Restoration, Defense (ER,D) appropriation—more commonly referred to as the Defense Environmental Restoration Account, or DERA—for work at active DoD installations and formerly used defense sites; and approximately $1.8 billion through the Base Realignment and Closure (BRAC) account for closing installations.

Program Funding



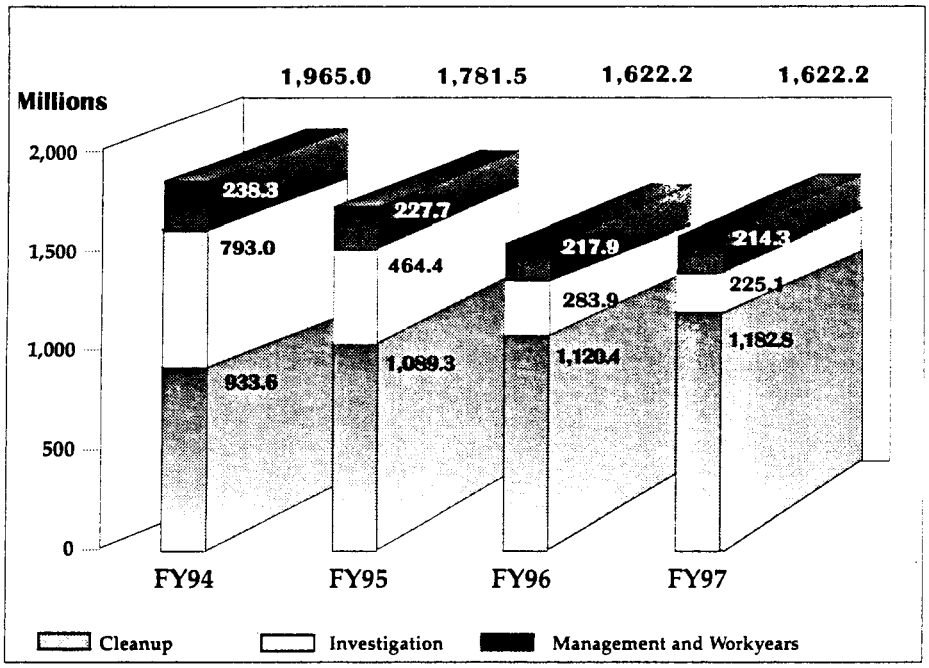
Prior to FY94, more than 60 percent of the funding was spent for investigations and analysis—a crucial investment required for identifying sites, determining the need for cleanup and the nature and extent of any cleanup required, and determining the proper approach for cleanup. FY94 saw the first year that more dollars were spent on actual cleanup work.

DERA Cleanup Trend
Cleanup vs. Investigation (FY92-FY97)



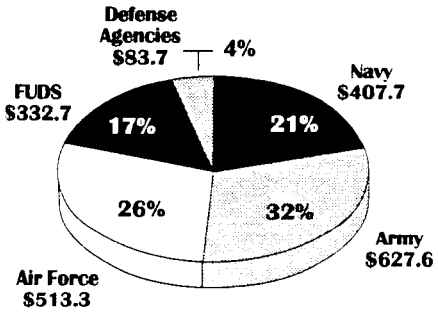
Costs incurred through FY94, funds executed in FY94, funds planned for execution in FY95, and planning estimates for FY96 and beyond are provided in Appendix B for work at DoD installations and formerly used defense sites. Funding for DERA and BRAC programs are summarized on the following pages for FY94 through FY97.

DERA Funding Profile



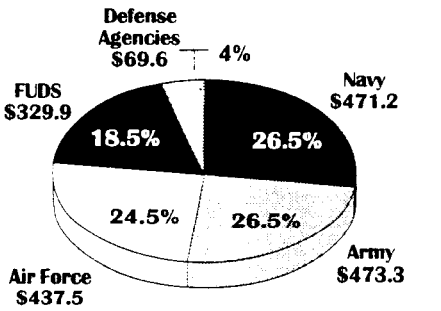
. . . for Military Departments, Defense Agencies, and FUDS

FY94



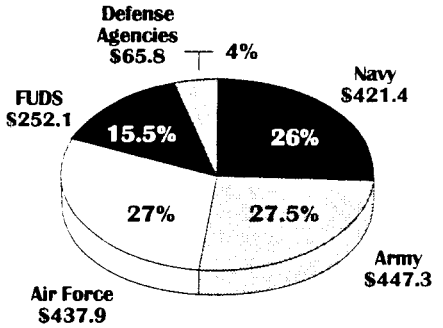
Total $1,965.0 Million

FY95



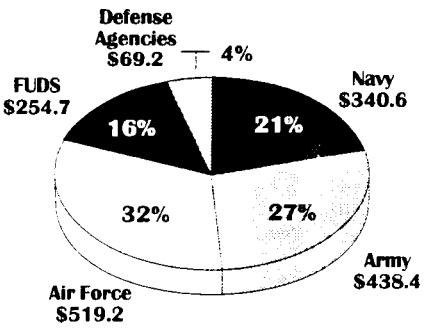
Total $1,731.5 Million

FY96



Total $1,622.2 Million

FY97



Total $1,622.2 Million

Cleanup -
Includes Interim Remedial Actions (IRA), Remedial Design (RD), Remedial Action (RA), Long-Term Operation and Monitoring, and Potentially Responsible Party (PRP) costs.

Investigation -
Includes Preliminary Assessment (PA), Site Inspection (SI), and Remedial Investigation/ Feasibility Study (RI/FS) costs.

Management -
Program administration costs such as travel and training as well as ATSDR and DSMOA.

Workyears -
Costs for DoD salaries.

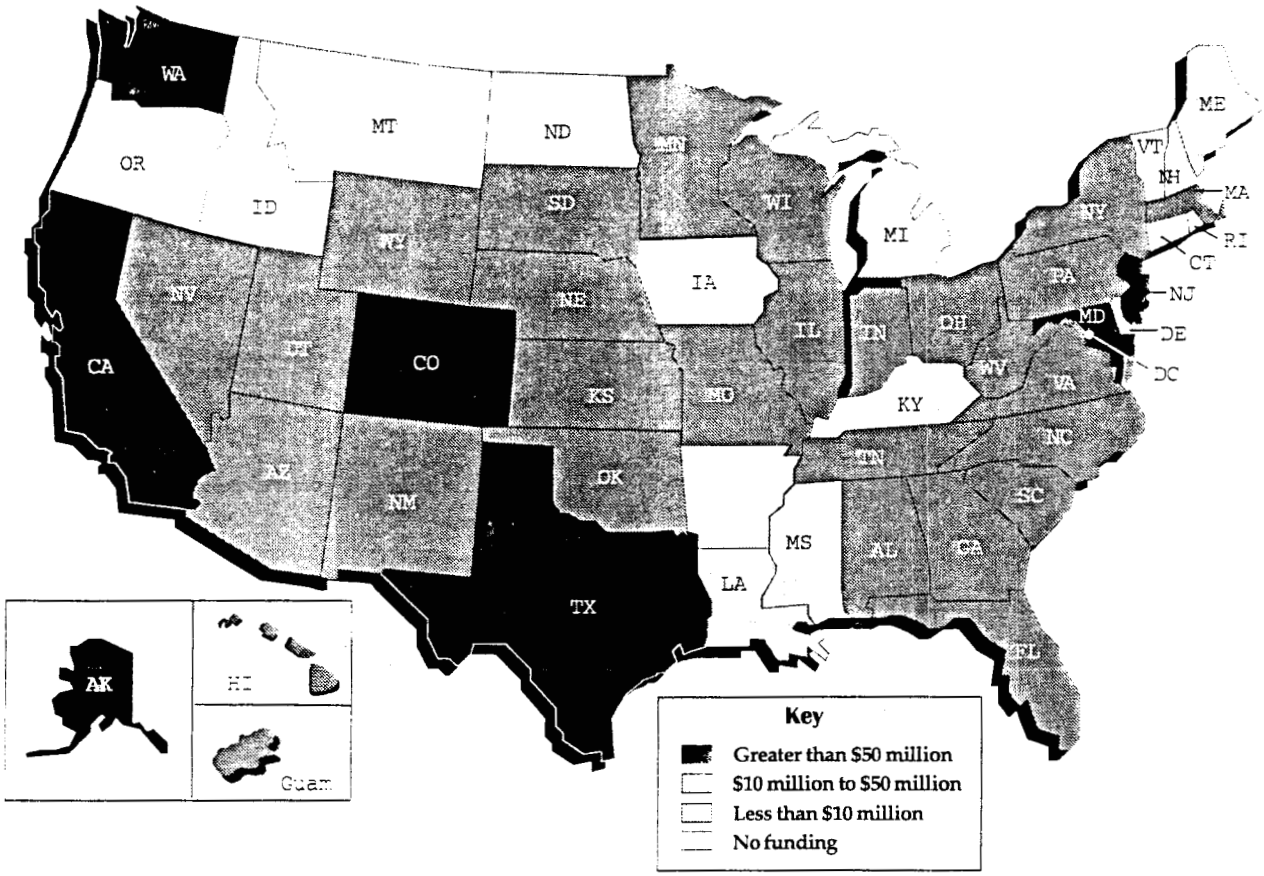
Potentially Responsible Party (PRP) -
DoD's share of costs incurred at sites for which DoD has been identified as a PRP. These sites are typically commercilly operated waste disposal facilities at which waste generated by DoD was disposed.

Agency for Toxic Substances and Disease Registry (ATSDR) -
Reimbursement for health assessments and health risk studies conducted by ATSDR at DoD NPL sites.

Defense and State Memorandum of Agreement (DSMOA) -
Reimbursement to states and U.S. territories for technical services in direct support of study and cleanup efforts at DoD installations within their boundaries.

Defense Agencies:
Includes Defense Logistics Agency (DLA), Defense Nuclear Agency (DNA), ATSDR, DSMOA, and DUSD(ES)

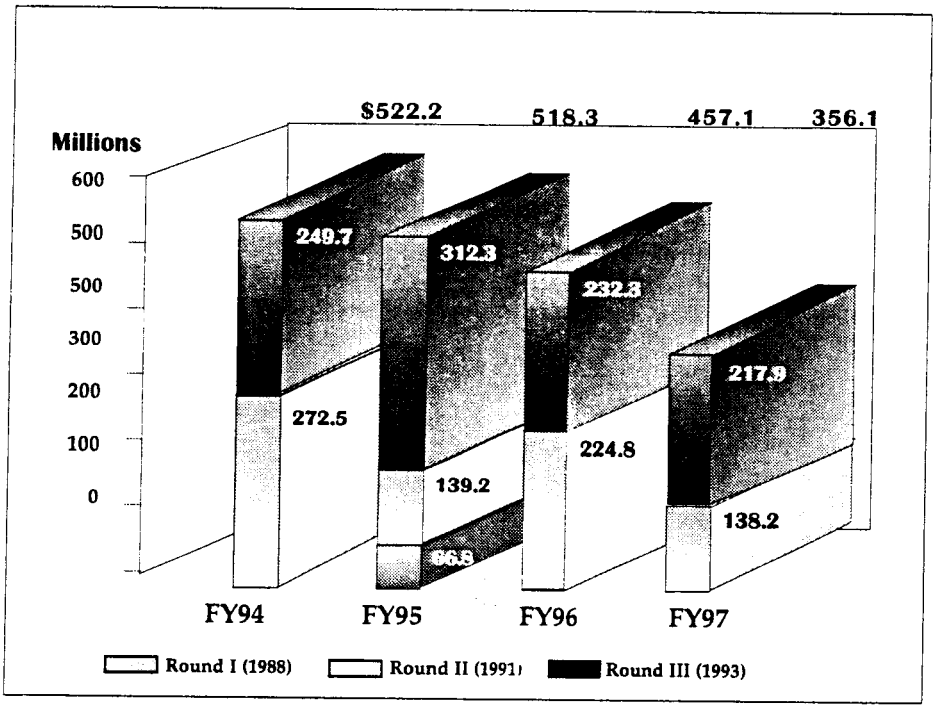
Defense Environmental Restoration Account FY94 Budget Distribution by State



The above map displays DERA expenditures by state in FY94. States and territories can be reimbursed for technical services for investigation and cleanup efforts at DoD installations within their boundaries under the Defense and State memorandum of Agreement (DSMOA) program. Forty-four states and four territories have signed DSMOAs, and 42 states and two territories have approved Cooperative Agreements (CA), as shown in Appendix H of this report.

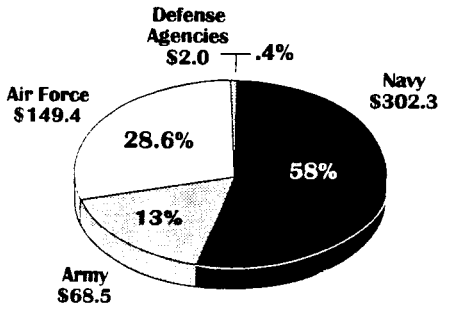
There are two steps required for a state or territory to participate in the program. The first step is for the state or territory to enter into a DSMOA. The DSMOA provides the mechanism to involve the state or territory in restoration activities by establishing the terms and conditions by which the state or territory is reimbursed for technical support.

BRAC Environmental Funding Profile



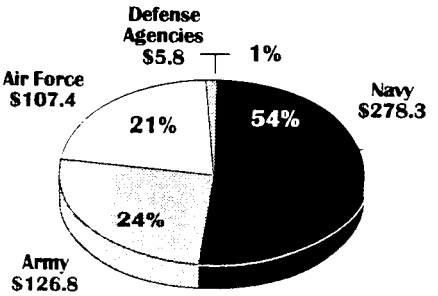
. . . for Military Departments and Defense Agencies

FY94



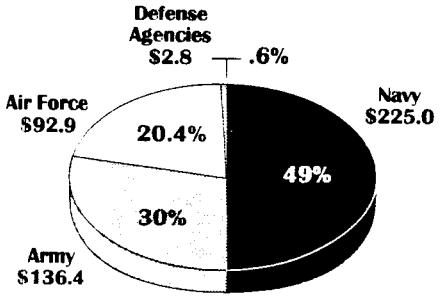
Total $522.2 Million

FY95



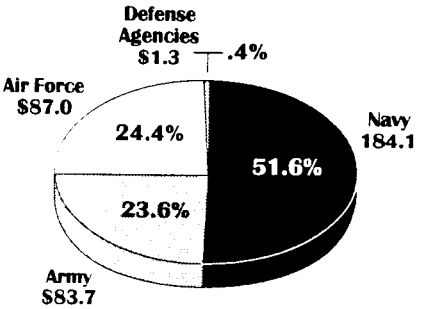
Total $518.3 Million

FY96



Total $457.1

FY97

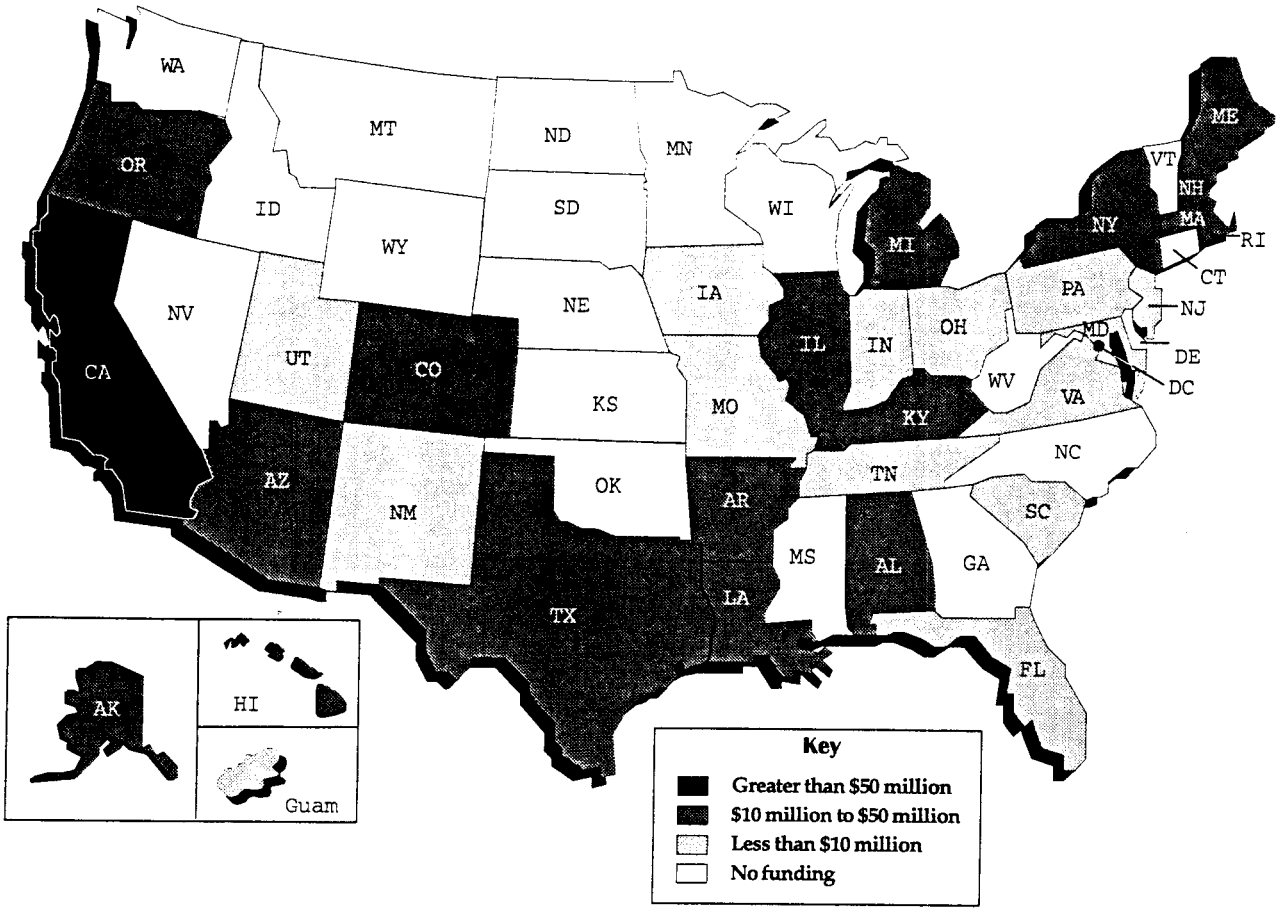


Total $356.1 Million

The BRAC environmental program, part of the overall BRAC account, encompasses more than environmental restoration efforts. BRAC environmental funding also includes closure related environmental compliance and environmental planning.

Compliance efforts include such actions as removal of underground storage tanks; closure of hazardous waste treatment, storage, and disposal facilities; radon surveys; and asbestos abatement. Planning involves environmental analyses required under the National Environmental Policy Act to aid decisions related to property reuse and redevelopment. To ensure maximum flexibility, funding provided for BRAC environmental efforts are not "fenced," although a funding threshold or floor is set forth in the appropriations act for environmental restoration. Furthermore, BRAC funding is provided in a five year account.

Base Realignment and Closure FY94 Budget Distribution by State



The above map displays BRAC expenditures by state in FY94. The table below displays the number of BRAC installations by state, corresponding to Appendix G of this report.

State	Round I (1988)	Round II (1991)	Round III (1993)
Alabama	2	–	1
Arkansas	–	1	–
Arizona	1	1	
California	5	7	11
Colorado	2	1	–
Florida	1	1	5
Guam	–	–	1
Hawaii	1	–	1
Iowa	1	–	–
Illinois	2	–	2
Indiana	2	2	–
Kentucky	1	–	–
Louisiana	1	1	–
Massachusetts	1	1	–
Maryland	4	–	2
Maine	–	1	–
Michigan	1	1	2
Midway	–	–	1
Missouri	1	1	–
New Hamshire	1	–	–
New Jersey	–	–	2
New Mexico	1	–	–
New York	1	–	3
Ohio	–	1	2
Oregon	1	–	–
Pennsylvania	2	3	1
Rhode Island	–	1	–
South Carolina	–	1	2
Tennessee	–	–	1
Texas	–	3	1
Utah	1	–	1
Virginia	2	1	4
Washington	1	–	–
Total	**36**	**28**	**43**
Grand Total			**107**

STATUS OF THE PROGRAM

The status of investigation and cleanup efforts as of September 30, 1994 for sites at DoD installations and formerly used defense properties is summarized below.

DoD Installations

Total No. of Installations with Response Complete at all Sites	1,010
Total No. of Installations with Sites in Progress	761

DoD Installation Sites

		Phase	Completed	Underway	Future
			No. Sites (No. Actions)		
Total No. of Installations:	1,771	Investigation	10,851	10,476	98
Total No. of Sites:	21,425	Interim Action	1,173(1,387)	551(573)	
No. of Sites in Progress:	11,785	Design	714	485	6,067
No. of Sites with Response Complete:	9,640	Cleanup	810	462	6,948

Response is complete at all sites at 1,010 DoD installations. 11,785 active sites remain at 761 DoD installations where investigation, design, or cleanup actions are in progress.

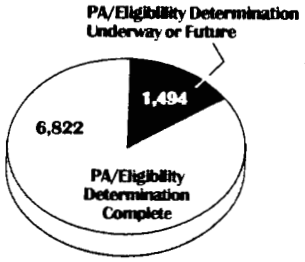
FUDS Properties

Total Number of Potential Properties:	8,316
Eligible Properties Determined to Require Response Action:	2,218
Properties with Eligibility Determination/Preliminary Assessment Underway or Pending:	1,494
	3,712
Properties Determined Ineligible:	1,796
Eligible Properties Determined to Require No Action:	2,808
	4,604

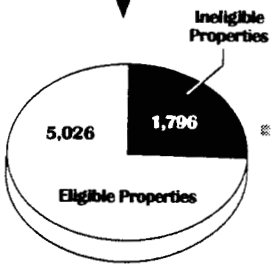
Formerly Used Defense Sites

		Phase	Completed	Underway	Future
			No. Sites (No. Actions)		
No. of Properties determined to require response action:	2,218	Investigation	881	2,568	24
Total No. of Sites:	3,473	Interim Action	11(11)	41(41)	
No. of Sites in Progress:	3,177	Design	433	251	765
No. of Sites with Response Complete:	296	Cleanup	265	266	2,381

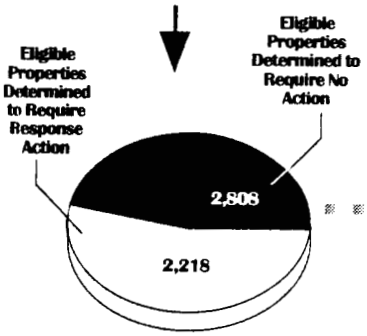
Response is complete at 4,604 potential FUDS properties based on a determination of ineligibility or no further action required. 3,712 FUDS properties remain where an eligibility determination/preliminary assessment is underway or pending, or where response action is complete, underway, or planned.



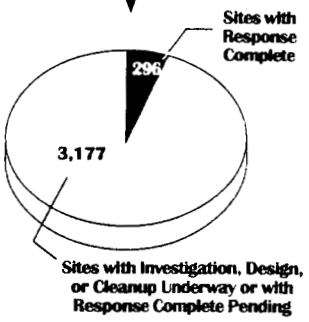
❖ Total Number of Potential Properties on Inventory = 8,316



❖ Total Number of Properties with Eligibility Determination Complete = 6,822

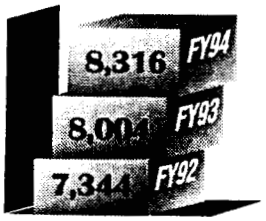


❖ Total Eligible Properties Determined as of September 30, 1994 = 5,026



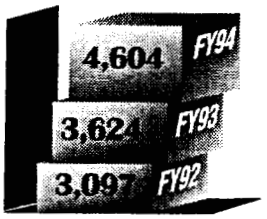
❖ Total Number of Sites Identified at Eligible Properties Requiring Response Action = 3,473

Total Number of Potentially Eligible Properties



❖ 312 new potential properties were added to the FUDS inventory in FY94 (see page 72).

Properties Ineligible or Requiring No Action

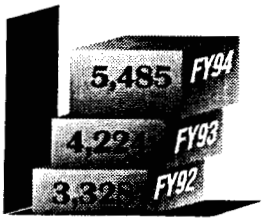


❖ 473 properties were determined ineligible, and 507 determined to require no action in FY94.

Properties with Eligibility Determination or Site Response in Progress

❖ 2,218 properties had site response action in progress, and 1,494 properties were awaiting eligibility determination at the end of FY94.

Properties and Sites with Investigations Complete

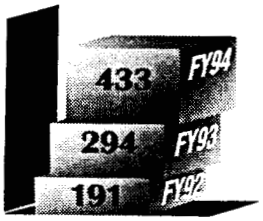


❖ Investigations have determined that 4,604 properties are either ineligible or require no action. Investigations have been completed at 811 sites on properties requiring response action.

Sites Identified Requiring Response Action

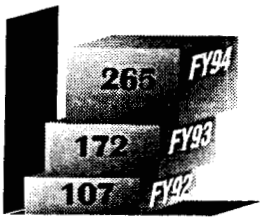
❖ 3,473 sites with response action required had been identified at eligible properties by the end of FY94.

Sites with Designs Complete



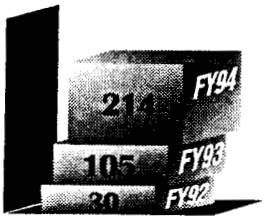
❖ Designs necessary for cleanup actions were completed at 139 sites in FY94.

Sites with Cleanups Complete



❖ Cleanups were completed at 93 sites in FY94 (does not include interim cleanup actions).

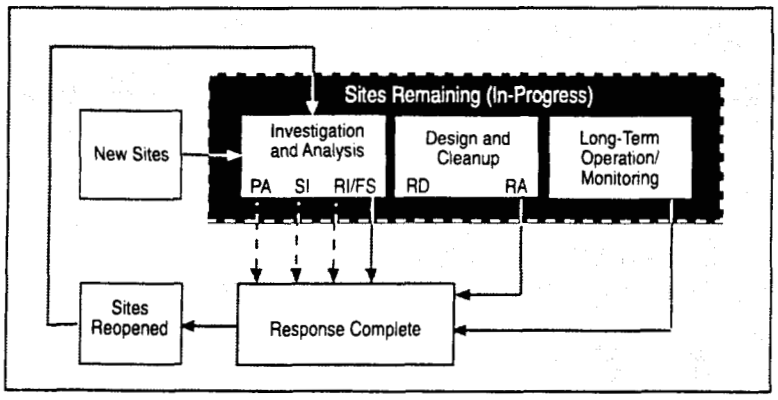
Response Complete Based on Cleanup



❖ 109 sites were closed out as response complete based on cleanups completed in FY94 and previous years.

❖ All numbers are cumulative as of September 30, 1994

Conceptual Progression of Sites in the Restoration Program



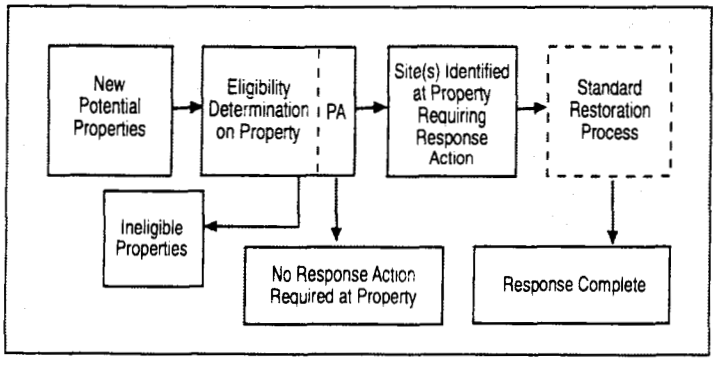
Progression of DoD Installation Sites Since FY92

	FY92	FY93	FY94
Previous Year's Sites Remaining	10,924	10,158	10,439
+ New Sites	1,135	280	1,036
+ Sites Reopened	–	619	695
- Response Complete Based on Investigation	1,685	487	178
- Response Complete Based on Cleanup	216	131	207
= End of Year Sites Remaining	10,158	10,439	11,785

Traditional measures of the status and progress of the restoration program are related to numbers of sites in any particular phase of the program. Typically, status is measured at the end of a fiscal year (that is, the status of sites as of September 30) and the count is compared with that which was recorded at the end of the preceding fiscal year.

The number of sites remaining continues to fluctuate as existing sites are determined to require no further action, new sites are identified, and some sites are reopened. New sites are added to the program because of the conduct of RCRA Facility Assessments, Environmental Baseline Surveys for BRAC installations, changes in eligibility policies, and other newly discovered CERCLA and UST sites. These new sties are identified predominantly as the result of newly discovered past contamination, not as the result of current deficiencies in environmental compliance. Sites previously determined to require no further action and closed out as a "response complete" can be reopened when a regulatory agency does not concur with DoD's determination and requires additional investigation and analysis. The effect is a decrease in the number of sites reported as "response complete" and an increase in the number of active sites remaining in the program.

Conceptual Progression of FUDS Properties



Progression of FUDS Properties Since FY92

	FY92	FY93	FY94
Previous Year's Properties [1]	4,866	4,247	4,380
+ New Potential Properties	558	660	312
- Properties Determined Ineligible	259	41	473
- Eligible Properties Determined to Require No Action	918	486	507
= End of Year Properties Remaining [1]	4,247	4,380	3,712

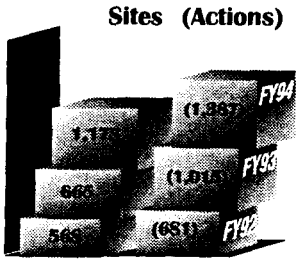
[1] Properties Remaining includes potential properties awaiting eligibility determination/ preliminary assessment and eligible properties determined to require response action.

The restoration program at FUDS properties is similar to that at DoD installations. However, information concerning the origin of contamination, land transfer, and current ownership must be evaluated to determine whether a site is eligible for DoD funding. A formerly used defense site is defined as real property that formerly was owned by, leased to, used by, or otherwise under the operational control of DoD. During the preliminary assessment phase, an inventory project is conducted to determine (1) if the property is eligible and (2) if any contamination exists. If the property is eligible and further response action is required, the identified site or sites then move into the standard restoration process. Because of the inventory phase associated with the FUDS program, information on the status and progress of FUDS properties is provided separately from that of DoD installations in this report.

PROGRESS IN FY94

DoD's focus on cleanup and reducing risk continues to be turned into real results by the capability, dedication, and ingenuity of the DoD agencies executing the work. One of DoD's priorities for accelerating cleanup and reducing risk is to focus more effort on interim actions—removal actions and interim remedial actions.

Interim Actions Complete at DoD Installations



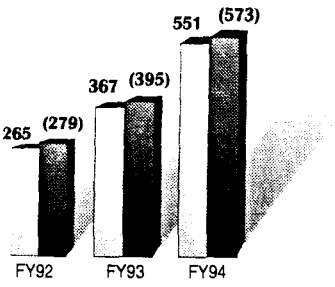
Cumulative Actions Complete as of September 30, of each year

The number of interim actions completed and the number of interim actions underway at any given time are key measures of cleanup progress. At DoD installations as of September 30, 1994:

- 1,387 interim actions at 1,173 sites had been completed, and another 573 interim actions were underway at 551 sites.
- Interim actions had been completed or were underway at 1,724 sites, almost 15 percent of the active sites in the program.
- The cumulative number of interim actions completed by the end of FY94 represents an increase of almost 40 percent over the cumulative number of interim actions completed as of the end of FY93.

These interim actions are reducing or eliminating risk to human health and the environment. Actions such as installing fences and providing alternate drinking water supplies reduce risks by eliminating exposure to contaminants. Actions such as source removal, capping, and pumping-and-treating groundwater serve to stabilize sites by controlling or eliminating migration of contaminants. Many actions involving waste removal and treatment, although initiated as interim measures, are proving to satisfy final cleanup requirements.

Interim Actions Underway at DoD Installations



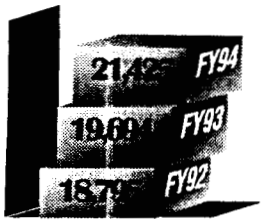
Actions Underway as of September 30, of each year

Interim actions are constantly being evaluated during the investigation phase, and taken where appropriate, to reduce risk and accelerate the overall restoration process.

Interim Actions by Type of Activity

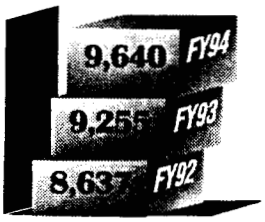
Type of Activity	Number of Actions Complete
Fence or Other Site Access Control Measures	115
Drainage Controls	16
Alternate Water Supply/Water Supply Treatment	63
Incineration	69
Waste Removal-Soils	242
Ground Water Treatment	98
Long-Term Monitoring	15
Bioremediation	36
Capping	36
Waste Removal-Drums, Tanks, Bulk containers	419
Soil Vapor Treatment	38
Other	159
In Situ Soil Treatment	5
Ex Situ Soil Treatment	72
	4
Total	**1,387**

Number of Sites



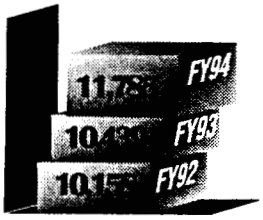
❖ 1,036 new sites were identified, and 695 sites were reopened in FY94 (see page 72).

Sites with Response Complete

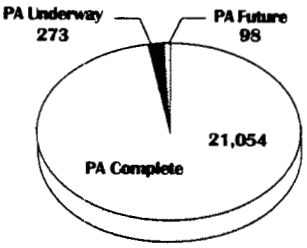


❖ 385 sites were determined to require no further action in FY94.

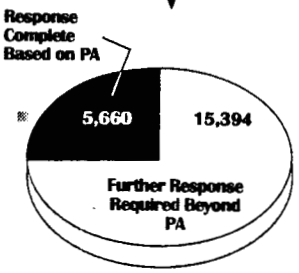
Sites in Progress



❖ 11,785 sites had investigations or cleanup actions underway or pending at the end of FY94.

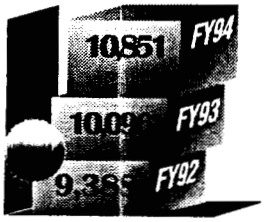


❖ Total Number of Sites = 21,425



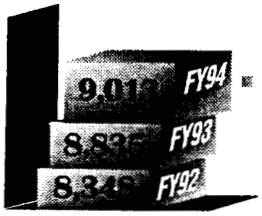
❖ Total Number of Sites with PA Complete = 21,054

Sites with Investigations Complete

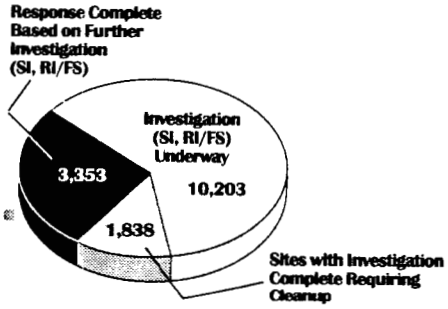


❖ Investigations were completed at 755 sites in FY94.

Response Complete Based on Investigations

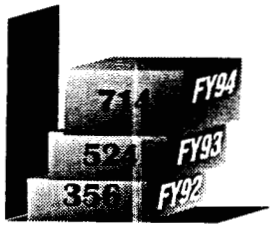


❖ 178 sites were determined to require no further action in FY94 based on investigations.



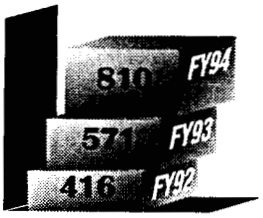
❖ Total Number of Sites which Required Further Response Action beyond PA = 15,394

Sites with Designs Complete



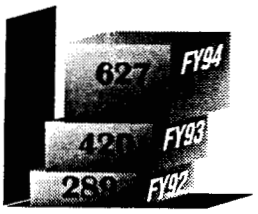
❖ Designs necessary for cleanup actions were completed at 190 sites in FY94.

Sites with Cleanups Complete

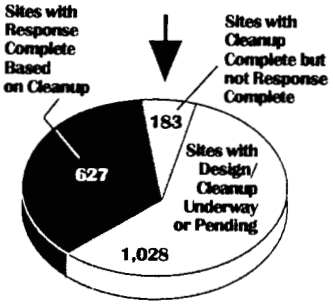


❖ Cleanups were completed at 239 sites in FY94 (does not include interim cleanup actions).

Response Complete Based on Cleanup



❖ 207 sites were closed out as response complete based on cleanups completed in FY94 and previous years.



❖ Total Number of Sites with Investigation Complete Requiring Cleanup =1,838

❖ All numbers are cumulative as of September 30, 1994

APPENDIX A National Priorities List (NPL), Proposed NPL, and Base Closure Installation Narrative Summaries

This Appendix summarizes restoration activities at DoD installations and Formerly Used Defense Sites (FUDS) on or proposed for the NPL, as well as for the majority of installations slated for base closure, as of September 30, 1994.

Table A lists each installation in alphabetical order by DoD Component, with reference to the page on which the summary information about each installation can be found. The table indicates whether the installation is listed on the NPL, proposed for listing on the NPL, or slated for base closure. In a number of cases, the installation is both slated for base closure and listed, or proposed for listing, on the NPL. Several of the installations identified as base closure are affected only by realignment actions that may involve the transfer or disposal of one or more parcels of property. A summary is provided at the end of Table A.

The narrative summaries follow Table A in alphabetical order by installation name. Each narrative description is a "snapshot" on each NPL, Proposed NPL, and BRAC installation. It includes a brief history of restoration activities, progress made during FY94, and a summary of the plan of action. Other pertinent information, such as Interagency Agreement (IAG) status, also is provided for each installation above the narrative summary. Additional information about site status and program costs for each installation can be found in Appendix B.

A list of programmatic terms commonly used in the narrative summaries is presented below. These terms are described in Appendix C entitled Executing the Program.

Activity	CERCLA	RCRA Corrective Action	Underground Storage Tanks
Investigation	Preliminary Assessment (PA) (or Initial Assessment Study, IAS) Site Inspection (SI) (or Confirmation Study, CS) Remedial Investigation (RI) Feasibility Study (FS) Engineering Evaluation/Cost Analysis (EE/CA)	RCRA Facility Assessment (RFA) RCRA Facility Investigation (RFI) Corrective Measures Study (CMS)	Initial Site Characterization Investigation for Soil and Groundwater Cleanup Corrective Action Plan (CAP)
Interim Action	Removal Action Interim Remedial Action (IRA)	Interim Measures	Initial Abatement Measures Free Product Removal
Design	Remedial Design (RD)	Corrective Measures Design (Remedy Design)	Design
Cleanup	Remedial Action (RA) Operation and Maintenance (O&M) Long-Term Monitoring (LTM)	Corrective Measures Implementation (CMI) Operation and Maintenance (O&M) Long-Term Monitoring (LTM)	Corrective Action Operation and Maintenance (O&M) Long-Term Monitoring (LTM)

National Priorities List (NPL), Proposed NPL, and Base Closure Installations

Table A

Installation	State	NPL	Proposed for NPL	Base Closure	Page No.
Army					
Aberdeen Proving Ground (Edgewood Area and Michaelsville Landfill)	MD	❖			A-9
Alabama Army Ammunition Plant	AL	❖		❖	A-14
Anniston Army Depot (Southeast Industrial Area)	AL	❖			A-19
Army Research, Development, and Engineering Command (Picatinny Arsenal)	NJ	❖			A-20
Cameron Station	VA			❖	A-29
Cornhusker Army Ammunition Plant	NE	❖			A-40
Fort Benjamin Harrison	IN			❖	A-65
Fort Devens	MA	❖		❖	A-66
Fort Devens-Sudbury Training Annex	MA	❖			A-67
Fort Dix	NJ	❖			A-68
Fort Eustis	VA		❖		A-69
Fort Lewis (Landfill No. 5 and Logistics Center)	WA	❖			A-70
Fort Meade	MD			❖	A-71
Fort Monmouth	NJ			❖	A-72
Fort Ord	CA	❖		❖	A-73
Fort Richardson	AK	❖			A-74
Army (continued)					
Fort Riley	KS	❖			A-75
Fort Sheridan	IL			❖	A-76
Fort Wainwright	AK	❖			A-77
Fort Wingate Depot Activity	NM			❖	A-78
Hamilton Army Airfield	CA			❖	A-83
Iowa Army Ammunition Plant	IA	❖			A-89
Jefferson Proving Ground	IN			❖	A-91
Joliet Army Ammunition Plant (LAP Area and Manufacturing Area)	IL	❖			A-93
Lake City Army Ammunition Plant (Northwest Lagoon)	MO	❖			A-96
Letterkenny Army Depot (PDO Area and Southeast Area)	PA	❖			A-99
Lexington-Bluegrass Army Depot	KY			❖	A-100
Lone Star Army Ammunition Plant	TX	❖			A-101
Longhorn Army Ammunition Plant	TX	❖			A-103
Louisiana Army Ammunition Plant	LA	❖			A-105
Milan Army Ammunition Plant	TN	❖			A-118
Natick Laboratory Army Research, Development and Engineering Center	MA	❖			A-123

Installation	State	NPL	Proposed for NPL	Base Closure	Page No.
DEPARTMENT OF THE NAVY (CONTINUED)					
Dahlgren Naval Surface Warfare Center	VA	❖			A-41
Davisville Naval Construction Battalion Center	RI	❖		❖	A-42
Driver Naval Radio Transmitting Facility	VA			❖	A-49
Earle Naval Weapons Station (Site A)	NJ	❖			A-51
Eastern Pacific Naval Computer and Telecommunications Area Master Station	HI	❖			A-52
El Toro Marine Corps Air Station	CA	❖		❖	A-55
Fridley Naval Industrial Reserve Ordnance Plant	MN	❖			A-79
Hunters Point Annex	CA	❖		❖	A-88
Jacksonville Naval Air Station	FL	❖			A-90
Keyport Naval Undersea Warfare Center	WA	❖			A-95
Lakehurst Naval Air Warfare Center (Aircraft Division)	NJ	❖			A-97
Long Beach Naval Station	CA			❖	A-102
Mare Island Naval Shipyard	CA			❖	A-112
Mechanicsburg Ship Parts Control Center	PA	❖			A-116
Moffett Field Naval Air Station (Including Crows Landing Naval Auxillary Landing Field)	CA	❖		❖	A-120
New London Naval Submarine Base	CT	❖			A-127
Newport Naval Education and Training Center	RI	❖			A-128
Orlando Naval Training Center	FL			❖	A-132
Parris Island Marine Corps Recruit Depot	SC		❖		A-134
Patuxent River Naval Air Station	MD	❖			A-135
Pearl Harbor Naval Complex	HI	❖			A-136
Pensacola Naval Air Station	FL	❖			A-138
Philadelphia Naval Complex	PA			❖	A-139
Port Hadlock Naval Ordnance Center	WA	❖			A-142
Portsmouth Naval Shipyard	ME	❖			A-143
Puget Sound Naval Shipyard (Including Jackson Park Housing Complex)	WA	❖			A-146
Quantico Marine Corps Combat Development Command	VA		❖		A-147
Sabana Seca Naval Security Group Activity	PR	❖			A-154
San Diego Naval Training Center	CA			❖	A-156
South Weymouth Naval Air Station	MA	❖			A-163
Treasure Island Naval Station	CA			❖	A-169
Trenton Naval Air Warfare Center	NJ			❖	A-170

Installation	State	NPL	Proposed for NPL	Base Closure	Page No.
DEPARTMENT OF THE NAVY (CONTINUED)					
Tustin Marine Corps Air Station	CA			❖	A-172
Warminster Naval Air Warfare Center Aircraft Division	PA	❖		❖	A-177
Whidbey Island Naval Air Station (Ault Field and Seaplane Base)	WA	❖			A-180
Whiting Field Naval Air Station	FL	❖			A-181
Willow Grove Naval Air Station	PA		❖		A-183
Yorktown Naval Weapons Station	VA	❖			A-187
Yuma Marine Corps Air Station	AZ	❖			A-188
AIR FORCE					
Air Force Plant #4 (General Dynamics)	TX	❖			A-11
Air Force Plant #85	OH		❖		A-12
Air Force Plant PJKS	CO	❖			A-13
Andersen Air Force Base	GU	❖			A-18
Arnold Engineering Development Center	TN		❖		A-21
Atlantic City Air National Guard Base	NJ	❖			A-22
Bergstrom Air Force Base	TX			❖	A-27
AIR FORCE (CONTINUED)					
Carswell Air Force Base	TX			❖	A-32
Castle Air Force Base	CA	❖		❖	A-33
Chanute Air Force Base	IL			❖	A-35
Dover Air Force Base	DE	❖			A-48
Eaker Air Force Base	AR			❖	A-50
Edwards Air Force Base	CA	❖			A-53
Eielson Air Force Base	AK	❖			A-54
Ellsworth Air Force Base	SD	❖			A-56
Elmendorf Air Force Base	AK	❖			A-57
England Air Force Base	LA			❖	A-58
F.E. Warren Air Force Base	WY	❖			A-59
Fairchild Air Force Base	WA	❖			A-60
George Air Force Base	CA	❖		❖	A-80
Griffiss Air Force Base	NY	❖		❖	A-81
Grissom Air Force Base	IN			❖	A-82
Hanscom Air Force Base	MA	❖			A-84

Installation	State	NPL	Proposed for NPL	Base Closure	Page No.
AIR FORCE (CONTINUED)					
Hill Air Force Base	UT	❖			A-86
Homestead Air Force Base	FL	❖		❖	A-87
K.I. Sawyer Air Force Base	MI			❖	A-94
Langley Air Force Base (Includes NASA Langley Research Center)	VA	❖			A-98
Loring Air Force Base	ME	❖		❖	A-104
Lowry Air Force Base	CO			❖	A-106
Luke Air Force Base	AZ	❖			A-107
MacDill Air Force Base	FL			❖	A-108
March Air Force Base	CA	❖		❖	A-111
Mather Air Force Base	CA	❖		❖	A-113
McChord Air Force Base (Wash Rack/Treatment Area and American Lake Garden Tract)	WA	❖			A-114
McClellan Air Force Base	CA	❖			A-115
Minneapolis-St. Paul Air Reserve Base (Small Arms Range Landfill)	MN	❖			A-119
Mountain Home Air Force Base	ID	❖			A-121
Myrtle Beach Air Force Base	SC			❖	A-122
Norton Air Force Base	CA	❖		❖	A-129
AIR FORCE (CONTINUED)					
Otis Air National Guard Base/Camp Edwards	MA	❖			A-133
Pease Air Force Base	NH	❖		❖	A-137
Plattsburgh Air Force Base	NY	❖		❖	A-141
Richards-Gebaur Air Force Base	MO			❖	A-149
Rickenbacker Air National Guard Base	OH		❖	❖	A-150
Robins Air Force Base (Landfill #4/Sludge Lagoon)	GA	❖			A-152
Tinker Air Force Base (Soldier Creek/Building 3001)	OK	❖			A-164
Travis Air Force Base	CA	❖			A-168
Tucson International Airport	AZ	❖			A-171
Williams Air Force Base	AZ	❖		❖	A-182
Wright-Patterson Air Force Base	OH	❖			A-185
Wurtsmith Air Force Base	MI		❖	❖	A-186
DEFENSE LOGISTICS AGENCY					
Defense Distribution Depot Memphis	TN	❖			A-43
Defense Distribution Depot Ogden	UT	❖			A-44

National Priorities List (NPL), Proposed NPL, and Base Closure Installations

Table A

Installation	State	NPL	Proposed for NPL	Base Closure	Page No.
Defense Logistics Agency (continued)					
Defense Electronics Supply Center	OH			❖	A-45
Defense General Supply Center	VA	❖			A-46
Defense Personnel Support Center	PA			❖	A-47
Sharpe Site, Defense Distribution Region West	CA	❖			A-162
Tracy Site, Defense Distribution Region West	CA	❖			A-167
Formerly Used Defense Sites					
Fike/Artel Chemical	WV	❖			A-61
Fisher-Calo	IN	❖			A-62
Former Larson Air Force Base	WA	❖			A-63
Former Pantex Ordnance Plant	TX	❖			A-64
Hastings Ground Water Contamination Site	NE	❖			A-85
Jet Propulsion Lab	CA	❖			A-92
Malta Test Station	NV	❖			A-109
Marathon Battery Corporation	NV	❖			A-110
Middletown Air Field (Formerly Olmstead Air Force Base)	PA	❖			A-117
Formerly Used Defense Sites (continued)					
National Presto Industries	WI	❖			A-124
Nebraska Ordnance Plant	NE	❖			A-125
New Hanover County Airport	NC	❖			A-126
Old Navy Dump/Manchester Annex	WA	❖			A-130
Ordnance Works Disposal Area	WV	❖			A-131
Phoenix-Goodyear Airport (Litchfield Park)	AZ	❖			A-140
San Fernando Valley Areas 1-4 (Air Force Plant No. 14)	CA	❖			A-157
Sangamo Electric Dump (Crab Orchard National Wildlife Refuge)	IL	❖			A-158
Weldon Spring Ordnance Works	MO	❖			A-178
West Virginia Ordnance Works	WV	❖			A-179

Summary of Installations Included in Narratives[1]

❖	Army		Department of the Navy		Air Force		DLA		Total		FUDS	
	Active	Base Closure	Active	Base Closure	Active	Base Closure	Active	Base Closure	Active	Base Closure	DoD Lead	Non-DoD Lead
NPL	27	7	31	6	25	11	5	0	88	24	11	8
Proposed NPL	1	0	5	0	2	2	0	0	8	2	0	0
Base Closure	—	13	—	13	—	11	—	2	—	39[2]	—	—

1 This summary accounts for all base closure installations on or proposed for the NPL, as well as the majority of major non-NPL installations slated for closure. Several of these installations identified as base closure are affected only by realignment actions that may involve the transfer or disposal of one or more parcels of property.

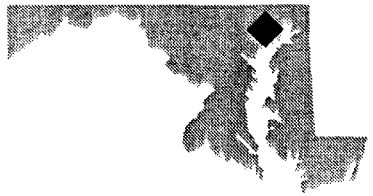
2 This figure represents only those installations identified in Appendix A of this report.

ABERDEEN PROVING GROUND

NPL

(EDGEWOOD AREA, MICHAELSVILLE LANDFILL, AND NIKE BRAC SITE)

Size:	79,000 acres
Mission:	Develop and test equipment and provide troop training
HRS Score:	31.09 (Michaelsville Landfill); Placed on NPL in 1989 53.57 (Edgewood Area); Placed on NPL in 1990
IAG Status:	IAG signed in March 1990
Contaminants:	VOCs, semi-VOCs, arsenic, phosphates, PCBs, UXO, explosives, nitrates, solvents, petroleum products, pesticides, heavy metals, asbestos, low-level radioactive waste, chemical agent material, and their degradation products
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$234 million



Edgewood and Aberdeen, Maryland

CLEANUP BACKGROUND

Environmental studies beginning in FY83 at Aberdeen Proving Ground identified eight areas of contamination including UXO, chemical munition, and manufacturing waste sites. RCRA Facility Assessments (RFA), conducted between FY87 and FY90, identified 319 Solid Waste Management Units (SWMU); these were combined into 13 study areas.

Since FY90, Removal Actions were completed at 34 SWMUs, including eight Underground Storage Tanks (UST). Removal Actions completed during FY91, FY92, and FY93 included the removal and incineration of soil contaminated with PCBs and DDT.

Remedial Investigation and Feasibility Studies (RI/FS) initiated in FY90 identified high levels of hydrocarbons in groundwater in four study areas. In addition, white phosphorous was detected in on-post surface water and sediments. The RI/FS also identified small amounts of VOCs in on-post portions of and tributaries to the Chesapeake Bay.

Results of RI/FS activities in early FY93 confirmed off-post trichloroethene (TCE) contamination of two residential drinking wells adjacent to the installation. In FY93, the Army installed and operated a granular activated-carbon treatment system to remove TCE from the two wells.

The installation's Technical Review Committee (TRC) met quarterly to inform local citizens of the status of the installation's cleanup program and to facilitate public review and comment on proposed actions since FY90. In FY93, a local community group received a Technical Assistance Grant (TAG) from EPA to hire technical consultants to review cleanup project documents and plans and to provide recommendations. As a result, local community involvement in the cleanup program decision-making process has been enhanced.

FY94 CLEANUP PROGRESS

The installation began converting the TRC to the Restoration Advisory Board. The installation maintained community involvement in its cleanup program through regular public meetings.

Eight Removal Actions were completed. A total of 5,138 tons of hazardous materials and 13,465 tons of nonhazardous materials were removed during these actions. Fire training area Removal Actions in FY93 and FY94 involved removal and incineration of 12,500 tons of soil contaminated with total petroleum hydrocarbons and TCE.

A Focused Feasibility Study, Proposed Plan, and draft Record of Decision (ROD) were also completed for the Old O-Field site. The Interim Remedial Design for the site, involving a groundwater extraction and treatment system using chemical precipitation to remove metals and UV-oxidation to remove organics, was completed in March. The cleanup involves constructing a permeable infiltration unit. A Remedial Action involving a cap and cover system was installed over the Michaelsville Landfill in July.

RI/FS and Risk Assessment activities continued for most study areas. The Army continued to use innovative technologies, including hydropunch sampling, passive soil gas surveys, geophysical surveys, and marine seismic surveys as part of the RI/FS.

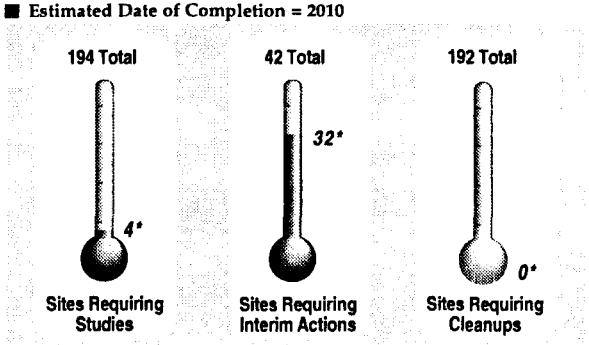
The Army is considering use of a real-time chemical agent air monitoring system as a new technology alternative for landfill excavations. It would include the Fourier Transform Infrared System (FTIR), a filtered air shelter, and a telerobotic excavator. The Army is also evaluating "Magic Sands" (an ex-situ treatment employing reductive dehalogenation) combined with installing a horizontal well to remediate contaminated groundwater.

PLAN OF ACTION

- Initiate 12 Removal Actions in FY95 and an additional 10 Removal Actions in FY96 and FY97
- Continue RI/FSs and Risk Assessments in 13 study areas in FY95
- Complete four RODs in FY95
- Begin groundwater extraction and treatment Interim Remedial Action (IRA) at Old O-Field site in FY95
- Complete installation-wide ROD in FY02
- Complete all Remedial Design and Remedial Action activities by FY10

PROJECT ACCOMPLISHMENTS

- *Total Number of Sites = 194*
- **Estimated Date of Completion = 2010**



** Complete*

ADAK NAVAL AIR STATION

NPL

Size:	61,935 acres
Mission:	Maintain and operate facilities and provide services and materials to support aviation activities and operating forces of the Navy
HRS Score:	51.37; Placed on NPL in May 1994
IAG Status:	Federal Facility Agreement signed in November 1993
Contaminants:	Heavy metals, PCBs, VOCs, pesticides, and petroleum products
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$27 million

Adak, Alaska

CLEANUP BACKGROUND

Adak Naval Air Station currently maintains and operates facilities and provides services and materials to support aviation activities and operating forces of the Navy.

An Initial Assessment Study (IAS) identified 32 sites in FY86. Site types include landfills, UXO areas, and PCB spill sites that have released contaminants to groundwater, soil, and surface water/sediments. Twenty sites were recommended for further investigation, and an Interim Remedial Action (IRA) consisting of institutional controls was completed at two sites during FY86.

During FY91, a RCRA Facility Assessment (RFA) conducted by EPA identified 76 potential Solid Waste Management Units (SWMU). Of the 76 potential SWMUs, 73 were also CERCLA sites and were transferred to the cleanup program.

In FY92, an IRA at four PCB spill sites consisted of excavating 2,000 cubic yards of PCB-contaminated soil and conducting confirmatory sampling.

There are 12 Underground Storage Tank (UST) sites at the installation; all but one UST site has been transferred to the cleanup program.

To date, the installation has completed Preliminary Assessments (PA) at 56 sites and has completed Site Inspections (SI) at 18 sites.

A Community Relations Plan (CRP) was completed in early FY90. An Information Repository was established in FY90, and a Technical Review Committee was formed in FY92.

FY94 CLEANUP PROGRESS

Although a Restoration Advisory Board has not yet been formed, early public involvement has been solicited through open houses and public meetings to encourage comment on proposed Remedial Actions (RA) at landfills and a drainage area. The installation also distributed fact sheets on cleanup activities.

To accelerate the decision-making process, project managers are using a Preliminary Source Evaluation process rather than the complete RI/FS process. In addition, project managers have conducted regularly scheduled telephone conferences to reach consensus on key issues. Quarterly progress reports have also been provided regarding cleanup activities, and scoping meetings have been held to provide input on various work plans and deliverables.

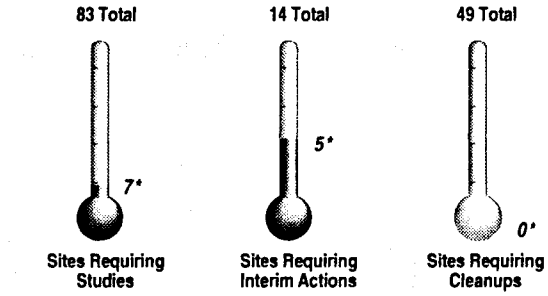
After further field investigations, about 20 sites were recommended for no further action. The installation made improvements to the petroleum/oil/lubricant recovery system from groundwater. The installation also finalized plans to cover and revegetate landfills, divert surface water, and cover the drainage area.

PLAN OF ACTION

- Continue use of the Preliminary Source Evaluation process to accelerate decisions and to allow small-scale Removal Actions, RAs, and Site Assessments to be conducted simultaneously
- Begin RAs at landfills and drainage area in mid-FY95 and complete by FY96
- Continue field investigation work and complete RI field work in FY97
- Complete Removal Action of two PCB spill sites by excavating and removing PCB-contaminated soil in FY95

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 83
- Estimated Date of Completion = 2003



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Installation	State	NPL	Proposed for NPL	Base Closure	Page No.
ARMY (CONTINUED)					
Presidio of San Francisco	CA			❖	A-144
Pueblo Depot Activity	CO			❖	A-145
Redstone Arsenal	AL	❖			A-148
Riverbank Army Ammunition Plant	CA	❖			A-151
Rocky Mountain Arsenal	CO	❖			A-153
Sacramento Army Depot	CA	❖		❖	A-155
Savanna Army Depot Activity	IL	❖			A-159
Schofield Barracks	HI	❖			A-160
Seneca Army Depot	NY	❖			A-161
Tobyhanna Army Depot	PA	❖			A-165
Tooele Army Depot (North Area)	UT	❖		❖	A-166
Twin Cities Army Ammunition Plant	MN	❖			A-173
U.S. Army Research Laboratory (Formerly Army Material Technology Laboratory)	MA	❖		❖	A-174
Umatilla Army Depot	OR	❖		❖	A-175
Vint Hill Farms Station	VA			❖	A-176
Woodbridge Research Facility	VA			❖	A-184

Installation	State	NPL	Proposed for NPL	Base Closure	Page No.
DEPARTMENT OF THE NAVY					
Adak Naval Air Station	AK	❖			A-10
Alameda Naval Air Station	CA			❖	A-15
Albany Marine Corps Logistics Base	GA	❖			A-16
Allegany Ballistics Laboratory - Mineral County	WV	❖			A-17
Bangor Naval Submarine Base and Ordnance Disposal	WA	❖			A-23
Barbers Point Naval Air Station	HI			❖	A-24
Barstow Marine Corps Logistics Base	CA	❖			A-25
Bedford Naval Weapons Industrial Reserve Plant	MA	❖			A-26
Brunswick Naval Air Station	ME	❖			A-28
Camp Lejeune Marine Corps Base	NC	❖			A-30
Camp Pendleton Marine Corps Base	CA	❖			A-31
Cecil Field Naval Air Station	FL	❖		❖	A-34
Charleston Naval Shipyard and Naval Station	SC			❖	A-36
Chase Field Naval Air Station	TX			❖	A-37
Cherry Point Marine Corps Air Station	NC		❖		A-38
Concord Naval Weapons Station	CA		❖		A-39

APPENDIX A National Priorities List (NPL), Proposed NPL, and Base Closure Installation Narrative Summaries

Each installation narrative has a corresponding graphic. BRAC installation narratives illustrate the Community Environmental Response Facilitation Act (CERFA) process at the installation. NPL and Proposed NPL installation narratives illustrate accomplishments in the cleanup process. Sample graphics are included below.

CERFA CLEAN ACREAGE

BRAC

% = Ratio of Concurred Acreage / Total → Concurred CERFA Clean Acreage (CERFA category 1 acreage concurred by regulatory agencies)

% = Ratio of Proposed Acreage / Total → Proposed CERFA Clean Acreage (Acreage proposed as CERFA category 1)

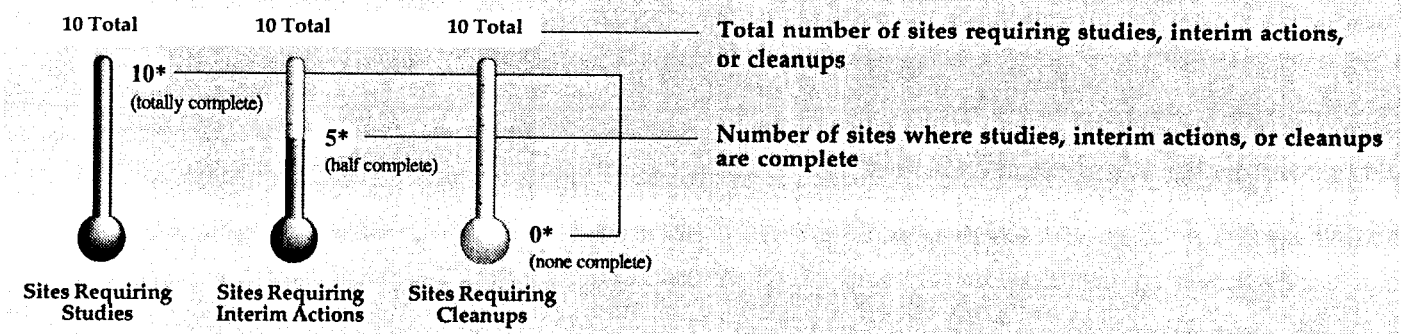
% = Ratio of Acreage available / Total → Acreage Available for Transfer (Acreage categorized as Environmental Condition of Property 1-4)

Total Acreage (Total installation acreage slated for closure under BRAC)

PROJECT ACCOMPLISHMENTS

NPL/Proposed NPL

- **Total Number of Sites = Number of sites in the restoration program**
- **Estimated Completion Date = Estimated date at which all restoration activities will be complete**

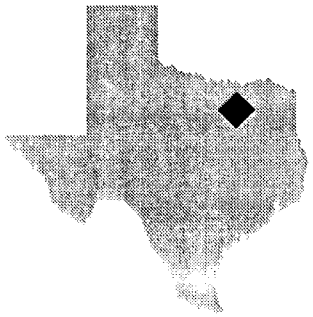


AIR FORCE PLANT NO. 4

NPL

(GENERAL DYNAMICS)

Size:	602 acres
Mission:	Manufacture aircraft and associated equipment
HRS Score:	39.92; Placed on NPL in 1990
IAG Status:	IAG signed in 1990
Contaminants:	Solvents, paint residues, spent process chemicals, PCBs, waste oils and fuels, heavy metals, VOCs, and cyanide
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$25.9 million



Fort Worth, Texas

CLEANUP BACKGROUND

Air Force Plant No. 4 has been in service as a primary manufacturer of military aircrafts and their associated equipment since 1942. Since then, the installation has been one of many manufacturers of military aircraft for the Air Force.

Studies ongoing since FY84 have identified 30 sites and have confirmed groundwater, surface water, and soil contamination. Groundwater contaminated with trichloroethene (TCE) has been identified at areas beneath six spill sites and four landfills at the installation. Groundwater is used as a primary source of drinking water for the city of White Settlement, Lake Worth, and Fort Worth.

A Remedial Investigation and Feasibility Study (RI/FS) began in FY86, and during the RI, seven of the 30 sites were recommended for no further action.

Two Interim Remedial Actions (IRA) were initiated in FY93. These IRAs were designed to reduce the threat of subsurface contamination at spill sites and the four landfills. In FY92, 21,300 cubic yards of contaminated soil were removed from several closed waste pits, and contaminated soil was excavated from four additional sites. The two IRAs included the installation of an interim groundwater treatment system to address contamination that originated from two spill sites. The interim groundwater treatment system, which became operational in FY93, consists of two large groundwater carbon filtration units.

To foster partnerships with the regulatory agencies, the installation conducts monthly meetings with representatives of EPA, Texas Natural Resources Conservation Commission, U.S. Fish and Wildlife Service, Army Corps of Engineers, Air Force Center for Environmental Excellence, and the U.S. Geological Survey. These meetings serve to facilitate communication on the installation's cleanup progress and schedule.

FY94 CLEANUP PROGRESS

The installation completed the design and construction of a soil vapor extraction system at the parts processing plant (building 181); the system is designed to treat TCE-contaminated soil.

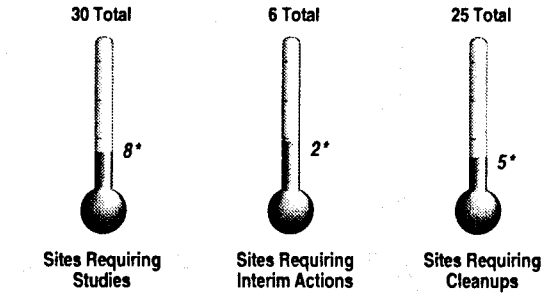
Two additional carbon filtration groundwater treatment systems were installed to control the further migration of TCE. Through November, these systems have treated about two million gallons of contaminated groundwater.

PLAN OF ACTION

- Complete construction and begin operation of vacuum-enhanced pumping system to treat groundwater and soil contamination at Landfill 3 in FY95
- Convert existing Technical Review Committee to a Restoration Advisory Board in FY95

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 30**
- **Estimated Date of Completion = 2013**

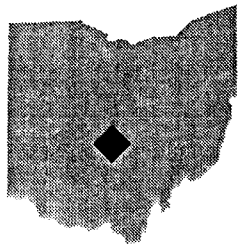


** Complete*

AIR FORCE PLANT 85

PROPOSED NPL

Size:	420 acres
Mission:	Inactive; formerly produced aircraft and aircraft missile components
HRS Score:	50.00; Proposed for NPL in January 1994
IAG Status:	None
Contaminants:	PAH's, VOC's, metals
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$3.4 million



Columbus, Ohio

CLEANUP BACKGROUND

Environmental studies ongoing since FY86 identified 11 sites and one Area of Concern at Air Force Plant 85. Historic operations at the installation involved the use of solvents and petroleum products. Contaminants include PCBs, metals, petroleum hydrocarbons, and VOC's that are affecting groundwater, surface water, and soil.

To date, Decision Documents have been prepared for nine of the 11 sites; however, the Air Force has not received concurrence from the regulatory agencies on the Decision Documents.

FY94 CLEANUP PROGRESS

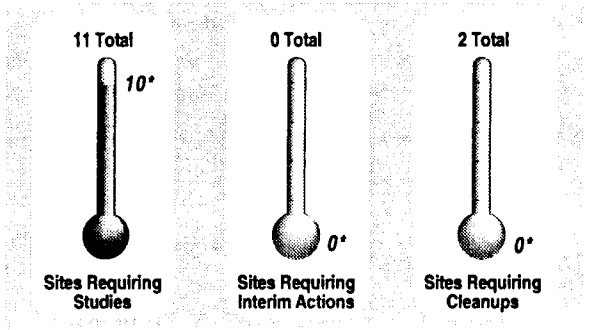
During this fiscal year, a Removal Action was initiated to remove PCB contamination in soil. Additional contamination was identified and funded for removal. Supplemental investigation into pesticide contamination was completed at the Fire Training Area.

PLAN OF ACTION

- Complete Long Term Monitoring
- Complete PCB Removal Action
- Prepare for cleanup of the Fire Training Area
- Coordinate closed sites with EPA and the state to allow transfer of the property
- Pursue CERCLA 120 requirements for transfer of the property

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 11
- Estimated Date of Completion = 1998



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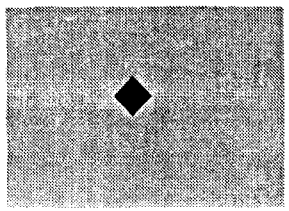
AIR FORCE PLANT PJKS

NPL

Size:	464 acres
Mission:	Research, develop, and assemble missiles and missile components; test engines
HRS Score:	42.93; Placed on NPL in 1989
IAG Status:	None
Contaminants:	Chlorinated organic solvents, fuel, and hydrazine
Media Affected:	Groundwater and soil
Funding to Date:	$16.5 million



Waterton, Colorado

CLEANUP BACKGROUND

Air Force Plant PJKS supports the military through research and development and assembly of missiles, missile components, and engines. Historic operations have resulted in trichloroethene (TCE) and hydrazine contamination of groundwater beneath the installation. Other contaminants of concern in groundwater include vinyl chloride, benzene, other VOCs, and nitrate.

Environmental studies ongoing since FY86 identified a total of 59 sites. These sites were grouped into six Operable Units (OU) and six RCRA Areas of Concern. Twelve of 14 Underground Storage Tanks (UST) were removed from the installation.

Two pilot tests to determine the effectiveness of innovative treatment technologies were conducted at the installation. A one year bioventing pilot test was conducted at an area with hydrocarbon-contaminated subsurface soils to determine the applicability of in-situ bioremediation. In addition, a pilot test was initiated to demonstrate the effectiveness of soil vapor extraction in removing chlorinated organic solvents from subsurface soils at the installation.

In FY93, field activities for a supplemental Remedial Investigation and Feasibility Study (RI/FS) were initiated at OU1, OU4, and OU6, and RI/FS work plans for supplemental investigations at OU2, OU3, and OU5 have been finalized. The installation also initiated a background soil quality investigation to determine background contaminant concentrations for the RI.

In FY93, the installation began a proactive public involvement program that included an open house and a tour of the installation.

FY94 CLEANUP PROGRESS

Technical workshops at the installation assured that all technical and regulatory requirements for the supplemental RI/FS would be met. The workshops were attended by both technical and regulatory agency specialists and included representatives from EPA and the state. As a result of the workshops, review and approval of the work plans for supplemental RI/FS activities at OUs 2, 3, and 5 were finalized. Field work at these three OUs also began.

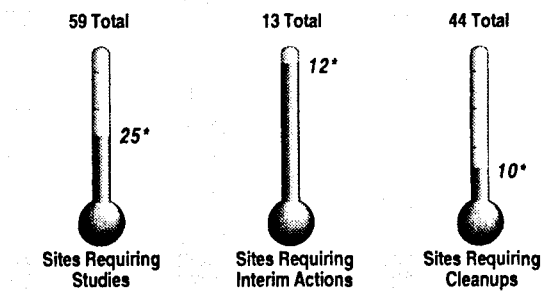
The installation is currently incorporating various technologies into the field investigations. A field data module, which is an electronic field data management tool, is used to assure the efficient collection of high quality analytical data. In addition, automated data validation techniques are used in conjunction with the field data module to improve analytical efficiency. A shallow seismic reflection device is being used to investigate geophysical characteristics in the top portion of the subsoils at the installation.

PLAN OF ACTION

- Complete supplemental RI/FSs at OUs 2, 3, and 5
- Install additional monitoring wells to supplement the existing monitoring well network
- Sign an installation-wide Record of Decision upon completion of supplemental RI/FSs at the remaining OUs

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 59
- Estimated Date of Completion = 2002



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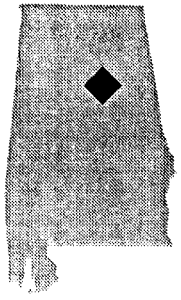
ALABAMA ARMY AMMUNITION PLANT

NPL BASE CLOSURE 1988

Size:	**4,329 acres (4,329 acres excess)**
Mission:	**Inactive; formerly manufactured explosives**
HRS Score:	**36.83; Placed on NPL in 1987**
IAG Status:	**Federal Facility Agreement signed in December 1989**
Contaminants:	**Nitroaromatic compounds, heavy metals, and munitions-related wastes**
Media Affected:	**Groundwater, surface water/sediments, and soil**
Funding to Date:	**$30.9 million**



Childersburg, Alabama

CLEANUP BACKGROUND

Environmental studies beginning in FY83 at Alabama Army Ammunition Plant identified sites considered potential sources of contaminant migration. Prominent site types include: a former ammunition production and burning ground for various explosives; industrial wastewater conveyance systems, ditches and washouts; landfills; Underground Storage Tanks (UST); PCB-containing transformers; and a former coke oven.

Remedial Investigation and Feasibility Study (RI/FS) activities began in FY85 and are currently ongoing. The installation is divided into five separate Operable Units (OU); Area A OU1 and OU2, Area B OU1, OU2, and OU3. The RI confirmed groundwater, surface water/sediments, and soil contaminated with nitroaromatic compounds, heavy metals and explosive wastes.

In FY88, the Army excavated about 25,000 cubic yards of contaminated soils from the burning grounds at Area A, and transported the soil to Area B to await a final decision on treatment or disposal. In FY90, the Record of Decision (ROD) incorporated a generic remedy that included on-site incineration of stockpiled contaminated soil.

In FY93, an all inclusive RI/FS was initiated in Areas A and B. The RI includes installing monitoring wells and soil borings; resampling existing monitoring wells; and collecting background samples, site-specific soil/sediment samples, surface water samples, and ecological sampling.

The Army has initiated partnering efforts with EPA and the state regulatory agency. These meetings resulted in the production of Interim RODs for removal, incineration, and/or solidification of contaminated soils in Area A OU2 and Area B OU3. The Interim ROD allows for accelerated cleanup in a heavily contaminated area. The Interim Action is supported by earlier studies and represents an agreement by all parties; however, it is not the final cleanup remedy. Partnering meetings were also responsible for the generation of an Installation Management Plan. The plan establishes the stakeholders' (Army, EPA, and the installation) course of action through cleanup in FY98.

FY94 CLEANUP PROGRESS

The Army completed remediation for the final Interim ROD for Area A OU2 and Area B OU2 addressing explosive and metals-contaminated soils. The selected cleanup remedy involves conducting on-site thermal treatment and/or solidification, and landfilling. Contaminated soils were transported from Area A to the mobile incinerator located in Area B. The incinerator treated approximately 20,000 cubic yards of soil and the treatment process lasted about seven months. The incinerator treats an average of 18 tons per hour of soils contaminated with explosives.

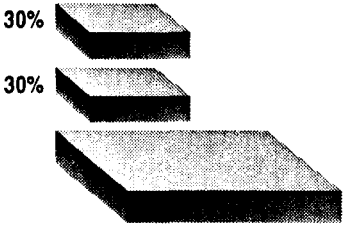
The Army awarded contracts to complete studies at Area A OU1, and initiate studies at Area B OU1.

The Army issued the final CERFA report identifying the environmental condition of property at the installation.

PLAN OF ACTION

- Submit technical work plans for studies at Area B; expecting approval in January 1995; begin field work in FY95 after approval of work plans
- Complete RI/FS for soil and groundwater contamination in Areas A and B in FY95
- Obtain federal and state regulatory agency approval for an Interim ROD at Area B OU3 in FY95
- Conduct Remedial Action at Area B OU3 in FY95, by excavating, transporting, on-site thermal treatment, solidification, and landfilling of about 40,000 cubic yards of contaminated soil
- Prepare Land Reuse Plan in FY95 and FY96

CERFA CLEAN ACREAGE



Concurred CERFA Clean Acreage –	**0**
Proposed CERFA Clean Acreage –	**1,285**
Acreage Available for Transfer –	**1,285**
Total Acreage –	**4,329 ***

2,083 acres transferred before CERFA

ALAMEDA NAVAL AIR STATION

Size:	2,573 acres, including about 1,000 off-shore acres (2,573 acres excess)
Mission:	Maintain and operate facilities and provide services and material support for Naval aviation activities and operating forces
HRS Score:	N/A
IAG Status:	Under negotiation
Contaminants:	Acetone, chlorinated solvents, cyanide, benzene, ethylbenzene, heavy metals, herbicides, pesticides, methylene chloride, petroleum hydrocarbons, PCBs, VOCs, semi-VOCs, toluene, xylene
Media Affected:	Groundwater and soil
Funding to Date:	$29.5 million

Alameda, California

CLEANUP BACKGROUND

Environmental cleanup activities at Alameda Naval Air Station are being conducted at 24 sites. Prominent site types at the installation include landfills, off-shore areas, and plating shops. The one Underground Storage Tank (UST) site consists of about 60 abandoned tanks that were discovered in FY89. An eight-phase Remedial Investigation and Feasibility Study (RI/FS) was initiated in FY89. Results of the RI/FS indicate groundwater and soil contamination consisting primarily of VOCs and PAHs.

In FY89, a Community Relations Plan was completed and three information repositories and an Administrative Record were established.

FY94 CLEANUP PROGRESS

The BRAC Cleanup Team (BCT) and the Navy fostered the use of innovative technology by establishing an innovative technology partnering contract with the University of California at Berkeley.

A Restoration Advisory Board (RAB) was formed in April. The RAB is currently developing a charter to define how to identify and resolve issues and ensure that all stakeholders have ample opportunity to participate in the decision-making process.

A CERFA Environmental Baseline Survey (EBS) was completed. A survey is in progress to identify and investigate all potential oil-water separator and transformer sites. The first phase of the Environmental Assessment (EA) has been completed, and work has begun on the follow-on EA.

The installation began an extensive effort to excavate all USTs and investigate surrounding soils for contamination.

An asbestos survey is currently underway and is expected to be complete in FY95. All buildings at the installation are being evaluated for asbestos to determine the need for further action or emergency cleanup.

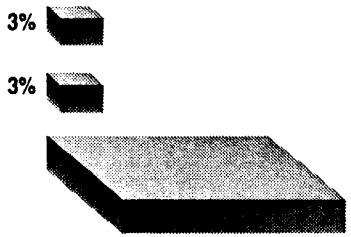
An innovative field screening technology known as the Site Characterization and Analysis Penetrometer System (SCAPS) was implemented. SCAPS uses fiber-optic and ultraviolet technology integrated into a traditional cone penetrometer system. The system is capable of providing rapid, real-time in-situ petroleum hydrocarbon screening. Because field data can be reviewed immediately, the cleanup decision-making process has been expedited.

Other accomplishments include the completion of the BRAC Cleanup Plan, the completion of a Removal Action at one site, and the mobilization of a Removal Action at another site.

PLAN OF ACTION

- Develop and implement work plan for an aquatic and terrestrial EA, including a threatened and endangered species survey
- Conduct RI sampling; at least five treatability studies will be underway, with some possibly completed by the end of FY95
- Initiate six Removal Actions in FY95; one Removal Action will take place under the EPA Superfund Innovative Technology Evaluation (SITE) Program; an innovative technology will be applied to remove PCBs and lead from the soil
- Complete first of four Records of Decision in FY95
- Complete base-wide EBS in FY95
- Complete UST removals in FY95
- Continue to solicit involvement from the community through the RAB and interact with regulatory agencies through the BCT
- Sign a Federal Facility Site Remediation Agreement with the state of California in mid-FY95

CERFA CLEAN ACREAGE



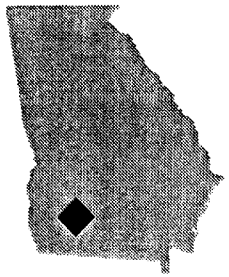
Concurred CERFA Clean Acreage –	TBD
Proposed CERFA Clean Acreage –	77
Acreage Available for Transfer –	77 *
Total Acreage –	2,573

** Environmental Condition of Property Categories 1-4*

ALBANY MARINE CORPS LOGISTICS BASE

NPL

Size:	3,327 acres
Mission:	Acquire, supply, and dispose of materials needed to sustain combat readiness of Marine Corps forces worldwide; acquire, maintain, repair, rebuild, distribute and store supplies and equipment; conduct training
HRS Score:	44.65; Placed on NPL in December 1989
IAG Status:	Federal Facility Agreement signed in July 1991
Contaminants:	VOCs, trichloroethene, PCBs, heavy metals, pesticides, phthalates, PAHs
Media Affected:	Groundwater and surface water/sediments
Funding to Date:	$20.9 million



Albany, Georgia

CLEANUP BACKGROUND

Environmental studies began at Albany Marine Corps Logistics Base in FY85. Primary site types include disposal areas, storage areas, and landfills.

In FY87, the Navy began cleanup activities at the Industrial Wastewater Treatment Plant (IWTP) on the installation by implementing a groundwater recovery system and quarterly groundwater monitoring program. In FY89, the installation completed an Interim Remedial Action (IRA) that consisted of capping of the IWTP sludge beds.

In FY90, the Navy was issued an administrative order by the state of Georgia to provide RCRA closure for the Domestic Wastewater Treatment Plant (DWTP) sludge beds. Sampling results indicated heavy metal concentrations remaining from decontamination activities.

Closure included the removal of sand and gravel from the sludge beds. RCRA Facility Investigation activities were completed in FY89. The installation began a Corrective Measures Study (CMS) and Remedial Investigation and Feasibility Study (RI/FS) activities in FY93.

In FY89, the Technical Review Committee (TRC) was formed, and meetings have been held periodically. To keep the public informed, the installation has solicited feedback from the community, held meetings for local community groups, and distributed press releases.

FY94 CLEANUP PROGRESS

The TRC converted to a Restoration Advisory Board (RAB). RAB membership currently includes representatives of the local utility company, public works, Darton College, state regulatory agency, EPA, Department of Commerce, and the U.S. Fish and Wildlife Service. As a result, the installation has improved the decision-making process, implementing a generic Health and Safety Plan and eliminating a draft final document for most reports.

Cleanup activities were completed for Operable Unit (OU) 3, and treatability studies were initiated for OU1. An Engineering Evaluation and Cost Analysis was completed for a site at OU4. The installation began Corrective Measures Implementation (CMI) activities at OU5 by removing the top eight inches of the DWTP sludge beds. In September, the installation determined that an Interim Measure was necessary for a site at OU1 and an Interim ROD was signed.

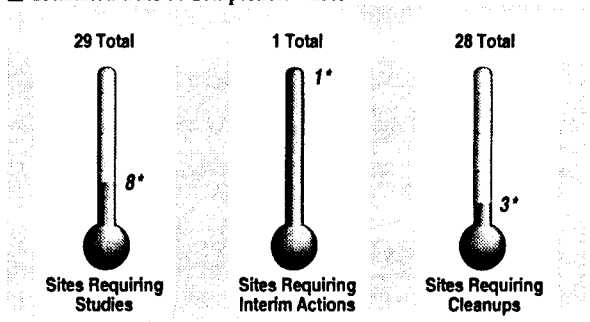
The groundwater recovery system and quarterly groundwater monitoring program continued at the IWTP.

PLAN OF ACTION

- Install groundwater extraction and air stripping treatment system for OU1 and OU4 in FY95
- Complete treatability studies at OU1
- Initiate Interim Actions for sites in OU4 and OU5
- Initiate Removal Actions at OU4
- Complete final closeout for OU3
- Complete RI/FS activities at the remaining sites in FY97; Remedial Designs are expected to be completed in FY98 and Remedial Actions for the remaining sites are expected to be completed between FY97 and FY02
- Complete the CMS in FY95 and the CMI in FY96; groundwater monitoring will be conducted until FY00

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 29
- Estimated Date of Completion = 2003



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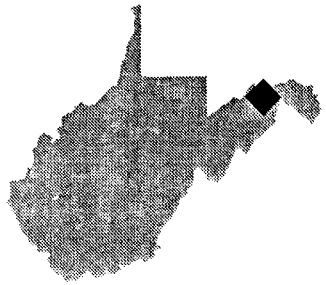
ALLEGANY BALLISTICS LABORATORY

NPL

Size:	1,628 acres (1,572 acres owned by the Navy)
Mission:	Research, develop, and produce solid propellant rocket motors for DoD and NASA; government-owned, contractor-operated
HRS Score:	50.00; Placed on NPL May 1994
IAG Status:	None
Contaminants:	VOCs, RDX, HMX, and Silver
Media Affected:	Groundwater and soil
Funding to Date:	$1.3 million



Mineral County, West Virginia

CLEANUP BACKGROUND

Environmental studies initiated in FY83 at Allegany Ballistics Laboratory identified 11 sites. A Confirmation Study completed in FY86 recommended further study at eight sites. In addition, the installation completed an Interim Remedial Action for these sites in FY90.

A Remedial Investigation and Feasibility Study (RI/FS) began in FY92 and is currently underway. Site 1 is an immediate concern and consists of six waste disposal units, including ordnance burning grounds, inactive solvent and acid pits, a drum storage area, a former open burn area, and an ash landfill.

A Technical Review Committee was established in FY89, and a Community Relations Plan was completed in FY93. The installation conducted several meetings with active involvement from community members.

FY94 CLEANUP PROGRESS

The Restoration Advisory Board was formed in December.

The installation realized significant time-savings by streamlining the environmental contracting process. For example, work plan development, implementation, and preparation of reports were contracted under one delivery order. Concurrent review and regulatory agency comment resolution also enabled field personnel to maximize project efficiency and effectiveness because additional field work began before a final work plan was issued. Data gaps were identified, and necessary additional field work was completed before preparing investigation reports.

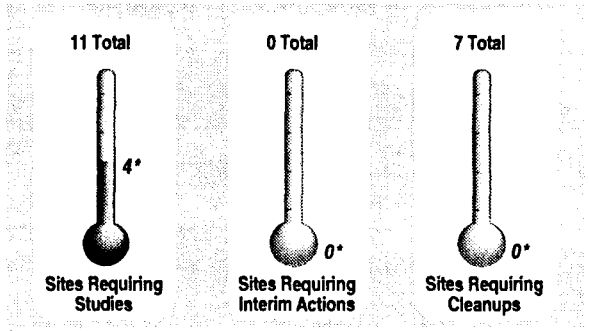
During July, the installation began excavating Site 7, the beryllium landfill. All excavated material was contained in roll-off bins for waste characterization. Negotiations began with the state of West Virginia and EPA Region 3 regarding waste disposal.

PLAN OF ACTION

- Complete all RI/FS work by FY95
- Complete Interim Actions, Removal Actions, and implement generic remedies at all sites by FY97
- Sign Records of Decision for several sites

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 11
- Estimated Date of Completion = 2003



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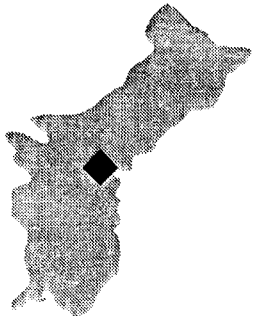
ANDERSEN AIR FORCE BASE

NPL

Size:	15,400 acres
Mission:	Support Air Force mission in the Pacific by providing troops, equipment, and facilities
HRS Score:	50.00; Placed on NPL in 1992
IAG Status:	Federal Facility Agreement signed in March 1993
Contaminants:	VOCs, petroleum/oil/lubricants, tars, and UXO
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$16.5 million



Yigo, Guam

CLEANUP BACKGROUND

In FY84 and FY85, Preliminary Assessments identified 50 sites at Andersen Air Force Base, including landfills, waste piles, fire training areas, hazardous waste storage areas, and spill sites. After the Federal Facility Agreement (FFA) was signed in FY93, the 50 sites were consolidated into 39 sites and grouped into six Operable Units (OU).

The installation began cleanup activities when low levels of trichloroethene (TCE) and tetrachloroethene (PCE) were detected in the sole drinking water aquifer on the island. Field activities are prioritized based on the relative risk associated with potential contamination of the aquifer.

Increased ecological and habitat concerns have made cleanup activities at the installation more complex. Rapid commercial development of nonmilitary lands on the island has made the base become a defacto nature preserve. Various threatened and endangered species may now inhabit areas of the installation. The Federal Endangered Species Act requires extensive ecological inventories before any field activities can be conducted within an identified endangered species habitat.

Landfill 5 was capped in FY93 as part of a Removal Action. To avoid the high cost of importing sterilized soil to Guam, the installation used a synthetic cover material to cap the landfill. The installation's demonstrated success with this innovative technology has prompted other agencies on Guam to use the same synthetic material.

Remedial Investigation and Feasibility Study (RI/FS) activities began in FY93.

The Technical Review Committee (TRC) was formed in FY93 after the FFA was signed. The TRC ensures that the decision-making process is timely and that regulatory requirements are met.

FY94 CLEANUP PROGRESS

The Air Force initiated partnering efforts with the Navy to establish a Defense Environmental Restoration Team. The sharing of information, and field experience has been beneficial to both parties. Guam's remote location also makes it advantageous to share logistical support and equipment.

The installation initiated the transition of the TRC to a Restoration Advisory Board (RAB). RAB co-chairs were selected, and interested community members and local organizations were solicited to ensure that the RAB represents a variety of viewpoints. Once the RAB is formed, members will decide what items will be put on the agenda. The goal is to facilitate open dialogue and ensure that all areas of concern are discussed and agreed upon.

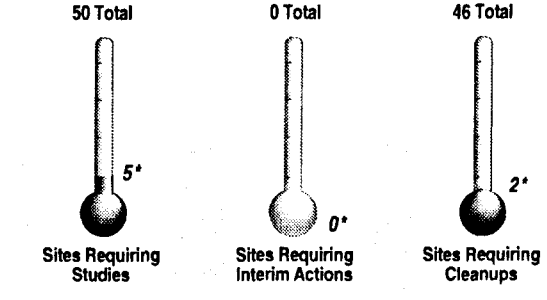
The installation continues to focus on accelerated cleanup and on completing the RI/FS. An on-site laboratory is being used to analyze soil gas samples and provide analytical results quickly, allowing decisions to be made sooner. The focus of current work is on well-head treatment for groundwater.

PLAN OF ACTION

- Continue transition from a TRC to a RAB
- Continue to hold teleconferences and quarterly meetings with Remedial Project Managers to effectively resolve issues of concern
- Use Superfund Accelerated Cleanup Model to accelerate cleanup of soil and groundwater at the installation

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 50**
- **Estimated Date of Completion = 2008**



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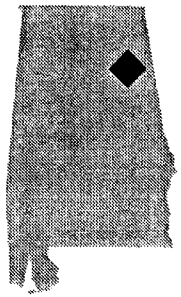
ANNISTON ARMY DEPOT

NPL

(SOUTHEAST INDUSTRIAL AREA)

Size:	600 acres
Mission:	Maintain combat vehicles
HRS Score:	51.91; Placed on NPL in 1989
IAG Status:	IAG signed in June 1990
Contaminants:	VOCs, heavy metals, phenols, petroleum products, acids, and caustics
Media Affected:	Groundwater and soil
Funding to Date:	$20.7 million



Anniston, Alabama

CLEANUP BACKGROUND

Since 1948, the Anniston Army Depot Southeast Industrial Area has been repairing and modifying combat vehicles and artillery equipment. Recently, the installation has focused on rebuilding armored vehicles. Installation operations involve painting, degreasing, and plating that generate wastes containing VOCs, phenols, heavy metals, and petroleum distillates. Previous waste management practices included disposal in unlined pits, trenches, and lagoons. Environmental studies at 44 sites ongoing since FY78 revealed soil and groundwater contamination. The initial Remedial Investigation and Feasibility Study (RI/FS), completed in FY89, confirmed that soil and groundwater were contaminated with VOCs, metals, and phenols.

An unlined lagoon was closed in FY79 from which two million gallons of waste were pumped. Waste from the lagoons was consolidated in a lined lagoon. Interim Actions at RCRA Corrective Action sites from FY82 to FY83 resulted in removing 62,000 tons of sludge and contaminated soil. The sludge and soil were removed from the lined lagoon and the trenches and disposed of off-site.

Since FY89, the installation has been removing USTs. Several USTs found to be leaking may be responsible for soil and groundwater contamination with petroleum products.

From FY87 to FY90, four Interim Remedial Actions involved installation of groundwater extraction and treatment systems. Three of the systems use a total of 16 groundwater extraction wells. Treatment for the system includes air stripping to remove VOCs and carbon absorption to remove phenols. The fourth system collects groundwater from an underground spring in a French drain. Treatment for this system includes air stripping to remove VOCs followed by ion exchange to remove metals.

The installation conducted an emergency Removal Action in FY93 to remove approximately 82,200 pounds of sludge from an abandoned treatment tank at a former industrial wastewater treatment plant. The sludge was contaminated with VOCs, metals, and petroleum products.

FY94 CLEANUP PROGRESS

The Army initiated studies of the Groundwater Operable Unit (OU) to evaluate the need for a systems upgrade. As a result of these studies, the Army Corps of Engineers completed the design and awarded a contract to convert an existing monitoring well at the fence line into an extraction well, tying it into the Groundwater OU.

RI/FS work continued, including a dye tracing study defining contaminant migration in groundwater, and a study determining whether the unlined lagoon closed in FY79 requires further cleanup.

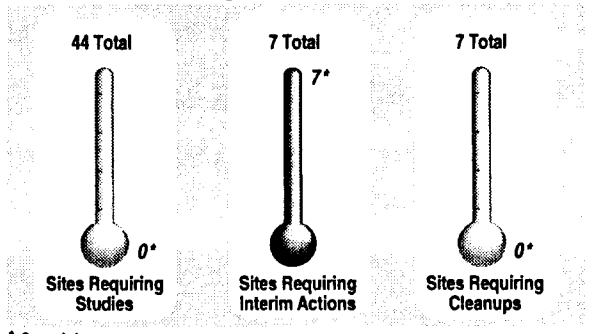
The installation also removed two USTs.

PLAN OF ACTION

- Remove two USTs in FY95
- Complete study of the Groundwater OU; a pilot study scheduled for FY95 should result in a design for the systems upgrade of the groundwater extraction and treatment system
- Finalize Phase I RI and initiate a Phase II RI/FS, and incorporate results into Baseline Risk Assessment
- Initiate emergency Removal Action in FY95 for three areas of lagoons closed in FY79

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 44
- Estimated Date of Completion = 2030



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Army Research, Development, and Engineering Command

NPL

(Picatinny Arsenal)

Size:	6,500 acres
Mission:	House the Army Armaments Research, Development, and Engineering Command
HRS Score:	42.92; Placed on NPL in 1990
IAG Status:	IAG signed in July 1991
Contaminants:	VOCs, explosives, and heavy metals
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$46.3 million

Rockaway Township, New Jersey

CLEANUP BACKGROUND

In 1880, Dover Powder Depot, now known as Picatinny Arsenal, was established to store gunpowder for manufacturing ammunition. From 1898 to the early 1970s, the installation loaded propellants into ammunition, manufactured propellants such as rifles and coastal artillery, and manufactured ammunition and explosives. The installation currently houses the Army Armaments Research, Development, and Engineering Command.

A Preliminary Assessment and Site Inspection identified 156 sites in FY87. Prominent site types include a burning ground, landfills, Underground Storage Tanks (UST), former production areas, and testing sites. Releases of VOCs, explosives, and heavy metals from these sites have contaminated groundwater, surface water/sediments, and soil.

A Remedial Investigation and Feasibility Study (RI/FS) work plan was approved by EPA in FY91. The RI/FS work plan identified 156 CERCLA sites which will be studied in three RI phases and the Burning Ground RI study. Burning Ground RI field activities were completed in FY93. The installation began Phase I RI field work for 50 CERCLA sites in FY93. Phase II RI/FS project plans for an additional 51 sites were submitted in FY93.

Interim Actions have consisted of removing USTs, installing a groundwater extraction and treatment system to treat contaminated groundwater, and removing drums at the installation. The installation has also received funding for a waterline extension to nearby residents.

The Technical Review Committee (TRC) was formed in FY91 and meetings are held every three months. The TRC consists of representatives from the installation, EPA, the state, county, and surrounding communities. The meetings are open to the public and the media.

FY94 CLEANUP PROGRESS

The Burning Ground final draft RI report was submitted for EPA review. Phase I RI field work was completed. The installation also continued to identify sites eligible for RCRA closure and USTs for removal.

The installation continued to operate the groundwater treatment system to remove contamination. The installation also conducted a wetlands survey to delineate the location, number, and size of wetlands.

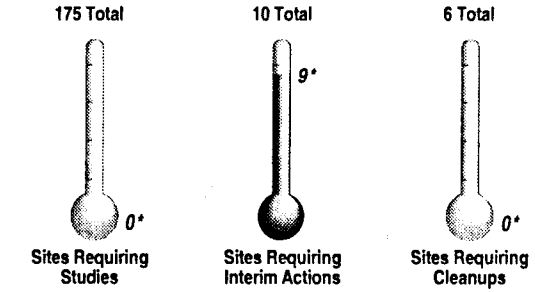
The installation began a Removal Action at the Defense Reutilization and Marketing Office storage yard, and is also investigating a screening technique to detect low concentrations of explosives and VOCs in groundwater and soil.

PLAN OF ACTION

- Finalize Burning Ground RI report in FY95
- Submit Burning Ground FS report in FY96
- Complete Phase I draft RI report in FY95 and finalize the RI report in FY96
- Complete Phase II RI field work in FY95 and submit Phase II draft RI report in FY96
- Submit project plans for all remaining sites in FY96

Project Accomplishments

- Total Number of Sites = 175
- Estimated Date of Completion = 2020



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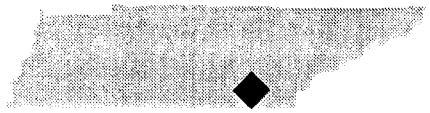
ARNOLD ENGINEERING DEVELOPMENT CENTER

PROPOSED NPL

Size:	32,000 acres
Mission:	Simulate flight conditions
HRS Score:	50.00; Proposed for NPL in August 1994
IAG Status:	None
Contaminants:	Trichloroethene, tetrachloroethene, 1,1,1-trichloroethane, PCBs, heavy metals, acids, and petroleum hydrocarbons
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$32.6 million



Coffee and Franklin Counties, Tennessee

CLEANUP BACKGROUND

Arnold Engineering Development Center is a test facility for the Air Force Materiel Command, and its primary mission is to simulate actual flight conditions in aerodynamic, propulsion, and space ground-test facilities. Arnold also conducts research and applies new technology to improve environmental facilities and associated testing techniques and instrumentation.

Arnold is currently proposed for the NPL because historical operations have contaminated groundwater, surface water/sediments, and soils at the installation. Primary site types at the installation include: a landfill, chemical treatment plant, main testing area, leaching pit, a leachate burn area, fire training area, and a consolidation of Solid Waste Management Units (SWMU). The chemical treatment plant and the leaching pit have contributed to soil and groundwater contamination with VOCs. Releases from the main testing area have contributed to PCB contamination of surface water/sediments.

To date, environmental studies identified 24 sites. Of the 24 sites, four sites required further field investigation; eight sites had Interim Remedial Actions (IRA) initiated; and two sites began Remedial Design (RD) activities.

During FY89, a RCRA Facility Assessment identified 110 SWMUs. Of the 110 SWMUs, RCRA Facility Investigations (RFI) were initiated for 13 SWMUs and additional sampling was required for 57 SWMUs. Between FY88 and FY92, the installation removed 33 Underground Storage Tanks (UST).

The Technical Review Committee (TRC) was formed in FY91. The installation held informal bimonthly meetings to discuss outstanding issues.

FY94 CLEANUP PROGRESS

Arnold worked closely with EPA and state regulatory agencies to meet all regulatory requirements. Through the conversion of the TRC to a Restoration Advisory Board (RAB), this commitment has resulted in several partnering sessions where issues have been discussed and resolved.

The installation continued IRAs. At one site, a 14-acre landfill, a groundwater extraction and treatment system has been installed. At another site, a 90-acre landfill, another groundwater treatment system was installed, the area was fenced, and city water was provided to nearby residents. At a leach pit, low temperature thermal treatment successfully remediated 6,000 cubic yards of excavated soil contaminated with acids and chlorinated VOCs. A skid-mounted air stripper was also installed to treat contaminated surface water. Heavy metals and PCB-contaminated soil at the fire training area and overflow pond were consolidated and capped, and at a leachate burn area, 4,500 cubic yards of petroleum hydrocarbons and VOC-contaminated soil were treated by ex-situ biological treatment. At two sites, a total of 17 acres of asbestos debris was excavated in an on-site asbestos landfill. At the steam plant and ash pits, 100,000 gallons of heavy metals and PCB-contaminated surface water were removed and treated with a reverse osmosis technology; and at four hazardous waste facilities RCRA closure was approved.

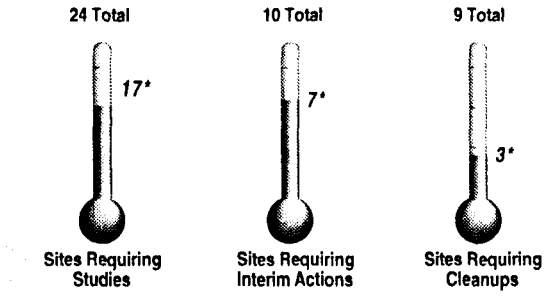
Several environmental studies were completed including: the Preliminary Assessments for all remaining sites, the additional sampling for the 57 SWMUs, and the RFI field work for the 13 SWMUs.

PLAN OF ACTION

- Complete conversion from TRC to RAB in FY95
- Complete IRAs
- Submit RFI report for 13 SWMUs in FY95
- Continue removal of four USTs in FY95
- Complete RD activities for two sites in FY95

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 24**
- **Estimated Date of Completion = 2010**



* Complete

ATLANTIC CITY AIR NATIONAL GUARD BASE

NPL

(ATLANTIC CITY INTERNATIONAL AIRPORT)

Size:	280 acres
Mission:	Air National Guard Training
HRS Score:	39.65; Placed on NPL in August 1990
IAG Status:	IAG signed in July 1993
Contaminants:	VOCs, semi-VOCs, PCBs, lead, copper, and pesticides
Media Affected:	Groundwater and soil
Funding to Date:	$1.1 million

Pleasantville, New Jersey

CLEANUP BACKGROUND

The Atlantic City International Airport is a Federal Aviation Administration (FAA) facility. The 177th Fighter Group, New Jersey Air National Guard is a tenant at the FAA Facility. The installation's mission is to maintain fighter aircraft on continuous peace time air defense alert for United States air sovereignty. During wartime, the mission is to mobilize personnel and equipment for deployment to designated locations and employment of air-to-air munitions in strategic defense of the North American continent. The FAA has identified over 20 areas of concern, including fire training, Underground Storage Tanks (UST), landfills, and a jet fuel misting area.

A Preliminary Assessment for the installation completed in FY90 identified the following areas: Tanker Defueling Area; Aircraft Defueling Area; Old Aircraft Washrack; Transformer Storage Area; Liquid Waste Holding Area; and Drum Burial Area. Contaminants, including tetrachloroethane, dichloroethene, and benzene were detected in groundwater. In addition, PCBs and VOCs were detected in soil. In FY93, a draft Site Inspection (SI) report was completed for all sites; two sites are being addressed by the FAA.

Interim Actions conducted in FY89 and FY90 removed approximately 62 tons of PCB-contaminated soil and contaminated cement debris from the Transformer Storage Area.

FY94 CLEANUP PROGRESS

On August 9, the FAA, the Air National Guard Readiness Center, and the New Jersey Air National Guard held a joint meeting to determine the cleanup status of Air National Guard sites.

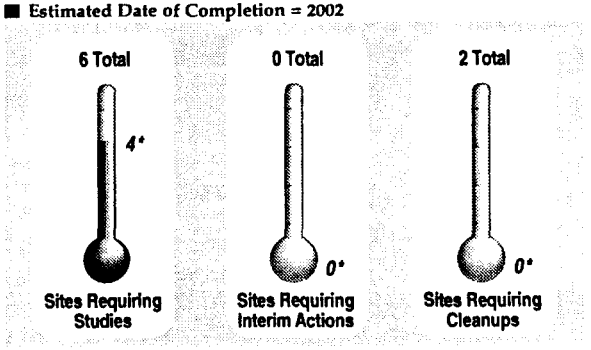
The installation addressed comments from EPA, the state of New Jersey Department of Environmental Protection and Energy, and the Air National Guard Readiness Center on the SI Report. The FAA is currently reviewing the final SI Report. At the completion of the SI phase of the investigation, the remaining Air National Guard sites will be turned over to the FAA for further investigation. The installation also conducted soil and groundwater sampling.

PLAN OF ACTION

- Initiate Remedial Investigation activities by FAA for Air National Guard sites in FY96
- Negotiate and sign a Memorandum of Agreement between the FAA and the Air National Guard Readiness Center

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 6
- Estimated Date of Completion = 2002



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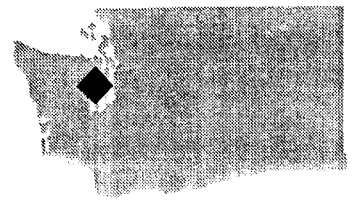
BANGOR NAVAL SUBMARINE BASE

NPL

Size:	6,692 acres
Mission:	Provide a support base for Trident submarines
HRS Score:	30.42 (Bangor Ordnance Disposal); Placed on NPL in 1987 55.91 (Bangor Naval Submarine Base); Placed on NPL in 1990
IAG Status:	Federal Facility Agreement signed in January 1990
Contaminants:	TNT and RDX residues, Otto fuel residues, pentaerythrol tetranitrate, ammonium picrate, electroplating wastes, mercury, PCBs, pesticides and herbicides
Media Affected:	Groundwater and soil
Funding to Date:	$40.8 million



Silverdale, Washington

CLEANUP BACKGROUND

From the early 1940s until it was commissioned as a submarine base in 1971, Bangor Naval Submarine Base was used as a munitions handling, storage, and processing installation. Most of the environmental contamination at the installation originates from operations such as explosive ordnance detonation, demilitarization, and disposal.

The installation conducted an Initial Assessment Study in FY83 that identified ten sites requiring further investigation because of suspected soil and groundwater contamination. One of the sites, the Explosive Ordnance Disposal Test Range (Site A), was placed on the NPL in FY87. In FY90, the remaining portion of the installation was placed on the NPL, and the EPA requested additional studies at 22 sites. The sites were grouped into seven Operable Units (OU) for a Remedial Investigation and Feasibility Study (RI/FS).

The RI/FS for OU1 was completed in FY91, and the Record of Decision (ROD) was signed in FY92. The cleanup involves an innovative technology, passive soil washing to remove explosives residue and an extraction and treatment system using advanced oxidation treatment. An Interim ROD for OU2 was signed in FY91 for an Interim Remedial Action (IRA) to contain the spread of contaminated groundwater. The cleanup will consist of an extraction and treatment and reintroduction of treated groundwater into the aquifer.

In FY92, the installation conducted Removal Actions at OU7 that involved the removal and disposal of buried drums from two sites.

The installation completed RI/FS activities for OUs 3, 4, 5, and 6 in FY93. The Navy and regulatory agencies signed RODs for OU3 and OU5.

The Technical Review Committee (TRC) for the installation was formed in FY87 and has met regularly since its formation. The installation prepared the Community Relations Plan for the installation in FY93. A local citizens group has obtained a grant from EPA and the state to allow community oversight of the installation cleanup.

FY94 CLEANUP PROGRESS

The installation held partnering sessions with the regulatory agencies to expedite the cleanup of contaminated areas. The meetings have streamlined the decision-making process by reducing the number of deliverables because issues are resolved in person rather than through formal review comments, responses, and revisions.

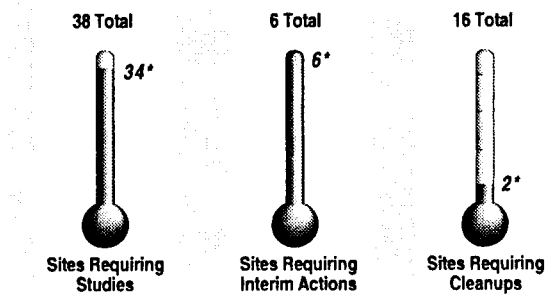
The installation completed the RI/FS for OU2 and signed a ROD for soil removal and enhancement of the existing groundwater containment and treatment system. The installation also signed a no action ROD for OU4. For OU6, the installation signed a ROD for the use of an innovative technology, composting, to bioremediate contaminated soils. The installation also completed the RI/FS for OU7 and conducted a Removal Action consisting of the removal of drums and the reconstruction of a bermed area at a site within OU7. An accelerated Removal Action for the newly established OU 8 was also conducted.

PLAN OF ACTION

- Conduct a composting (bioremediation) treatability study for OU6 in FY95
- Complete Remedial Design (RD) for OUs 2 and 6 in FY95
- Implement concurrent development of RDs and the ROD for sites within OU7 in FY95
- Complete site investigations at the three remaining UST sites in FY95, with Corrective Action Plans, where necessary, to be completed in FY96
- Convert the TRC to a Restoration Advisory Board in FY95

PROJECT ACCOMPLISHMENTS

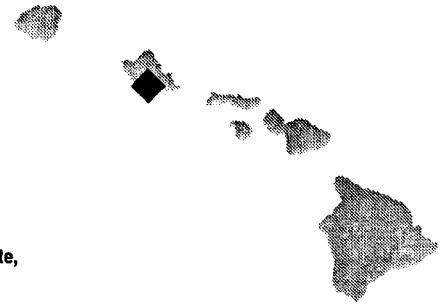
- Total Number of Sites = 38
- Estimated Date of Completion = 2003



* Complete

BARBERS POINT NAVAL AIR STATION

Size:	3,759 acres (3,759 acres excess)
Mission:	Maintain and operate facilities and provide services and material support to aviation activities and units of the operating forces
HRS Score:	N/A
IAG Status:	None
Contaminants:	PCBs, heavy metals, petroleum hydrocarbons, ethyl acetate, and hexane
Media Affected:	Groundwater and soil
Funding to Date:	$14.3 million



Barbers Point, Hawaii

CLEANUP BACKGROUND

In the early 1980s, a Preliminary Assessment and Site Inspection (PA/SI) identified nine sites at Barbers Point Naval Air Station. As a result of the PA/SI, the Coral Sea Road Coral Pit site was the only site requiring further investigation. In FY93, the SI was completed for the Coral Sea Road Coral Pit site. The primary contaminants identified include PCBs and heavy metals affecting groundwater and soil.

Underground Storage Tanks (UST) were removed in FY92. A UST survey was performed in FY93 that identified abandoned USTs, which are being addressed as one UST site.

FY94 CLEANUP PROGRESS

In February, public involvement was enhanced with formation of the Restoration Advisory Board (RAB). The RAB is composed of representatives of the community associations and neighborhood boards surrounding the installation as well as other community organizations such as Friends for Ewa, Save the Ewa Beach Ohana, and Hawaii Thousand Friends. Since the RAB has been 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), and CERFA documents for review as well as Remedial Investigation and Feasibility Study (RI/FS) documents.

The BRAC Cleanup Team (BCT) was formed. The cleanup process has been accelerated through BCT meetings, on-site visits, and concurrent review of documents, including the EBS, the BCP, and CERFA document submittals. The BCP identified 50 areas of concern; approximately 18 of the 50 sites requiring further investigation.

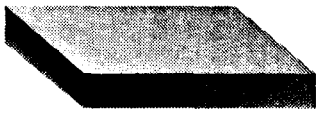
The installation completed the CERFA EBS Report. Currently, all property is classified as category seven and requires further investigation because the installation has not determined whether the groundwater on the base has been impacted. The classification of property will not change until the groundwater investigation is completed.

The installation began the RI/FS for the Coral Sea Road Coral Pit site and investigation of groundwater.

PLAN OF ACTION

- Consider the use of generic remedies and Removal Actions with boilerplate Records of Decision (ROD)
- Complete a draft Land Reuse Plan for the installation by April 1995
- Complete groundwater investigation in FY95
- Summarize results of the investigation of the sites identified for further investigation in interim summary reports in FY96; the BCT will determine further actions required at the sites according to the summary reports; the installation anticipates that no further action will be recommended for several sites
- Proceed with testing and cleanup of petroleum-contaminated soil at 21 UST sites; soil will be remediated at a commercial facility by low temperature thermal desorption; the installation is also proceeding with plans and specifications to remove abandoned and not in service USTs with actual removals anticipated for FY96

CERFA CLEAN ACREAGE



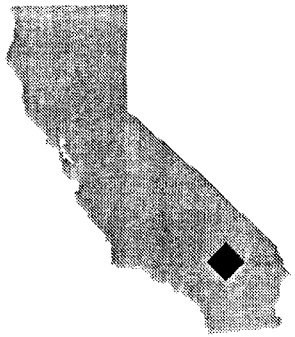
Acreage Available for Transfer –	0*
Total Acreage –	3,759

** Environmental Condition of Property Categories 1-4*

BARSTOW MARINE CORPS LOGISTICS BASE

NPL

Size:	5,688 acres
Mission:	Maintain, repair, rebuild, store, and distribute supplies and equipment; originally conducted industrial operations
HRS Score:	37.93; Placed on NPL in November 1989
IAG Status:	Federal Facility Agreement signed in October 1990
Contaminants:	Heavy metals, PCBs, petroleum hydrocarbons, pesticides, herbicides, and VOCs
Media Affected:	Groundwater and soil
Funding to Date:	$42.1 million



Barstow, California

CLEANUP BACKGROUND

Initial Assessment Studies and other investigations conducted between FY83 and FY90 identified 38 CERCLA sites and two 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 six Operable Units (OU). Site types include sludge disposal areas, plating waste disposal areas, low-level radioactive storage areas, spill sites, and evaporation ponds.

OUs 1 and 2 address groundwater contamination at the Yermo and Nebo Annexes, respectively. An Action Memorandum was completed in FY89 for installation of an activated carbon groundwater treatment system to address VOCs in the Yermo drinking water system. Treatment will continue until FY97. An Interim Remedial Action (IRA) was completed in FY93 at OU2 that provided potable water to nearby residents.

OUs 3, 4, 5, and 6 address contaminated soil at previously identified sites. A Removal Action involving the removal of industrial waste sludge was completed during FY93 at the Sludge Waste Disposal Area within OU3, and at the Sludge Storage Area within OU5. A treatability study using a pilot extraction well and air sparging was completed at another site to determine the groundwater recovery rate necessary to control off-base migration of a contaminant plume. The percolation ponds at Site 35 continue to be aerated, and the Marine Corps installed a filter in FY93 to remove solvents from water before discharging to the ponds.

At UST Site 01, the installation removed 41 abandoned USTs during an IRA in FY92. UST Site 02 consists of approximately 70 additional USTs that the California Regional Water Quality Control Board has required to be closed.

A Technical Review Committee was formed in FY91. The installation also prepared the Community Relations Plan and established an Information Repository and Administrative Record during FY91.

FY94 CLEANUP PROGRESS

The installation initiated a Removal Action at a chemical storage area site within OU4 to excavate and dispose of contaminated soil.

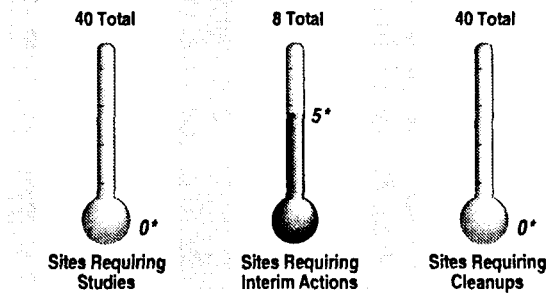
The installation continued to conduct Remedial Investigation and Feasibility Study (RI/FS) activities at 38 sites. EPA Region 9 continued to conduct a RCRA Facility Assessment (RFA) at the installation. Sites identified upon completion of the RFA will be studied under an RI/FS.

PLAN OF ACTION

- Complete RIs for OUs 1 through 4 in FY95 and for OUs 5 and 6 in FY96
- Complete the FS for OUs 1 and 2 in FY96 and for OUs 4 through 6 by FY97
- Prepare a Record of Decision for OUs 1 through 4 during FY96 and for OUs 5 and 6 during FY97
- Complete Remedial Designs for OUs 1 and 2 during FY96 and for OUs 3, 4, 5, and 6 during FY97
- Implement groundwater extraction and air sparging at OU1 and OU2 in FY97
- Complete UST Site 01 Corrective Actions in FY98
- Complete UST Site 02 investigation in FY96 and implement Corrective Measures, if necessary, during FY97

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 40
- Estimated Date of Completion = 2003

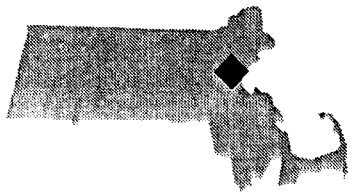


* Complete

BEDFORD NAVAL WEAPONS INDUSTRIAL RESERVE PLANT

NPL

Size:	46 acres
Mission:	Design, fabricate, and test prototype weapons and equipment; government-owned, contractor-operated
HRS Score:	50.00; Placed on NPL in May 1994
IAG Status:	None
Contaminants:	Acids, BTEX, incinerator ash, industrial wastes, paints, petroleum/oil/lubricants, photographic wastes, solvents, and VOCs
Media Affected:	Groundwater and soil
Funding to Date:	$4.6 million



Bedford, Massachusetts

CLEANUP BACKGROUND

The Bedford Naval Weapons Industrial Reserve Plant produces and tests prototype weapons and equipment, such as missile guidance and control systems. Three prominent sites at the installation include the following: the Old Incinerator Ash Disposal Areas site, containing soils contaminated with ash and heavy metals; the Components Laboratory Fuel Oil Tank site, containing soils contaminated with petroleum/oil/lubricants; and the Northwest Groundwater Plume site, containing groundwater contaminated with a plume of VOCs detected at concentrations above drinking water standards. Remedial Investigation and Feasibility Study (RI/FS) activities began in FY88.

In cooperation with the Massachusetts Department of Environmental Protection, the installation implemented a Remedial Action to contain and remediate the VOC groundwater plume. The action is a Short Term Measure as defined under state law, meaning it is designed to prevent or eliminate an imminent hazard. The action includes a groundwater extraction and treatment system preventing the migration of the VOC contaminant plume into the public water supply. The installation is expediting construction of the treatment system by using an alternative contract vehicle.

The installation developed a Community Relations Plan (CRP), and formed the Technical Review Committee (TRC) in FY89. The installation updated the CRP in FY92.

FY94 CLEANUP PROGRESS

The installation converted the TRC to a Restoration Advisory Board (RAB) to facilitate decision-making at the installation. The installation notified TRC members and met with EPA to develop a plan of action for increasing public involvement in the RAB.

In May, the installation was placed on the NPL, primarily because of the Northwestern Groundwater Plume site.

Work continued on the Phase II RI/FS to further characterize soil contamination, locate sources of the VOC groundwater plume, and characterize the migration of contaminants in groundwater. Activities included collecting and analyzing sediment samples from nearby wetlands and creeks to determine potential off-base impacts, and collecting data supporting Ecological Risk Assessments.

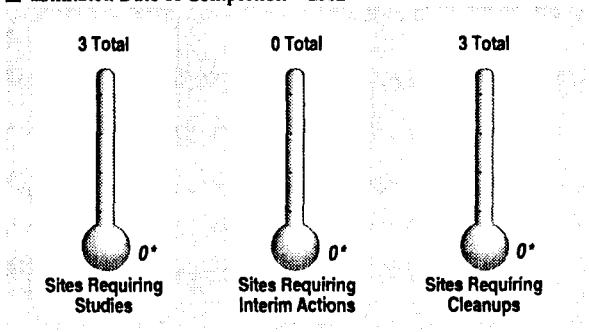
The installation also completed the Remedial Design (RD) for the groundwater extraction and treatment system for the Northwest Groundwater Plume site.

PLAN OF ACTION

- Complete Phase II RI/FS for the three CERCLA sites in FY95
- Investigate a fourth potential CERCLA site identified during the Phase II RI/FS
- Complete RD for the Old Incinerator Ash Disposal Areas site and the Components Laboratory Fuel Oil Tank site in FY96; complete Remedial Actions in FY97
- Construct the groundwater extraction and treatment system for the Northwest Groundwater Plume site, in FY95; the system is expected to operate for at least 10 years
- Continue informal partnering with the Massachusetts Department of Environmental Protection and EPA

PROJECT ACCOMPLISHMENTS

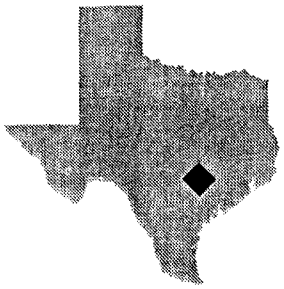
- Total Number of Sites = 3
- Estimated Date of Completion = 2002



* Complete

BERGSTROM AIR FORCE BASE

Size:	3,216 acres (2,886 acres excess)
Mission:	Inactive; formerly housed the 67th Reconnaissance Wing, 12th Air Force Headquarters, 12th Tactical Intelligence Squadron, 712th Air Support Operations Center, 10th Air Force Reserve, and 924th Fighter Group
HRS Score:	N/A
IAG Status:	None
Contaminants:	VOCs, pesticides, petroleum hydrocarbons, metals, and low-level radioactive waste
Media Affected:	Groundwater and soil
Funding to Date:	$42.8 million



Austin, Texas

CLEANUP BACKGROUND

During its operation, beginning in 1942, Bergstrom Air Force Base served to maintain troop carrier units. In July 1991, the BRAC Commission recommended the closure of Bergstrom and the retirement of the assigned RF-4 aircraft. Existing Air Force Reserve units will be maintained in an enclosed area when the installation is converted to a civilian airport. All other mission activities were inactivated or relocated, and the installation was closed in late FY93.

The Land Reuse Plan for the installation was developed to establish the city of Austin Bergstrom International Airport, which should open in 1998. The city is currently constructing the airport.

Environmental studies since FY83 have identified 30 CERCLA and 52 RCRA sites. Site types include Underground Storage Tanks (UST), landfills, fuel spill areas, pesticide evaporation pits, a sludge weathering pit, aboveground storage tanks, fire training areas, and a radioactive waste disposal area. Primary contaminants include petroleum hydrocarbons, metals, VOCs, and pesticides, which have been released to groundwater and soil.

The installation began Remedial Investigation and Feasibility Study (RI/FS) activities in FY83. In FY93, an Interim Remedial Action was initiated that included the removal of 27 USTs.

The installation completed the Environmental Baseline Survey in FY93.

FY94 CLEANUP PROGRESS

The installation formed the Restoration Advisory Board (RAB). The RAB has 30 members, and another 70 people have requested that they be included on the RAB mailing list.

The installation entered into a partnering agreement in FY94. The Air Force Base Conversion Agency (AFBCA) signed a Memorandum of Understanding with the state regulatory agency, EPA, and the Air Force Center for Environmental Excellence (AFCEE) regarding site management and site characterization. The installation also conducted weekly demolition and construction status meetings with the city of Austin, the state regulatory agency, EPA, AFCEE, and AFBCA.

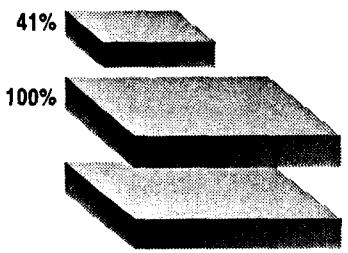
The BRAC Cleanup Team (BCT) was formed and has been involved in concerns regarding the city of Austin's access to construction areas. To date, the city has identified 28 construction areas. The city formally requested access to all of construction area 1 by November 3, 1994. The BCT met to discuss the possibility of rearranging sites to be investigated to reflect the city's needs; however, the BCT determined that environmental investigations could not be completed in construction area 1 by November 3, 1994. AFBCA had understood that the city had previously committed to working in construction area 1 with restrictions on those sites under investigation. To minimize similar scheduling conflicts in the future, AFCEE has investigated rearranging the remaining site investigations to reflect construction areas.

To date, Interim Actions have consisted of removing contaminated soils, low-level radioactive wastes, USTs, and aboveground storage tanks.

PLAN OF ACTION

- Continue cleanup of sites, and Solid Waste Management Units in accordance with the agreed AFCEE schedule for construction of the Bergstrom International Airport
- Continue environmental studies at the CERCLA, RCRA, and UST sites in FY95
- Continue removal of USTs and oil-water separators in FY95

CERFA CLEAN ACREAGE



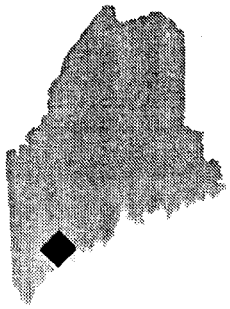
Concurred CERFA Clean Acreage –	0
Proposed CERFA Clean Acreage –	1,323
Acreage Available for Transfer –	3,216 *
Total Acreage –	3,216

** Environmental Condition of Property Categories 1-4*

BRUNSWICK NAVAL AIR STATION

NPL

Size:	7,259 acres
Mission:	Provide facilities, services, materials, and aircraft for submarine warfare
HRS Score:	43.38; Placed on NPL in July 1987
IAG Status:	Federal Facility Agreement signed in 1989 and revised in 1990 to include the state of Maine
Contaminants:	DDT, PCBs, PAHs, VOCs, benzene, and xylenes
Media Affected:	Groundwater and soil
Funding to Date:	$28.1 million



Brunswick, Maine

CLEANUP BACKGROUND

Since FY83, environmental studies identified 19 sites at the Brunswick Naval Air Station. Prominent site types at the installation include: landfills; a groundwater plume contaminated with VOCs; and two Underground Storage Tank (UST) sites. Installation landfills were used to dispose wastes such as wastewater treatment sludge, paints, solvents, medical supplies, pesticides, petroleum products, and photographic and industrial chemicals.

The contaminated groundwater plume, known as the Eastern Groundwater Plume, is believed to be associated with the following sources: (1) a former fire training area consisting of an unlined pit used to burn waste oils and solvents; (2) three USTs formerly used to store petroleum products and waste solvents; and (3) a waste pit used to dispose of transformer oils, battery acids, caustics, VOCs, solvents, and paint thinners. The installation and EPA signed a Record of Decision (ROD) in FY92 for an Interim Remedial Action to extract and treat the contaminated groundwater.

The installation removed or replaced many USTs, and work has begun on Corrective Action designs.

In FY87, an Administrative Record and Information Repository were established for the installation. A Technical Review Committee (TRC) was formed in FY88, providing a forum for regular involvement by the community and federal and state regulatory agencies in the cleanup decision-making process. The Community Relations Plan was completed in FY88.

FY94 CLEANUP PROGRESS

Cleanup progress at the installation focused on implementing Interim Actions to accelerate the process, and fostering the development of innovative cleanup technologies. In addition to the regular quarterly meetings, the Navy scheduled several technical meetings with the TRC to expedite decision-making and reach consensus on site management and characterization.

The installation completed a Removal Action at Site 17, the former pesticide shop, where DDT contamination was detected in soils and unfiltered groundwater samples. No further action is planned for the site, except Long-Term Monitoring of groundwater.

The installation also tested an innovative bioremediation technology that uses a methanogenic process to clean up DDT in soils.

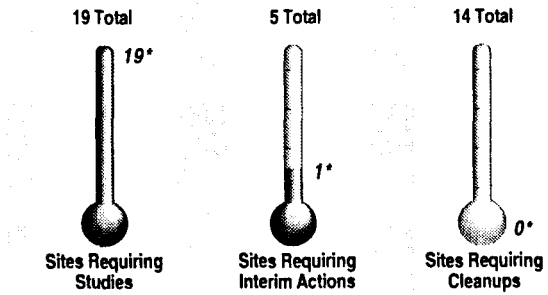
The installation removed more USTs at the Fuel Farm UST site. At the Navy Exchange service station UST site, the Navy completed pilot operation and began full-scale operation of an air-sparging system to remediate petroleum hydrocarbon contamination in soils. An Interim Remedial Action for the Eastern Groundwater Plume site was completed that consists of (1) extraction and treatment of contaminated water to remove iron, manganese, and VOCs and (2) subsequent discharge of treated water to the public wastewater treatment plant.

PLAN OF ACTION

- Prepare a limited action Proposed Plan and ROD for one landfill site during FY95
- Prepare a final Proposed Plan and ROD for three sites suspected to be sources for the Eastern Groundwater Plume
- Perform source investigations at a disposal site where incinerator ash, solvents, paint sludges, and refuse are present in trenches; the installation will prepare a final Proposed Plan and ROD for the site during FY97
- Finalize Proposed Plans and RODs for an acid-caustic disposal pit and an explosive ordnance detonation area during FY97
- Begin the process of delisting the installation as an NPL site during FY00
- Continue Long-Term Monitoring of groundwater at Site 17 through FY98

PROJECT ACCOMPLISHMENTS

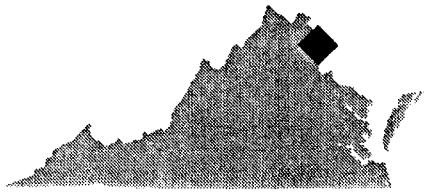
- **Total Number of Sites = 19**
- **Estimated Date of Completion = 2003**



* Complete

CAMERON STATION

Size:	165 acres (165 acres excess)
Mission:	Provide logistical and administrative support to the Military District of Washington and tenant activities
HRS Score:	N/A
IAG Status:	None
Contaminants:	VOCs, heavy metals, petroleum products, PCBs, pesticides, and herbicides
Media Affected:	Groundwater and soil
Funding to Date:	$5.5 million



Alexandria, Virginia

CLEANUP BACKGROUND

In December 1988, the BRAC Commission recommended closure of Cameron Station and relocation of the major logistical and transportation activities to Fort Belvoir, Virginia. Following closure, the entire property will be returned to the community and available for redevelopment.

In FY90, Remedial Investigation and Feasibility Study (RI/FS) activities began at the installation. Sites identified in previous investigations include Underground Storage Tanks (UST), PCB and pesticide storage areas, a landfill, and burn pits. Following completion of the Phase 1 activities, these sites were grouped into 12 Operable Units (OU). Petroleum hydrocarbons are the primary contaminants affecting groundwater.

Interim Actions conducted to date include the removal of USTs, the removal of electrical transformers containing PCBs, installation-wide storm sewer cleanout, and the removal of asbestos.

In FY93, RI/FS activities were completed at the installation. Remedial Design and Remedial Action (RD/RA) work plans were completed, and RDs for six OUs were begun.

The installation formed the BRAC Cleanup Team (BCT) in FY93. The BCT expedited the resolution of issues, avoiding additional costs and delays in the schedule. To assist DoD in the base closure, the Virginia Department of Environmental Quality set up a special team that advises the installation on the cleanup process. This team includes a BCT representative who provides a contact for addressing issues regarding the installation and expedites the document review process. The use of this representative improved communication with the state.

FY94 CLEANUP PROGRESS

A Restoration Advisory Board (RAB) was formed. A coordination meeting was held June 10, 1994, with representatives nominated by the City of Alexandria Reuse Task Force. The meeting agenda included establishing a nominating committee, determining location of future meetings and schedule, and initiating efforts for membership outreach. The RAB meets monthly. RAB members receive information, meeting minutes, and agendas ahead of time, allowing them to provide comments before minutes and agendas are finalized.

The city of Alexandria developed a reuse plan. The plan has served as the road map for future development of the property. The plan provided direction for Risk Assessments and cleanup actions and helped reduce conflicts among proposed and expected uses. The reuse plan divided the installation into two areas: one to be transferred to the city for park use and the other to be sold to a private developer.

Regulatory agencies approved CERFA clean acreage designations. With the exception of nine acres being awarded to two developers of housing for the homeless, no property has been transferred or leased.

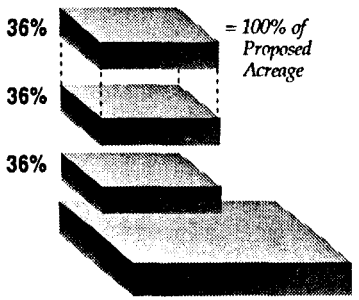
The City of Alexandria has been very active in providing direction for the revitalization of the community. The area surrounding the installation is highly developed with commercial and residential complexes. There are few large undeveloped parcels left in this densely populated area. The city understands the value of this land and its impact to the tax base of the city; subsequently, the City of Alexandria has been proactive in providing direction for the redevelopment of installation property.

The installation also completed Remedial Actions for six OUs.

PLAN OF ACTION

- Complete a Finding of Suitability for Transfer in FY96; upon completion, the installation will be available for transfer
- Close installation on September 30, 1995

CERFA CLEAN ACREAGE



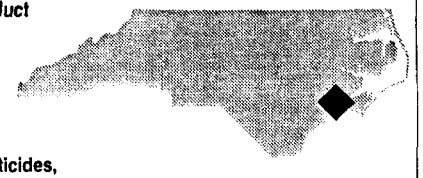
Concurred CERFA Clean Acreage –	59
Proposed CERFA Clean Acreage –	59
Acreage Available for Transfer –	59 *
Total Acreage –	165

** Environmental Condition of Property Categories 1-4*

CAMP LEJEUNE MARINE CORPS BASE

NPL

Size:	151,000 acres
Mission:	Provide housing, training facilities, logistical support and administrative supplies for Fleet Marine Force units and other assigned units; conduct specialized schools and other training as directed
HRS Score:	36.84; Placed on NPL in 1989
IAG Status:	Federal Facility Agreement signed in February 1991
Contaminants:	Battery acid, fuels, lithium batteries, paints and thinners, PCBs, pesticides, herbicides, and used oils
Media Affected:	Groundwater and surface water/sediments
Funding to Date:	$36.1 million



Jacksonville, North Carolina

CLEANUP BACKGROUND

Past investigations at Camp Lejeune Marine Corps Base have identified 84 sites and 50 Underground Storage Tank (UST) sites. Evidence indicates that contaminants released from the past storage and disposal areas at the installation have migrated to the shallow aquifer and several surface water bodies. Primary contaminants include VOCs and heavy metals.

Hadnot Point Industrial Area was identified as an Area of Concern. High levels of organics in the shallow aquifer can be tied to operations within the industrial area. Several plumes also contain high levels of VOCs throughout the installation where the source of groundwater contamination has not been identified. The installation implemented a groundwater extraction and treatment program at Hadnot Point Industrial Area as a presumptive remedy to remove high levels of trichloroethene (TCE) from shallow groundwater.

Camp Lejeune Marine Corps Base has maintained public involvement by fostering an open door policy with the neighboring community. Technical Review Committee (TRC) meetings are held quarterly, and all interested persons from the community are invited to attend.

FY94 CLEANUP PROGRESS

The installation completed two significant cleanups. Utilizing the time-critical removal process, 1,000 cubic yards of soil contaminated with high levels of pesticides were removed from the pesticide mixing area. This action was completed in 70 days. A Record of Decision indicating no further action with monitoring was signed in September. The second cleanup involved the removal of several 55-gallon drums containing pesticides, paint, and mixed waste from Lot 203. Groundwater treatment equipment has been installed at the Hadnot Point Industrial Area, and operation will begin in the near future.

Investigations completed include a Site Inspection (SI) for three sites and a Remedial Investigation and Feasibility Study (RI/FS) for five sites. Seventeen sites have an RI/FS already underway. Sites entered the RI/FS process at different times, according to their relative risk.

The installation also completed the Remedial Design (RD) for two sites. At the RCRA sites, a Corrective Action Plan was completed for nine USTs, and design was completed for eight USTs. Final RODs were signed for five sites; three of those sites required no further action, with monitoring.

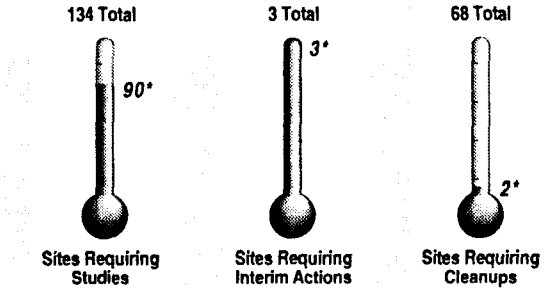
The installation is currently forming federal and state partnerships. The cleanup team consists of representatives from the installation, EPA, the state of North Carolina, and contractors. In July, the team began a formalized partnering approach. The team currently holds facilitated partnering meetings in which members are taught tools for building teams. The cleanup team has been extremely successful in reducing the timeline of site study from the original schedule of 48 months to 23 months.

PLAN OF ACTION

- Solicit interest in forming a Restoration Advisory Board
- Implement innovative technologies at one site, including a pilot test of well aeration to treat VOC groundwater contamination in FY95, with the cleanup contract awarded in March 1996
- Conduct RI/FS activities at seven sites, which will then enter the RD and Remedial Action phase; most sites should require cleanup before the site close out, with Long-Term Monitoring expected at a significant portion of the sites
- Sign RODs for these sites between FY96 and FY99
- Complete RD for 24 sites

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 134**
- **Estimated Date of Completion = 2003**

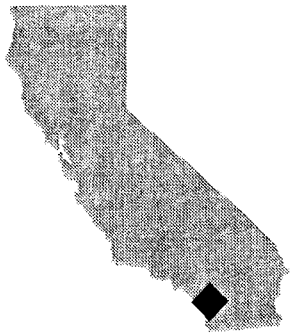


* *Complete*

CAMP PENDELTON MARINE CORPS BASE

NPL

Size:	125,000 acres
Mission:	Provide housing, training facilities, logistic support, and administrative support to Fleet Marine Force Units
HRS Score:	33.79; Placed on NPL in November 1989
IAG Status:	Federal Facility Agreement signed in October 1990
Contaminants:	Pesticides, herbicides, heavy metals, PCBs, and VOCs
Media Affected:	Groundwater and soil
Funding to Date:	$46.3 million



Oceanside, California

CLEANUP BACKGROUND

Environmental contamination at Camp Pendelton Marine Corps Base 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. Wastes generated from these operations were disposed of in various locations throughout the installation. Site types include landfills, surface impoundments, pesticide storage areas, fire training areas, vehicle maintenance areas, and Underground Storage Tanks (UST). Camp Pendelton Marine Corps Base was placed on the NPL after the herbicide 2,4,5-TP (Silvex) was detected in two groundwater wells used to supply water.

Since the initial assessment study was completed in FY84, 61 CERCLA sites, 109 RCRA Corrective Action sites, and 30 RCRA UST sites have been identified at the installation. Fifty-three sites have proceeded to the Remedial Investigation and Feasibility Study (RI/FS) phase.

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, during a 2-week-long meeting held in FY93, regulatory agencies reviewed and evaluated sampling results directly from the analytical data, greatly expediting the decision-making process with respect to the RFA.

The installation prepared the Community Relations Plan and formed the Technical Review Committee (TRC) in FY92. An Administrative Record and Information Repository were established the same year. TRC meetings are held regularly, and communities participate actively in discussions.

FY94 CLEANUP PROGRESS

The sites in the cleanup program have been organized into four groups (Groups A - D) for sites that will proceed to Phase II RI, and two Operable Units (OU) for sites that will not proceed to Phase II RI. The installation continued work on the RIs for Group B, C, and D sites and began work on FS reports for Groups A and B and OUs 1 and 2. The installation recommended no further action for soils at OU1 and implementing an institutional control of groundwater at OU1.

The installation recommended implementing soil washing at the pest control washrack area and the scrap yard to clean up pesticide and PCB-contaminated soil.

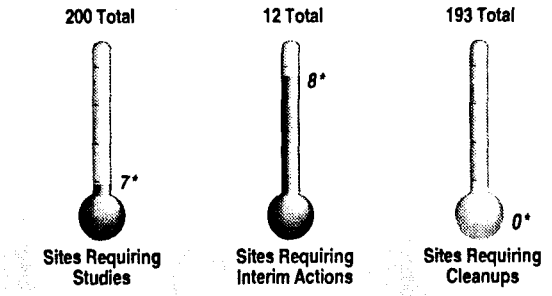
The installation began a Removal Action to remove BTEX-contaminated soils from the fire training areas. It is expected that the removal will constitute the final cleanup for the site. The installation continued to conduct a Site Assessment of the 30 UST sites at the installation. Eleven leaking USTs were removed, and two others have been closed in place.

PLAN OF ACTION

- Complete the soil Removal Action at the fire training areas in FY95
- Begin Removal Actions at the pest control wash area and the scrap yard site in FY95
- Conduct Removal Actions to remove liquids, sludges, and liners from surface impoundments by FY96
- Implement a Removal Action in FY96 for suspected groundwater contamination at the Las Pulgas Landfill and Las Flores Creek
- Complete Remedial Design for a generic remedy to mitigate groundwater contamination at the Site 7 Landfill in FY95 and implement the cleanup in FY96
- Complete the FS, Proposed Plan, and Record of Decision for OU1 in FY95 and for OU2 in FY96
- Complete Corrective Action Plans for four UST sites in FY96, for one site in FY98, for twelve sites in FY99, and for the remaining sites by FY00

PROJECT ACCOMPLISHMENTS

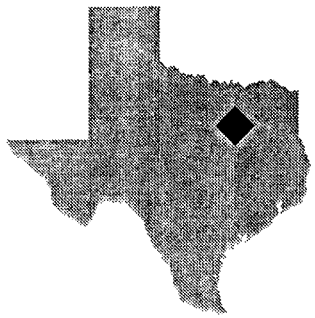
- **Total Number of Sites = 200**
- **Estimated Date of Completion = 2003**



* Complete

CARSWELL AIR FORCE BASE

Size:	3,198 acres (800 acres excess)
Mission:	Inactive; formerly housed the 7th Bombardment Wing, 436th Training Squadron and Detachment 1, and 1365th Audiovisual Squadron
HRS Score:	N/A
IAG Status:	None
Contaminants:	Waste oils, petroleum/oil/lubricants, JP-4 fuel, solvents, trichloroethene cleaners, and low-level radioactive material
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$13.5 million



Fort Worth, Texas

CLEANUP BACKGROUND

In July 1991, the BRAC Commission recommended the closure of Carswell Air Force Base (AFB). The BRAC Commission also recommended the transfer of the assigned B-52 aircraft to Barksdale AFB, Louisiana, and the transfer of the assigned KC-135 aircraft to the Air Reserve Component.

Studies ongoing at the installation since FY84 have identified the following site types: Underground Storage Tanks (UST); landfills; fire training areas; waste burial areas; contaminated groundwater plumes; contaminated ditches; and oil-water separators. The primary contaminant is petroleum hydrocarbons in groundwater, surface water/sediments, and soil. Trichloroethene (TCE) is contaminating groundwater and soils. Low-level radioactive material from buried munitions is potentially contaminating soil.

To date, contaminated soils have been removed, Remedial Investigations (RI) have been completed for several sites, and a treatability study has been completed for a petroleum/oil/lubricant (POL) tank farm.

In FY89, a RCRA Facility Assessment was conducted, and RCRA Facility Investigation activities for 13 Solid Waste Management Units (SWMU) were completed in FY92.

FY94 CLEANUP PROGRESS

The BRAC Cleanup Team (BCT) was formed to accelerate cleanup, help return the property to the community, and prepare the installation property for redevelopment. Regulatory agencies are involved in the decision-making process, and monthly meetings address specific issues. Quarterly meetings are held with all stakeholders to encourage community involvement. The BCT is coordinating the transfer of the property to the Navy by expediting the document review process and resolving issues quickly.

The Restoration Advisory Board (RAB) was formed and focuses on involving the community throughout the cleanup process. An open discussion during each meeting allows all attendees the opportunity to ask specific questions about installation cleanup activities.

An Environmental Baseline Survey (EBS) was completed which identified CERFA clean acreage.

The installation established an agreement with the Aeronautical Systems Center at Wright-Patterson Air Force Base to investigate options for a contaminated groundwater plume from entering sites at Carswell.

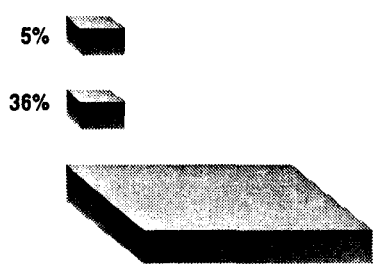
The installation continued several substantial cleanups at a POL tank farm area, a hydrant fueling system area, a fire training area, and a storm water ditch. Several UST removals also were completed. To accelerate cleanup, the study and cleanup phases are conducted simultaneously whenever possible, and concurrent interagency document review is encouraged. Under the Texas risk reduction rules, the installation is also implementing an innovative risk-based approach to bioventing soils. In addition, removal of low-level radioactive material is underway.

The installation initiated a base-wide RI for TCE-contaminated groundwater. RI and Feasibility Study (FS) activities were also initiated for five other sites. Remedial Design (RD) activities were initiated for four sites contaminated with JP-4 fuel from spill areas and pipelines of USTs.

PLAN OF ACTION

- Complete cleanups and Long-Term Monitoring of groundwater at sites where cleanup is underway; cleanups will be completed at non-DoD areas first
- Maintain dialogue with the community and stakeholders through RAB meetings
- Continue partnership with the Aeronautical Systems Center to implement a remedy for the contaminated groundwater plume
- Complete base-wide RI activities and submit a draft RI report in FY95
- Complete RI/FS activities for 5 sites in FY95
- Complete RD and initiate RA activities for four sites contaminated with JP-4 fuel from spill areas and pipelines of USTs in FY95

CERFA CLEAN ACREAGE

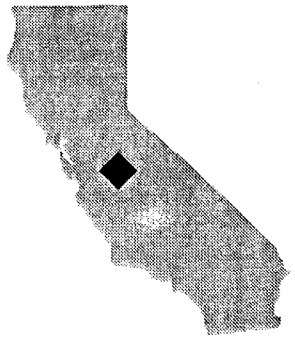


Concurred CERFA Clean Acreage –	0
Proposed CERFA Clean Acreage –	162
Acreage Available for Transfer –	1,146 *
Total Acreage –	3,198

** Environmental Condition of Property Categories 1-4*

CASTLE AIR FORCE BASE

Size:	2,777 acres (2,777 acres excess)
Mission:	Train tanker crews and service KC-135 stratotanker
HRS Score:	37.93; Placed on NPL in 1987
IAG Status:	IAG signed in 1989
Contaminants:	Spent solvents, PCBs, petroleum/oil/lubricants, pesticides, cyanide, and cadmium
Media Affected:	Groundwater and soil
Funding to Date:	$57.6 million



Merced, California

CLEANUP BACKGROUND

In FY84, a Preliminary Assessment and Site Inspection (PA/SI) conducted at Castle Air Force Base identified site types including landfills, Underground Storage Tanks (UST), discharge areas, chemical disposal pits, fire training areas, fuel spill areas, and six PCB spill areas. Groundwater and soil contaminants include spent solvents such as trichloroethene (TCE), as well as petroleum/oil/lubricants (POL), pesticides, cyanide, and cadmium from spills at various sites and leaking USTs. Interim Actions conducted at the six PCB-contaminated spill areas consisted of excavating contaminated soil and off-site disposal. Other Interim Actions consisted of the installation of potable water supply wells, groundwater filtration systems to remove TCE from the groundwater, and the removal of 30 USTs.

In FY86, Remedial Investigation and Feasibility Study (RI/FS) activities were initiated, and sites were grouped into the following four Operable Units (OU): OU1, OU2, source control OU and comprehensive base-wide OU. OU1 and OU2 consist of extraction systems for contaminated groundwater. The source control OU addresses soil contaminated with spent solvents, POL, pesticides, cyanide, and cadmium. The base-wide OU addresses all contaminated sites at the installation. This approach ensures cleanup at all sites and that the necessary reports and documents are submitted to the appropriate federal, state, and local regulatory agencies.

In FY91, the installation submitted Records of Decision (ROD) for OU1 and OU2.

In FY93, additional Areas of Concern (AOC) were identified through aerial photographs, a RCRA Facility Assessment, a contaminant source assessment, and an Environmental Impact Statement. AOCs were incorporated into the source control OU that addresses surface and vadose zone soil contamination. In late FY93, the installation recommended no further action for the six PCB spill sites, and the recommendation was approved by EPA.

In FY92, the BRAC Cleanup Team (BCT) was formed. Communication has been improved through daily telephone conversations with BCT members and regular meetings. The BCT coordinates the review of technical reports to ensure consistency in the documents. The installation identified 215 acres of property as CERFA clean. A portion of this acreage will be transferred to the Bureau of Prisons. Parcels have been leased to private entities for various uses.

FY94 CLEANUP PROGRESS

The installation formed the Restoration Advisory Board (RAB). The RAB consists of four local community members and advertises the bimonthly meetings through community meetings and the local newspaper.

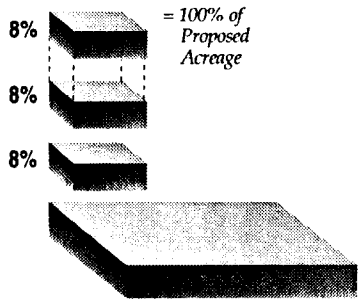
The installation completed Remedial Design (RD) activities at OU1, and initiated the Remedial Action (RA). The RA for OU1 involved two phases: Phase 1 consists of a 500-gallon per minute groundwater extraction and treatment system for contaminated groundwater on-base, and Phase 2 consists of expanding groundwater cleanup into off-base areas. RA activities at OU1 will also include capping inactive production wells and removing abandoned USTs.

The installation continued the RD for OU2, and RI/FS activities at the source control and base-wide OUs. The draft RI/FS report for the base-wide OU was also submitted.

PLAN OF ACTION

- Continue to operate the OU1 and OU2 groundwater extraction and treatment system
- Complete the draft final RI/FS report and the draft final ROD for the source control OU in June FY95; RD and RA activities are planned to begin in FY96 and FY97
- Complete a draft final RI/FS report and the draft final ROD for the base-wide OU in June FY95; RD and RA activities are planned to begin in FY96 and FY97
- Complete closure of installation on September 30, 1995

CERFA CLEAN ACREAGE

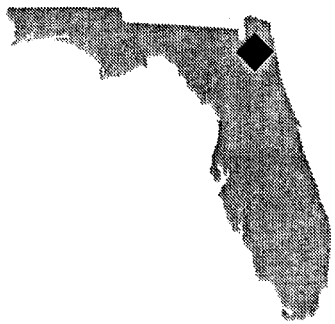


Concurred CERFA Clean Acreage –	215
Proposed CERFA Clean Acreage –	215
Acreage Available for Transfer –	216 *
Total Acreage –	2,777

** Environmental Condition of Property Categories 1-4*

CECIL FIELD NAVAL AIR STATION

Size:	20,171 acres (20,171 acres excess)
Mission:	Provide facilities, services, and material support for maintenance of Naval weapons, aircraft
HRS Score:	31.99; Placed on NPL in December 1989
IAG Status:	Federal Facility Agreement signed in October 1990
Contaminants:	Waste fuel oil, solvents, heavy metals, halogenated aliphatics, phthalate esters, and semi-VOCs
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$6.2 million



Jacksonville, Florida

CLEANUP BACKGROUND

In July 1993, the BRAC Commission recommended the closure of Cecil Field Naval Air Station and relocation of its aircraft, dedicated personnel, and equipment to Marine Corps Air Station, Cherry Point, North Carolina; Naval Air Station, Oceana, Virginia; and Marine Corps Air Station, Beaufort, South Carolina.

Until FY93, the installation's operations included (1) equipment maintenance, (2) fuel and oil storage and disposal, (3) fire training, and (4) target ranges. Groundwater, surface water, and soil contamination resulted from installation operations. Contaminants may have migrated downward to the shallow aquifer, which supplies drinking water to nearby residents. Surface water contamination has occurred in numerous ditches and creeks that drain into several larger nearby water bodies, including Lake Fretwell, Rowell Creek, and Sal Taylor Creek.

In FY85, a Preliminary Assessment (PA) identified 19 sites, and Site Inspections (SI) were completed in FY88 for 17 sites. A Federal Facility Agreement (FFA) was signed in FY91 between the Navy, EPA, and the Florida Department of Environmental Protection (FDEP). The FFA identified potential sources of contamination requiring Remedial Investigation and Feasibility Study (RI/FS) activities and further screening.

In an effort to keep the community informed of the cleanup progress at the installation, a Technical Review Committee (TRC) was formed in FY91. Also in FY91, the installation prepared a Community Relations Plan. TRC and public meetings are held periodically.

FY94 CLEANUP PROGRESS

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. The installation's BRAC Cleanup Team (BCT) was formed. The BCT secured the assistance of a Remedial Action contractor for further investigation and cleanup activities. The installation also completed the draft Environmental Baseline Survey (EBS).

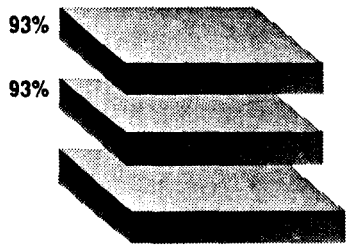
The installation established the Restoration Advisory Board (RAB). The success of the installation's RAB has greatly reduced impediments to the cleanup program. The team approach to solving problems has reduced the amount of time required for the installation's sites to proceed from the investigation phase to the remedial process.

In May, the installation successfully conducted an Interim Remedial Action (IRA) involving removal of a RCRA-permitted storage tank at the seepage pit in the aircraft intermediate maintenance department. The installation also removed approximately 25 percent of the Underground Storage Tanks.

PLAN OF ACTION

- Finalize EBS in early FY95
- Obtain regulatory agency concurrence on the CERFA clean acreage
- Complete IRA for three sites and finalize ROD for four sites in FY95
- Implement bioremediation, an innovative treatment technology, at the old disposal area northwest, and complete cleanup activities at the site in 15 months
- Complete Land Reuse Plan in FY95
- Transfer one section of production and wing activities to Oceana NAS located in Virginia in FY96; transfer Reserves and support wing activity to Beaufort, South Carolina in FY96; transfer another section of production and support wing activities and aircraft intermediate maintenance department activities to Marine Corps Station, Cherry Point, North Carolina

CERFA CLEAN ACREAGE

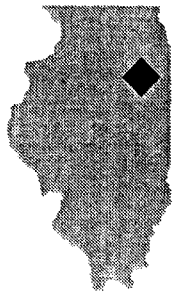


Concurred CERFA Clean Acreage –	TBD
Proposed CERFA Clean Acreage –	18,759
Acreage Available for Transfer –	18,759 *
Total Acreage –	20,171

** Environmental Condition of Property Categories 1-4*

CHANUTE AIR FORCE BASE

Size:	2,125 acres (2,125 acres excess)
Mission:	Inactive; served as technical training center
HRS Score:	N/A
IAG Status:	None
Contaminants:	Petroleum/oil/lubricants, VOCs, and metals
Media Affected:	Groundwater and soil
Funding to Date:	$5.7 million



Rantoul, Illinois

CLEANUP BACKGROUND

Chanute Air Force Base is one of five Air Training Command Technical Training Centers providing specialized training for officers, airmen, and civilians of the Air Force, and for other DoD agencies. In December 1988, the installation was recommended for closure due to a shortage of buildings for training and administrative purposes, maintenance, and warehousing. A Record of Decision (ROD) for the reuse of the base was signed in FY91. At installation closure on September 30, 1993, the ROD was incorporated into the zoning laws of the Village of Rantoul, Illinois. The majority of the installation will eventually be transferred to the Village of Rantoul for use in developing an airport.

Environmental studies conducted between FY82 and FY92 identified 33 CERCLA and 34 RCRA sites. Prominent site types include landfills, four of which cover a total of approximately 80 acres, and a fire training area that covers approximately 9 acres. Other site types include landfills, oil-water separators, additional fire training areas, a petroleum sludge disposal pit, jet engine test cells, and Underground Storage Tanks (UST). The primary contaminant is petroleum/oil/lubricants (POL) which are contaminating the upper glacial tills and shallow groundwater. Other contaminants include VOCs and heavy metals that affect groundwater and soil.

Interim Actions include removal of USTs, pipelines, and contaminated soil at all UST sites, removal of sludge and contaminated soils at a sludge pit, removal of oil-water separators, removal of trichloroethene (TCE) contaminant sources, and removal of some contaminated soils at TCE spill sites.

A Remedial Investigation (RI) report for 11 sites was submitted to the state of Illinois in FY91; further investigation is required for the sites.

FY94 CLEANUP PROGRESS

The Restoration Advisory Board (RAB) was formed in January and holds quarterly meetings. Before each RAB meeting, installation personnel, federal and state regulatory agency representatives, and Air Force personnel meet to reach consensus on regulatory issues. RAB meetings cover the progress of the ongoing RI and address concerns regarding the cleanup at the installation.

The BRAC Cleanup Team (BCT) was also formed in January and meets regularly. The Air Force and regulatory agency personnel interact closely by sharing information and facilitating consensus on regulatory issues, thereby conserving resources and costs. An Environmental Baseline Survey also was conducted.

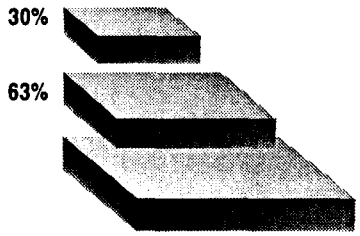
A Village of Rantoul Reuse Committee was formed to address reuse of the installation. To date, 14 parcels have been leased to the Village of Rantoul and several private industries in an effort to revitalize the area and develop an airport.

Chanute Air Force Base is currently remediating petroleum-contaminated soil at 15 UST sites as part of a treatability study for low temperature thermal volatilization. Background well investigations were conducted at the installation because of suspected groundwater contamination of metals. Metals were detected in levels above maximum contamination levels.

PLAN OF ACTION

- Continue plans to redevelop the base for use as a civilian airport
- Continue RI activities at 11 sites and continue background well investigations in FY95 and FY96
- Begin Feasibility Study (FS) activities of 11 sites in FY97
- Implement a treatability study for 15 USTs that will include treating fuel-contaminated soil with low temperature thermal volatilization in FY95
- Design bioremediation and intrinsic bioremediation projects, with the completion of treatability studies and focused FSs for two landfills

CERFA CLEAN ACREAGE

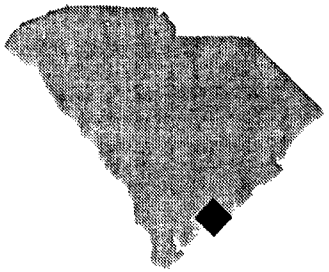


Concurred CERFA Clean Acreage –	0
Proposed CERFA Clean Acreage –	631
Acreage Available for Transfer –	1,343 *
Total Acreage –	2,125

** Environmental Condition of Property Categories 1-4*

CHARLESTON NAVAL SHIPYARD AND NAVAL STATION

Size:	2,879 acres (2,879 acres excess)
Mission:	Repair, maintain, and overhaul Navy ships
HRS Score:	N/A
IAG Status:	None
Contaminants:	Asbestos, cyanide, decontaminating agents, heavy metals, paints, PCBs, pesticides, petroleum/oil/lubricants, solvents, and petroleum hydrocarbons
Media Affected:	Soil
Funding to Date:	$1.1 million



Charleston, South Carolina

CLEANUP BACKGROUND

Environmental studies conducted at Charleston Naval Shipyard and Naval Station identified 36 Solid Waste Management Units (SWMU) and two Underground Storage Tank (UST) sites. Release of petroleum hydrocarbons to soil have occurred at storage and disposal area sites.

Between FY85 and FY89, Interim Measures were conducted that included the removal of free product at three sites and the removal of drums at one site. In FY92, five USTs were removed at the two UST sites.

The installation divided the sites into 12 zones to accelerate the cleanup process. Work has begun to update the FY88 RCRA closure plan for the permitted hazardous waste storage facility. A RCRA Facility Investigation (RFI) work plan containing both comprehensive and zone-specific sections was prepared.

In the late 1980s, the installation formed a Technical Review Committee (TRC) and completed a Community Relations Plan (CRP). The TRC has held quarterly meetings since its inception. The TRC established guidelines for preparation of documents, reducing the review time of documents, the level of review comments, and accelerating the resolution of technical issues. In FY93, the CRP was updated to include all 36 SWMUs.

FY94 CLEANUP PROGRESS

In March, the Restoration Advisory Board (RAB) was formed. RAB members increased the level of communication with the community by distributing fact sheets and information packages to the community and holding training and briefing sessions.

The BRAC Cleanup Team (BCT) was formed. The BCT accelerated the cleanup process by having an on-site EPA representative and holding joint document review meetings to ensure consensus. The meetings increased communication at all levels and established guidelines for the RFI before development of the work plan to maximize the efficiency of the investigation. While no formal partnering agreement exists, a partnership developed between the installation and regulatory agencies through the BCT.

An innovative rotasonic drilling technique was used at one site for RFI field investigations. The installation implemented presumptive remedies including capping, containment, and groundwater removal and treatment.

A draft Environmental Baseline Survey (EBS) and BRAC Cleanup Plan (BCP) were prepared. In June, the Land Reuse Plan was prepared, enabling the BCT to consider preferred reuse alternatives when making cleanup decisions.

The installation also submitted a comprehensive RFI work plan and obtained approval. Three zone-specific work plans were submitted and approved.

PLAN OF ACTION

- Complete final EBS and BCP in FY95
- Implement rotasonic drilling technique at a second site in FY95
- Begin cleanup of contaminated soils from leaking USTs in FY95
- Prepare RFI work plans for the remaining zones; once the EBS has been finalized, the RFI schedules will be modified to accelerate cleanup

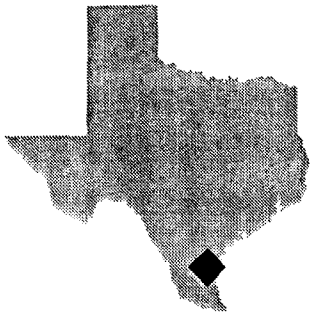
CERFA CLEAN ACREAGE

Acreage Available for Transfer–	0*
Total Acreage –	2,879

** Environmental Condition of Property Categories 1-4*

CHASE FIELD NAVAL AIR STATION

Size:	4,226 acres (4,226 acres excess)
Mission:	Provide facilities, services, and material to support jet pilot training
HRS Score:	N/A
IAG Status:	None
Contaminants:	Acids, heavy metals, paints, PCBs, petroleum fuels and hydrocarbons, photographic chemicals, and solvents
Media Affected:	Groundwater and soil
Funding to Date:	$4.9 million



Beeville, Texas

CLEANUP BACKGROUND

In July 1991, the BRAC Commission recommended closure of Chase Field Naval Air Station. The installation will retain the capability of being operated as an outlying field, but the air training squadrons will be disbanded. A BRAC Cleanup Team (BCT) was formed that same year. In FY93, the installation initiated a Finding of Suitability to Transfer (FOST) for approximately half of the property at the installation.

The primary site types at the installation include landfills and fire training areas. In FY92, a RCRA Facility Assessment identified one site as a RCRA Corrective Action site. Contaminants at the sites include acids, heavy metals, paints, PCBs, petroleum fuels and hydrocarbons, photographic chemicals, and solvents. Corrective Action was completed at the RCRA site in FY93; the RCRA site is now closed.

The installation's Technical Review Committee (TRC) was formed in FY91 and continues to meet monthly. The TRC has successfully built teamwork and consensus between installation personnel, representatives of regulatory agencies, the local community, and other stakeholders. In FY92, a Community Relations Plan, an Information Repository, and an Administrative Record were established in Beeville, Texas. In FY93, a Land Reuse Plan was developed, and an Environmental Baseline Survey was completed.

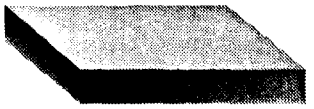
FY94 CLEANUP PROGRESS

All Solid Waste Management Units at the installation were cleaned up. The state of Texas also accepted the FOST for approximately half of the property. Lack of funding has delayed the lease of the property, but administration and support areas have been transferred to the state of Texas.

PLAN OF ACTION

- Close and transfer remaining installation property in FY95 and FY96; close Site 4 by April of 1995, and Sites 1 and 2 by July of 1995
- Initiate three Remedial Actions consisting of Long-Term Monitoring and treatment of groundwater by FY95

CERFA CLEAN ACREAGE



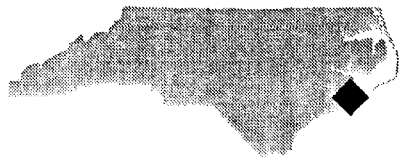
Acreage Available for Transfer –	0 *
Total Acreage –	4,226

** Acreage Transferred Prior to CERFA*

CHERRY POINT MARINE CORPS AIR STATION

PROPOSED NPL

Size:	27,715 acres
Mission:	Maintain and operate support facility, provide services and materials for marine aircraft
HRS Score:	70.71; Proposed for NPL in August 1994
IAG Status:	None
Contaminants:	PCBs, petroleum hydrocarbons, and solvents
Media Affected:	Groundwater and soil
Fund to Date:	$13.2 million



Cherry Point, North Carolina

CLEANUP BACKGROUND

Cherry Point Marine Corps Air Station has conducted numerous environmental studies and Removal Actions, including: Preliminary Assessments (PA) for 32 sites in FY83; a RCRA Facility Assessment (RFA) in FY88; RCRA Facility Investigations for 24 sites in FY93; and 117 Underground Storage Tank (UST) removals in FY93.

As a result of the RFA, the installation and EPA negotiated a Consent Order in FY90. Under the Consent Order, 23 sites were transferred to the RCRA Corrective Action and UST programs. The nine remaining sites were closed out with no further action necessary.

A Technical Review Committee (TRC) was established in FY91, and the installation established community Information Repositories at two locations.

FY94 CLEANUP PROGRESS

The installation began to solicit community members to participate on the Restoration Advisory Board (RAB), which is an expansion of the TRC and includes a broad cross-section of community representatives. The installation expanded its public involvement program, completed a Community Relations Plan, and implemented a plan to proactively inform and involve the community in the cleanup process.

The installation implemented a formal partnering process between the installation, EPA Region 4, and the state of North Carolina in July. Partnering has resulted in reduced review times, and a streamlined Site Management Plan, eliminating the need for four separate Remedial Investigation and Feasibility Study (RI/FS) work plans.

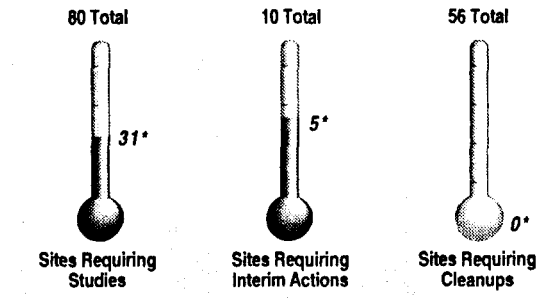
The installation also completed six Interim Remedial Actions (IRA), conducted RI/FS field work at nine sites, one of which was identified for no further action, and removed 58 USTs.

PLAN OF ACTION

- Continue and expand public involvement efforts; the first RAB meeting is scheduled for early FY95
- Negotiate a Federal Facility Agreement (FFA) addressing the RCRA Consent Order, and provide a proper mechanism for handling sites in the future
- Continue partnering activities and conduct concurrent document reviews
- Complete Corrective Measure Study for one Operable Unit in FY95 and Corrective Action design and implementation for two sites
- Complete IRAs for two UST sites, Corrective Action Plans (CAP) for 17 UST sites, and design for two sites in FY95
- Conduct CAP for two UST sites, the design for 19 sites, and Long-Term Monitoring for five sites in FY96
- Complete IRAs for soil and debris at one site in FY95 and groundwater at the same site in FY96
- Prepare Records of Decision for five sites in FY96

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 80
- Estimated Date of Completion = 2003

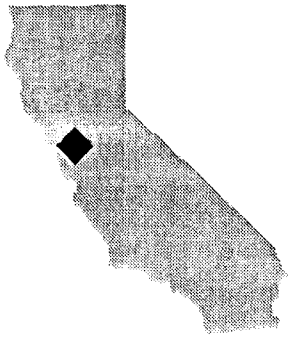


* Complete

CONCORD NAVAL WEAPONS STATION

PROPOSED NPL

Size:	13,023 acres
Mission:	Ship, receive, inspect, and classify munitions (tidal area); serve as munitions storage and weapons maintenance, inspection, and testing facility (inland area)
HRS Score:	50.00: Placed on NPL in December 1994 (in FY95)
IAG Status:	Federal Facility Site Remediation Agreement signed in September 1992
Contaminants:	Heavy metals and petroleum hydrocarbons
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$35.6 million



Concord, California

CLEANUP BACKGROUND

Environmental investigations beginning in FY83 identified 58 sites at Concord Naval Weapons Station. In FY90, the Navy entered into seven consent decrees with the adjacent property owners. Surface water contamination is of great concern because several sites are located in tidal and wetland areas. A Remedial Investigation (RI) was completed for seven sites in FY86. The RI identified elevated concentrations of heavy metals in soil, and indicated potential toxicological impacts and potential contamination of species in the tidal area.

An installation project team worked with the regulatory agencies revising the investigative approach for the tidal area landfill site. Instead of traditional sampling and analysis, the regulatory agencies agreed that a generic remedy would be appropriate for the site.

Intallation personnel also developed the Ecological Assessment work plan with regulatory agency involvement and input. The Ecological Assessment project team held scoping meetings with the regulatory agencies, reducing the number of comments on the draft work plan. The project team revised the traditional approach to include extensive sampling in Phase I of the Ecological Assessment in order to expedite site characterization and help focus on Phase II.

In FY92, the installation completed Remedial Design activities for seven sites. The installation also removed three Underground Storage Tanks (UST).

The installation has set up information repositories for public use and prepared a Community Relations Plan. A Technical Review Committee was formed. The Navy sponsored a partnering meeting in FY93 before beginning the Remedial Action (RA) at seven sites. The meeting helped the project team set goals for the effort, resulting in smooth and cooperative relations throughout the subsequent construction period.

FY94 CLEANUP PROGRESS

An RA at one site was completed. Cleanup consisted of excavating and disposing of approximately 22,700 cubic yards of soil contaminated with heavy metals. A Long Term Monitoring plan for groundwater is in effect to evaluate the success of cleanup.

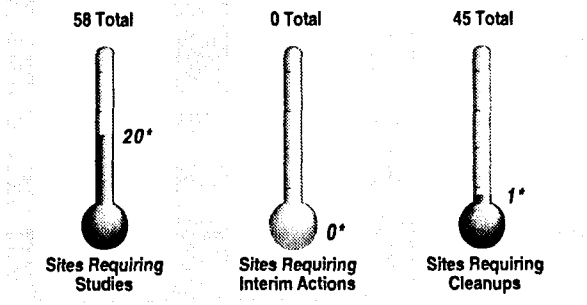
A RCRA Facility Investigation (RFI) began to determine the extent of contamination at all 25 Solid Waste Management Units (SWMU).

PLAN OF ACTION

- Establish Restoration Advisory Board in January 1995
- Develop "test plots" at seven sites to demonstrate wetlands creation using soil manufactured from dredged material and biosolids in FY95
- Complete removal of napalm thickener at one site and closure of disposal wells at another site in FY95
- Complete cleanups at four sites in FY95
- Plan pilot project in FY95 at the tidal area sites to demonstrate the use of field bioassays in Ecological Assessment; complete Ecological Assessment in FY97
- Complete RFI for at all 25 SWMUs in FY96
- Complete the RI and Feasibility Study activities at four tidal area sites and five inland sites in FY96
- Complete Corrective Measures Design for the RCRA SWMUs in FY97; complete Corrective Measures Implementation at all 25 SWMUs in FY98; complete Corrective Actions for the three UST sites in FY97

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 58**
- **Estimated Date of Completion = 2003**

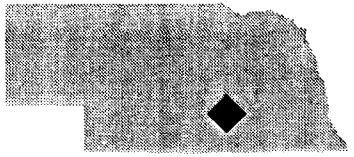


** Complete*

CORNHUSKER ARMY AMMUNITION PLANT

NPL

Size:	11,936 acres
Mission:	Currently in standby status
HRS Score:	51.13; Placed on NPL in 1987
IAG Status:	IAG signed in 1990
Contaminants:	Explosives and heavy metals
Media Affected:	Groundwater and soil
Funding to Date:	$39.2 million



Hall County, Nebraska

CLEANUP BACKGROUND

Cornhusker Army Ammunition Plant (Cornhusker) is a former ammunition manufacturing facility, currently undergoing property disposal. Numerous sumps, cesspools, and leaching pits were historically used in the manufacturing process. These areas, in addition to disposal pits, old landfills, and open burning areas, have contributed to the environmental problems at Cornhusker and have resulted in the installation's listing on the NPL.

The Initial Assessment Study completed in FY80 identified 65 sites. To date, Interim Remedial Actions have been completed at 59 sites. In FY86, about 40,000 tons of contaminated soil at cesspools and leaching pits was removed and incinerated. This action removed nearly 95 percent of the sources of contamination at the installation.

In FY83, a groundwater plume contaminated with explosive materials was identified both on and off base. The unlined leaching pits, cesspools, and sumps were determined to be the primary sources of contamination. Off-base contamination has affected more than 500 private drinking water wells in Hall County and nearby Grand Island. In FY86, the Hall County municipal water distribution system was extended to residences in Grand Island. An Engineering Evaluation and Cost Analysis completed in FY92 recommended extending the system to 60 additional Grand Island residences.

Cornhusker has also implemented innovative measures to reduce cleanup costs. For example, characterizing the extent of the groundwater plume typically requires installing groundwater monitoring wells. Early in the cleanup process, the installation realized that the large size of the groundwater plume would require a large number of wells. Therefore, to reduce costs, temporary well points were used instead of full-scale cased wells. The temporary well points are easier and cheaper to install but do not compromise data quality. In addition, the installation used innovative chemical screening techniques to identify explosive materials in groundwater. Such techniques reduced project analytical costs to about one-sixth the cost of typical wet-chemical analyses.

At the end of FY89, Cornhusker entered a Federal Facility Agreement (FFA) with EPA and the state of Nebraska. The FFA has allowed all parties to be involved in the decision making process. Partnering between the agencies has resulted in the completion of a Feasibility Study to Interim ROD in nine months.

FY94 CLEANUP PROGRESS

A draft Remedial Investigation (RI) submitted in FY93 led to the decision to divide the sites into smaller Operable Units. The decision involved representatives of Cornhusker, EPA, and the state of Nebraska. These negotiations were completed. This successful use of partnering has made it easier to reach consensus, construct goals, and proceed with Remedial Actions.

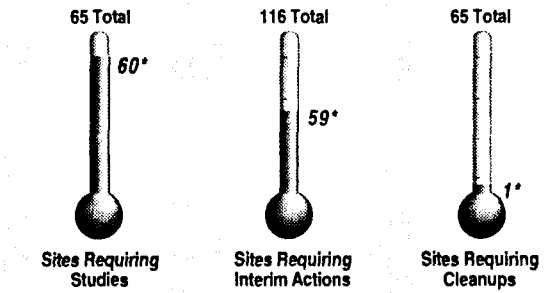
A fence was constructed around a 30-acre open burning area to restrict access to UXO and heavy metal contamination in the area.

PLAN OF ACTION

- Form a Restoration Advisory Board in FY95 to facilitate property transfer and reuse; the installation intends to involve the community from the beginning of reuse planning to allow for effective negotiations of reuse plans; a Reuse Committee, formed in 1989, already includes local citizens, farmers, politicians, industry representatives, and installation personnel
- Continue Removal Actions and cleanup actions currently underway, including off-base disposal of 5,000 tons of stabilized contaminated soil
- Finalize an Interim ROD which will include containment and cleanup of groundwater contamination using a groundwater extraction and treatment system equipped with carbon adsorption
- Consider implementation of innovative treatment technologies such as peroxone

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 65**
- **Estimated Date of Completion = 2030**

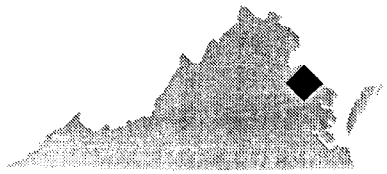


* Complete

DAHLGREN NAVAL SURFACE WARFARE CENTER

NPL

Size:	2,677-acres main site; 1,614-acre experimental explosive area
Mission:	Proof and test ordnance
HRS Score:	50.26; Placed on NPL in October 1992
IAG Status:	Federal Facility Agreement signed in September 1994
Contaminants:	Cleaning solvents, explosive residues, heavy metals, low-level radioactive materials, mercury, PCBs, and pesticides
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$6.3 million



Dahlgren, Virginia

CLEANUP BACKGROUND

The installation was placed on the NPL because releases from sites could affect the Potomac River and associated wetlands; the installation is also suspected to have contaminated the aquifer that provides its drinking water. Ordnance testing operations at the installation have contributed to environmental contamination. Site types include former landfills, former ordnance burn and disposal areas, operating ordnance ranges, and operating ordnance research and development areas. Releases of cleaning solvents, explosive residue, heavy metals, low-level radioactive materials, mercury, PCBs, and pesticides have affected the soil at the installation.

Seventy-four sites have been identified. All of the sites are currently being addressed under CERCLA. A RCRA Facility Investigation (RFI) was completed in early FY93; however, all Areas of Concern (AOC) and Solid Waste Management Units (SWMU) identified by the RFI were incorporated into the Federal Facility Agreement and are being studied under CERCLA. Preliminary Assessments (PA) have been completed for all 74 sites, and six sites have completed Site Inspections (SI).

A Removal Action involving soil and concrete sampling, excavation, and disposal for the Barbette site was completed in mid FY92. The contaminants included lead and low-level radioactive waste.

In FY91, an Administrative Record and an Information Repository were established at local libraries. In FY93, a Community Relations Plan was completed and a Technical Review Committee (TRC) was established. The TRC provides an opportunity for public review of cleanup activities at the installation. The TRC meets quarterly to review project plans and progress. As a result of these meetings, many suggestions from the community have been incorporated into the cleanup program.

FY94 CLEANUP PROGRESS

The installation has established partnerships with EPA and the Virginia Department of Environmental Quality. The installation holds frequent meetings and conference calls with representatives of the federal and state regulatory agencies and has worked with them to prioritize sites and incorporate agreements into its Site Management Plan. The Site Management Plan includes the description, location, and cleanup schedule for sites at the installation. The installation's personnel are working closely with the U.S. Geological Survey to better define the hydrology at the installation.

The installation performed a Removal Action at the tar tank storage area, excavating about 100 cubic yards of soil. As part of the Removal Action, the installation used immunoassay field screening techniques to reduce laboratory and mobilization costs. At the Pesticide Rinse Area, the installation is using a thermal desorption and solvent extraction innovative technology to investigate and clean up the site. The installation also completed several other Interim Remedial Actions (IRA).

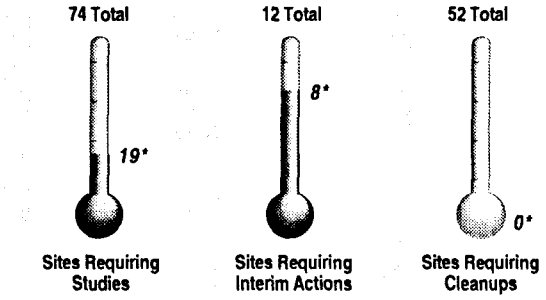
In an effort to accelerate its cleanup program, the installation is in the process of developing a standardized boilerplate for its Decision Documents and technical reports.

PLAN OF ACTION

- Form Restoration Advisory Board in FY95
- Finish the development of a standardized boilerplate for its Decision Documents and technical reports in FY95
- Complete an Interim Action at the transformer draining area; to save on laboratory and mobilization costs, field immunoassay tests will be used to determine the extent of PCB contamination
- Begin Removal Action at the Pesticide Rinse Area in FY95
- Complete 17 SIs, eight Remedial Investigation and Feasibility Studies, and begin Remedial Designs for eight sites by FY96

PROJECT ACCOMPLISHMENTS

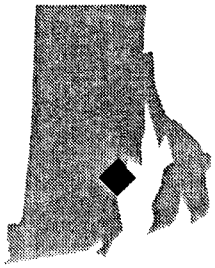
- **Total Number of Sites = 74**
- **Estimated Date of Completion = 2003**



* Complete

DAVISVILLE NAVAL CONSTRUCTION BATTALION CENTER

Size:	1,284 acres (1,284 acres excess)
Mission:	Provide mobilization support to Naval Construction Forces
HRS Score:	34.52; Placed on NPL in November 1989
IAG Status:	Federal Facility Agreement signed in March 1992
Contaminants:	Heavy metals, PCBs, pesticides, petroleum hydrocarbons, and VOCs
Media Affected:	Groundwater and soil
Funding to Date:	$20.7 million



Davisville, Rhode Island

CLEANUP BACKGROUND

In July 1991, the BRAC Commission recommended closure of Davisville Naval Construction Battalion Center. Construction battalion training and mobilization activities are being transferred to Gulfport Navy Construction Battalion Center at Gulfport, Mississippi, and to Port Hueneme Naval Facilities Engineering Service Center at Port Hueneme, California.

Environmental studies conducted at the installation since FY84 have identified 16 sites including solvent storage and disposal areas, transformer storage areas, and fire training areas. Contaminants include solvents, PCBs, petroleum/oil/lubricants, and pesticides that are affecting groundwater and soil.

The installation completed a Remedial Investigation and Feasibility Study (RI/FS) for 10 sites in FY92. The Phase II RI/FS for these sites began in FY93 and will be completed in FY95. The RI/FS for two PCB spill sites was completed in FY93.

In FY91, the installation completed two Interim Remedial Actions (IRA), consisting of asphalt and concrete removal, for two PCB spill sites. This is expected to be the final action at these sites.

In FY93, a Removal Action at the Creosote Dip Tank Spill site was completed. The installation also began Remedial Design (RD) activities, which consist of a landfill cap and slurry wall, for the Allen Harbor Landfill.

Thirteen Solid Waste Management Units (SWMU) have been identified at the installation. The closure plans for the SWMUs are being addressed under the RCRA Corrective Action Plan (CAP). In FY92, the installation removed 56 Underground Storage Tanks (UST) at seven UST sites. Sampling indicated that further investigation is necessary. A work plan was drafted in FY93.

A Phase I Environmental Baseline Survey (EBS) has been completed. Portions of West Davisville currently are leased to the Rhode Island Port Authority.

In FY88 and FY89, the installation established a Technical Review Committee (TRC), an Administrative Record, and an Information Repository. The Community Relations Plan was completed in FY89.

FY94 CLEANUP PROGRESS

The installation's TRC was converted to a Restoration Advisory Board (RAB). The RAB meets regularly and promotes open discussion to address issues regarding cleanup at the installation. Community members of the RAB will be receiving technical assistance grants through EPA to provide continued support to the RAB.

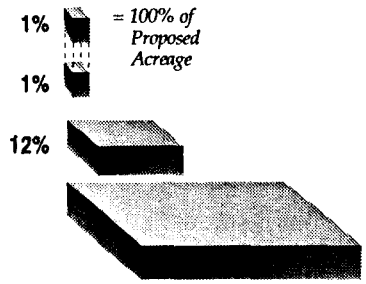
The BRAC Cleanup Team (BCT) was formed and meets regularly to discuss current and future cleanup initiatives. The BCT identified data gaps in the installation's Ecological Risk Assessment and in several RI/FS reports, and developed a strategy to resolve the issues. The BCT also renegotiated a new Federal Facility Agreement schedule.

The RD was completed for the Allen Harbor Landfill. The Remedial Action (RA) began and is expected to be completed in FY97. An RD was completed for a PCB transformer spill area. The RA began and is expected to be completed in FY95.

PLAN OF ACTION

- Establish a grant program for environmental education and training at the installation; the purpose of the grant is to educate university students and former installation employees about environmental cleanup issues
- Prepare a CAP for seven of the 56 USTs that were removed in FY92
- Commence or complete RD/RAs at 11 sites; these activities are scheduled to be completed in FY97
- Complete Phase II of the EBS to characterize all parcels by FY95

CERFA CLEAN ACREAGE



Concurred CERFA Clean Acreage –	13
Proposed CERFA Clean Acreage –	13
Acreage Available for Transfer –	154 *
Total Acreage –	1,284

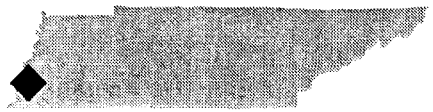
** Environmental Condition of Property Categories 1-4*

DEFENSE DISTRIBUTION DEPOT MEMPHIS

NPL

(FORMERLY MEMPHIS DEFENSE DEPOT)

Size:	642 acres
Mission:	Store and distribute clothing, food, medical supplies, electronic equipment, petroleum products, and industrial chemicals
HRS Score:	58.06; Placed on NPL in October 1992
IAG Status:	IAG under negotiation
Contaminants:	Pentachlorophenol and PCBs
Media Affected:	Groundwater and soil
Funding to Date:	$12.7 million



Memphis, Tennessee

CLEANUP BACKGROUND

Environmental studies beginning in FY81 identified 75 CERCLA sites; 35 sites required no further action. Remedial Investigation and Feasibility Study (RI/FS) activities began in FY89 and were completed for 40 sites in FY90. Between FY86 and FY89, 11 Underground Storage Tanks (UST) were removed at the installation. All remaining CERCLA sites and UST sites have been divided into four Operable Units.

In FY85, an Interim Remedial Action (IRA) was completed that included the removal of a pentachlorophenol (PCP) wood preservative treatment vat, a UST used for PCP storage, and contaminated soil surrounding the site. In FY91, the depot initiated an IRA to address groundwater contamination at Dunn Field. In FY92, a pump test was conducted to characterize groundwater and evaluate extraction and treatment alternatives.

A UST survey completed in FY93 identified 16 additional UST sites and outlined actions needed to ensure that USTs are maintained in compliance with applicable regulations. Two of the USTs were also removed in FY93.

FY94 CLEANUP PROGRESS

The installation conducted community interviews and developed a Community Relations Plan. A Restoration Advisory Board was formed which includes representatives of the local community, city and county agencies, a local utility company, an environmental group, the local health department, and the state. The installation also began distributing a quarterly newsletter describing the cleanup program.

The installation, EPA, and the state regulatory agency completed negotiations and began finalizing the Federal Facility Agreement (FFA). The installation completed a Site Management Plan which will be included as an appendix in the FFA.

RI/FS work plans were developed for each Operable Unit and the screening sites; a no further action report was prepared for 13 sites.

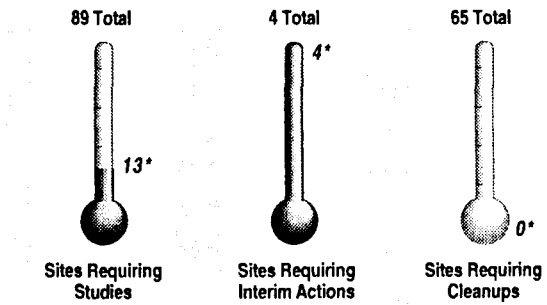
Groundwater monitoring was performed to characterize contamination at the installation. Based on the results, a draft Proposed Groundwater Action Plan is being developed for the Dunn Field IRA.

PLAN OF ACTION

- Conduct public meetings and provide public comment periods on the FFA and the Proposed Groundwater Action Plan and sign the FFA after addressing public comments
- Initiate the IRA for groundwater at Dunn Field, including the construction of pumping wells along the lead edge of the contamination plume during FY95
- Begin RI field work in FY95
- Complete the FS in FY97
- Begin Remedial Design in FY97 and complete it in FY98
- Begin Remedial Action in FY98

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 89**
- **Estimated Date of Completion = 2015**



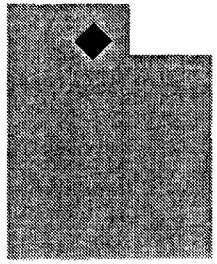
* Complete

DEFENSE DISTRIBUTION DEPOT OGDEN

NPL

(FORMERLY OGDEN DEFENSE DEPOT)

Size:	1,139 acres
Mission:	Store and distribute DoD commodities, including electronic equipment, textiles, package petroleum, and industrial and commercial chemicals
HRS Score:	45.10; Placed on NPL in 1987
IAG Status:	IAG signed in 1989
Contaminants:	Solvents, paint and paint residues, petroleum/oil/lubricants, insecticides, chemical warfare agents, methyl bromide, metal plating wastes and sludges, PCB-contaminated transformer oils, degreasers, acids and bases, and sand-blast residues
Media Affected:	Groundwater and soil
Funding to Date:	$32.4 million



Ogden, Utah

CLEANUP BACKGROUND

A Preliminary Assessment conducted in FY80 located 44 sites of potential contamination; 22 of which required further action. Prominent site types include oil burning pits, disposal pits, a French drain system, and burial sites that have contaminated groundwater and soil.

In FY88, a Removal Action was completed that consisted of removing vials of mustard gas and irritant grenades from disposal pits.

In FY85, all sites requiring further action entered into the Remedial Investigation and Feasibility Study (RI/FS) stage. During FY91, the Federal Facility Agreement divided the sites into the following four Operable Units (OU): groundwater extraction and treatment systems at OU1, 2, and 4, and soil excavation at all OUs. RI/FS reports were also completed for all OUs by FY91, and Records of Decision (ROD) were completed for all OUs by FY92.

Remedial Design (RD) activities were initiated for OU1 and 2 in late FY91; OU3 in late FY92; and OU4 in early FY93. During RD activities, the review process was expedited through the elimination of a design submittal and the attendance of regular meetings with the state and federal regulatory agencies. There was also no lapse of time between RD activities and the initiation of Remedial Action (RA) activities because bid and specification documents for RA construction activities were prepared during the RD.

RA activities were initiated with the construction of a groundwater extraction and treatment system at OU2 in FY93 and at OU1 and 4 in late FY93. More than 11,000 tons of contaminated soil and debris were removed to RCRA-approved hazardous waste landfills during FY93 and FY94.

In FY89, the Technical Review Committee (TRC) was formed which consists of representatives from the installation, state and federal regulatory agencies, the local community, and the county health department. Partnering efforts initiated with federal and state regulatory agencies have established a cooperative effort in the decision-making process and helped expedite the cleanup process.

FY94 CLEANUP PROGRESS

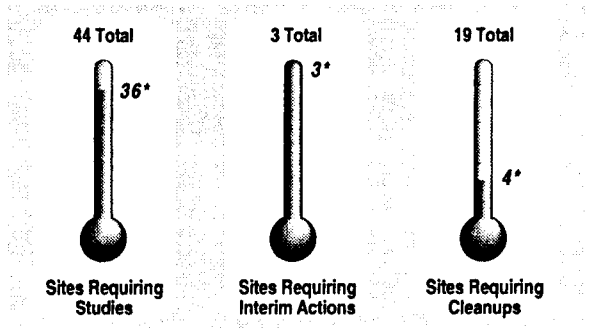
RA construction activities consisted of completing the excavation and disposal of approximately 90 percent of contaminated soil and debris for all OUs. Wells and piping for the groundwater extraction and treatment systems were installed at OU1 and 4. To date, more than 130 groundwater monitoring wells and over 100 extraction or injection wells have been installed for the air-stripping towers.

PLAN OF ACTION

- Continue treatment of groundwater plumes at OU1, 2, and 4 between FY95 and FY99
- Continue Long-Term Monitoring and Operation and Maintenance for OU1, 2, and 4
- Conduct additional soil excavation and confirmatory sampling for about 1 acre of contaminated soil at OU3 in FY95
- Complete removal of approximately 100 tons of contaminated stockpiled soil at OU4 in FY95

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 44
- Estimated Date of Completion = 2003

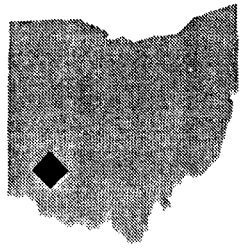


* Complete

DEFENSE ELECTRONICS SUPPLY CENTER

(GENTILE AIR FORCE STATION)

Size:	164 acres (164 acres excess)
Mission:	Provide logistical support to the military services by supplying electrical and electronic material
HRS Score:	N/A
IAG Status:	None
Contaminants:	Low-level radioactive wastes, paint, petroleum/oil/lubricants, solvents, pesticides, herbicides, PCBs, lead, silver, hydrofluoric acid, coal pile runoff
Media Affected:	Groundwater and soil
Funding to Date:	$.3 million



Kettering, Ohio

CLEANUP BACKGROUND

In July 1993, the BRAC Commission recommended closure of the Defense Electronics Supply Center and relocation of its mission to the Defense Construction Supply Center in Columbus, Ohio. Environmental studies have identified nine sites and 48 Areas of Concern at the installation. Prominent site types include landfills containing construction debris and low-level radioactive waste and areas of past and present industrial processes. Releases from these sites have contaminated soil and groundwater. In FY92, the installation initiated efforts to remediate Underground Storage Tanks (UST); all remaining USTs will be removed in FY95.

To expedite the closure process, a Reuse Advisory Committee consisting of personnel from the installation and the local community was formed in FY93. The primary objective of the committee is to evaluate the impact of the installation closure on the community and provide input on the long-term future use of the installation. The committee has been instrumental in preparing a market survey that evaluated types of commercial space in high demand in the area. These findings have been incorporated into the Land Reuse Plan.

FY94 CLEANUP PROGRESS

Various programs and actions to expedite cleanup were initiated through partnering efforts with representatives of the installation, the Air Force Base Conversion Agency (AFBCA), state and federal regulatory agencies, and local community leaders. In November, a Memorandum of Understanding was signed between the installation, AFBCA, and DLA.

The installation formed the BRAC Cleanup Team (BCT). The BCT consists of members from the installation, EPA, and the state regulatory agency. The BCT has adopted a review process that decreases the number of draft reports written, reducing the traditional review process by at least three months. The BCT also reviews preliminary screening data as soon as it is available and makes field sampling decisions immediately. The BCT, working with the Air Force, completed the BRAC Cleanup Plan for the installation.

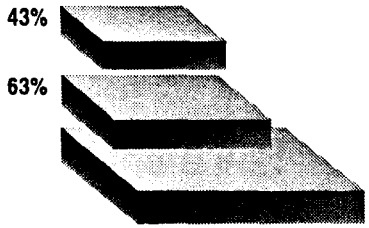
A Restoration Advisory Board (RAB) was established to serve as a forum for discussion and exchange of information between federal and state regulatory agencies and the community regarding the cleanup program. The RAB meets regularly and includes representatives from the installation, EPA, the state, AFBCA, and the city of Kettering.

In October, a Decision Document was signed to move from the Preliminary Assessment and Site Inspection phase to the Remedial Investigation and Feasibility Study (RI/FS) phase. Eight monitoring wells were installed at one landfill site.

PLAN OF ACTION

- Sign Memorandum of Agreement by the end of FY95
- Finalize the Land Reuse Plan in mid-FY95
- Begin base-wide RI/FS in FY95
- Prepare draft Environmental Impact Statement
- Begin Remedial Design and Remedial Action by end of FY96
- Finalize two leases by the end of FY95; one lease is between the Air Force and the city of Kettering with a sublease to the Montgomery County Board of Mental Retardation
- Complete closure of the installation in FY97

CERFA CLEAN ACREAGE



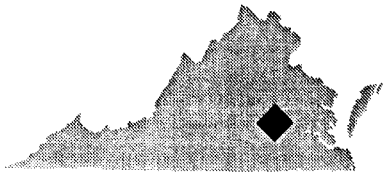
Concurred CERFA Clean Acreage –	TBD
Proposed CERFA Clean Acreage –	70
Acreage Available for Transfer –	103 *
Total Acreage –	164

** Environmental Condition of Property Categories 1-4*

DEFENSE GENERAL SUPPLY CENTER

NPL

Size:	611 acres
Mission:	Manage general supplies for the armed services
HRS Score:	33.85; Placed on NPL in 1987
IAG Status:	IAG signed in 1991
Contaminants:	Phenols, solvents, paints and paint residues, corrosives, pesticides, refrigerants, antifreeze, photographic chemicals, and oils
Media Affected:	Groundwater and soil
Funding to Date:	$13.9 million



Richmond, Virginia

CLEANUP BACKGROUND

Preliminary Assessment and Site Inspection (PA/SI) activities revealed 31 sites at the Defense General Supply Center. Investigations completed by FY90 indicated that no further action was required for eight sites. Expanded Site Inspections (ESI) were planned for six sites. During IAG negotiations in FY91, sites at the installation were grouped into eight Operable Units (OU). OUs 1 through 5 are associated with soil contamination, and OUs 6 through 8 are associated with groundwater contamination. In FY92, a ninth OU was added for groundwater contamination.

In FY89 and FY92, the installation removed 44 Underground Storage Tanks (UST). Heat pumps were installed to replace 15 USTs.

Two Records of Decision (ROD) were signed during FY92. The first ROD selected institutional controls for contaminated soil in OU1, and the installation has implemented the requirements detailed in the ROD. The second ROD selected a vapor extraction system as the Remedial Action for contaminated soils in OU5. The design for the extraction system included a pilot plant, which was operated to obtain design data. Operations at the pilot plant indicated that contaminants of concern had decreased to nondetectable levels, suggesting that the pilot plant had successfully performed the required cleanup. This conclusion was supported by soil sampling and analysis.

In FY93, a third ROD was signed for an Interim Remedial Action (IRA), involving a groundwater extraction and treatment system, to remove VOCs from groundwater at OU9.

FY94 CLEANUP PROGRESS

The installation submitted addenda to the Remedial Investigation (RI) report to regulatory agencies.

The installation also submitted final ESI reports for five sites to the regulatory agencies. One site requires no further action, and three sites are proceeding to the Remedial Investigation and Feasibility Study (RI/FS) phase. The installation also completed field work at the Former Fire Training Pit site. During the field work, the installation identified another area of contamination that was not related to site activities of the Former Fire Training Pit.

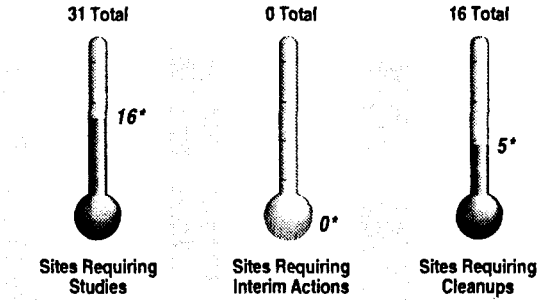
The installation completed the Remedial Design (RD) for the groundwater extraction and treatment system at OU9. Three USTs were removed and one UST was replaced.

PLAN OF ACTION

- Award contract for RD of the groundwater extraction and treatment system at OU9 in the first quarter of FY95
- Conduct exploratory trenching of soils in OU2 in the first quarter of FY95, providing data for selecting the most effective cleanup for soils
- Construct the groundwater extraction and treatment system at OU9 in the second quarter of FY95, and begin operation in early FY96
- Finalize RIs in the second quarter of FY95
- Conduct a public meeting in the second quarter of FY95 to present the Proposed Plan for OU3 and results of the ESI for the no further action site
- Sign ROD in the fourth quarter of FY95
- Submit draft FSs for five OUs and draft RIs for three OUs to regulatory agencies in FY95
- Submit draft reports of the sixth and seventh ESIs in FY95

PROJECT ACCOMPLISHMENTS

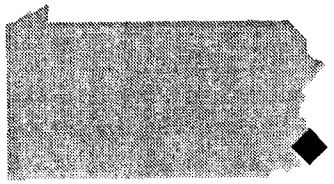
- **Total Number of Sites = 31**
- **Estimated Date of Completion = 2015**



* Complete

DEFENSE PERSONNEL SUPPORT CENTER

Size:	87 acres (87 acres excess)
Mission:	Procure and distribute subsistence and medical supplies in support of the Armed Forces
HRS Score:	N/A
IAG Status:	Federal Facility Compliance Agreement signed in December 1990
Contaminants:	Petroleum/oil/lubricants, pesticides, PCBs, and asbestos
Media Affected:	Groundwater and Soil
Funding to Date:	$4.1 million



Philadelphia, Pennsylvania

CLEANUP BACKGROUND

In July 1993, the BRAC Commission recommended the closure of the Defense Personnel Support Center (DPSC) and relocation of its mission to the Aviation Supply Office Compound in North Philadelphia, Pennsylvania. The BRAC Commission also recommended closing the clothing factory and disestablishing the Defense Contract Management District Mid-Atlantic.

Environmental studies ongoing since FY82 identified sites that include: Underground Storage Tanks (UST); above-ground storage tanks; pesticide management areas; hazardous waste management areas; PCB-containing transformers; asbestos; and former railroad track areas. A plume of petroleum contamination underlies large portions of the installation.

In FY92, the installation completed the cleanup of a PCB-contaminated sewer site. In FY93, preliminary analysis of soil and groundwater was completed and a draft work plan for Remedial Investigation and Feasibility Study (RI/FS) activities was completed.

FY94 CLEANUP PROGRESS

The BRAC Cleanup Team (BCT) was formed to expedite cleanup and the document review process. In May, the BRAC Cleanup Plan (BCP) was developed. The BCT has provided information to the Base Transition Office and the redevelopment board of the city of Philadelphia to support reuse plans for the installation. The final Environmental Baseline Survey (EBS) was completed. An Environmental Assessment was prepared to evaluate alternatives involving the reuse of the clothing factory.

Removal Actions are underway at three UST sites at the installation.

RI/FS and Remedial Action activities were initiated for the clothing factory in preparation for short-term leasing to the city of Philadelphia for redevelopment. Activities include the cleanup of pesticide-contaminated building areas and a pesticide-contaminated UST area. Asbestos remediation was initiated in the clothing factory.

Installation-wide RI activities are also underway to determine the extent of the petroleum contamination underlying the installation.

PLAN OF ACTION

- Schedule the first meeting of the Restoration Advisory Board in FY95
- Provide "real time" input from the BCT to direct the BRAC initiatives and the cleanup efforts
- Lease the clothing factory to the city of Philadelphia to create jobs and enhance the socioeconomic conditions of the surrounding community
- Continue separate phases of the installation-wide RI to identify, characterize, and assess all potential environmental concerns related to petroleum/oil/lubricants, USTs, hazardous waste management, pesticides, PCB contamination, and railroad track areas
- Remove and replace PCB-containing transformers
- Implement RCRA Closure Plan for past storage areas identified in the Federal Facility Compliance Agreement
- Complete asbestos abatement in clothing factory

CERFA CLEAN ACREAGE

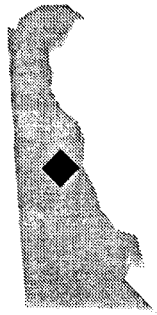
Acreage Available for Transfer –	0 *
Total Acreage –	87

** Environmental Condition of Property Categories 1-4*

DOVER AIR FORCE BASE

NPL

Size:	3,730 acres
Mission:	Provide airlift support for troops, cargo, and equipment
HRS Score:	35.89; Placed on NPL in 1989
IAG Status:	Federal Facility Agreement signed in August 1989
Contaminants:	Solvents, paints, petroleum products, VOCs, and plating wastes
Media Affected:	Groundwater and soil
Funding to Date:	$25.6 million



Dover, Delaware

CLEANUP BACKGROUND

Since 1942, Dover Air Force Base has provided airlift assistance for troops, cargo, and equipment. Waste management practices at the base have contaminated the shallow groundwater aquifer with petroleum products, VOCs, and heavy metals. The primary site types identified at the installation include Underground Storage Tanks (UST), oil-water separators, fire training areas, landfills, fuel spills and leaks, and a fuel hydrant system.

Environmental studies were initiated in FY83, identifying 33 sites. In FY89, a RCRA Facility Assessment was completed, and later that year the installation was placed on the NPL. Other environmental studies confirmed the presence of VOCs and heavy metals in the shallow groundwater aquifer below the installation. Probable sources of petroleum product contamination include the fuel hydrant system and tank farm sites. Probable sources of VOC contamination are various aircraft cleaning and maintenance operations.

In FY86, a soil Removal Action was conducted at the Old Industrial Waste Basins. These basins were used between 1965 and 1975 as retention ponds to control releases of the Industrial Waste Collection System.

Contaminated soil was removed from a fire training area in FY92 after a Record of Decision (ROD) was signed. An Interim ROD was signed for the recovery of free-floating product at two other sites. Also in FY92, a Site Inspection was completed, and work began on a base-wide Remedial Investigation and Feasibility Study (RI/FS) work plan. RI/FS field work began in FY93.

FY94 CLEANUP PROGRESS

Through FY94, a total of 59 sites were identified at the installation. The Air Force conducted focused FSs assessing potential cleanup alternatives. The focused FSs addressed three distinct source areas including: VOC-contaminated soil impacting groundwater; sediments in a drainage ditch contaminated with heavy metals; and a solvent plume in the shallow groundwater aquifer. The focused FS for the VOC-contaminated soil resulted in the selection of aquifer air sparging and soil vapor extraction system coupled with a carbon adsorption off-gas treatment system.

The installation demonstrated the following five innovative treatment technologies: (1) a pulsed pump test in a confined cell of the contaminated shallow groundwater aquifer; (2) a natural attenuation study determining the degradation rates of petroleum contamination in subsurface soils; (3) a soil bioventing study determining the effectiveness of bioventing as a cost-efficient alternative to petroleum cleanup; (4) an in-house test of two different solar powered free-product recovery pumps; and (5) a cross-flow air stripper test assessing removal efficiency compared to normal stripping technology.

Field work was completed on the base-wide RI/FS.

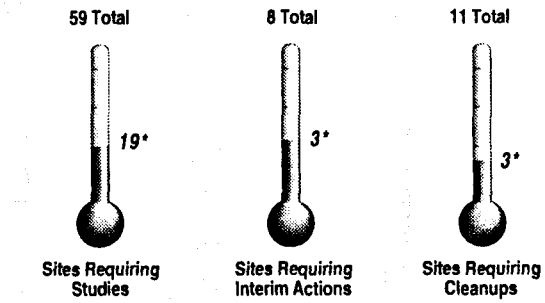
Two EPA sponsored agreements were developed for studies currently underway at the installation. One agreement is between the installation and Waterloo University, and another is between EPA and a consortium of large private companies. The agreements enable the parties to study the effects of natural attenuation and accelerated biodegradation at several sites throughout the installation.

PLAN OF ACTION

- Complete Remedial Action at a former waste oil tank site
- Continue testing innovative treatment technologies
- Determine cleanup alternatives for sites in the base-wide RI/FS
- Select cleanup alternatives based on focused FSs in FY95

PROJECT ACCOMPLISHMENTS

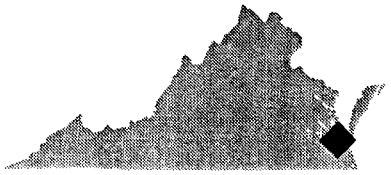
- Total Number of Sites = 59
- Estimated Date of Completion = 2030



* Complete

DRIVER NAVAL RADIO TRANSMITTING FACILITY

Size:	597 acres (597 acres excess)
Mission:	Formerly provided radio transmitting facilities and services to support Naval ships, submarines, and aircraft
HRS Score:	N/A
IAG Status:	None
Contaminants:	Dichlorobenzene, PCBs, petroleum/oil/lubricants, trichlorobenzene
Affected Media:	Surface water/sediments and soil
Funding to Date:	$2.1 million



Suffolk, Virginia

CLEANUP BACKGROUND

The Driver Naval Radio Transmitting Facility was established during World War II as a Naval Air Station that was used to train pilots. The installation was converted to a Naval transmitter facility after the war. Twelve sites have been identified at the installation. Major site types include a former service station, two PCB spill areas, and a number of landfills and other areas used to dispose of solvents, pesticides, acids, bases, and general refuse. One site is recommended for no further action, and seven sites are currently in the Preliminary Assessment and Site Inspection (PA/SI) phase.

Three sites have progressed to the Remedial Investigation and Feasibility Study (RI/FS) phase. At Site 1, a former landfill, semi-VOCs were detected in groundwater, and RI/FS activities are ongoing. At Site 5, a PCB spill site, a Removal Action was performed in FY93 to remove contaminated soils. Cleanup has been completed at Site 8, a former gas station, where soils were contaminated with petroleum hydrocarbons and lead.

The installation's Technical Review Committee (TRC) was formed in FY88. The installation prepared the Community Relations Plan, established Information Repositories, and the Administrative Record in FY92.

FY94 CLEANUP PROGRESS

The TRC was converted to a Restoration Advisory Board (RAB). RAB meetings provide an open forum where all voices can be heard. The BRAC Cleanup Team (BCT) was also formed and includes representatives from the state, EPA, and the Navy. The BCT prepared the BRAC Cleanup Plan, which sets forth cleanup and compliance program strategies for the installation. The BCT's monthly meetings have resulted in time and cost savings by allowing issues and concerns to be communicated in advance, so that regulatory comments are discussed and addressed before plans are formalized.

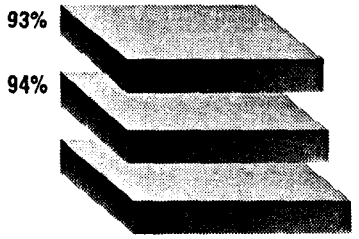
The PA/SI for seven sites began. At Site 9, the northwest dump, debris removal and sampling were conducted as part of the PA/SI. During PA/SI and RI/FS investigations for two PCB spill sites, the installation used field screening techniques. Field screening allows for more informed selection of sampling points to improve the efficiency of field investigations and the quality of site characterization data. The Remedial Action (RA) for Site 8, which consisted of excavation and off-site thermal incineration of contaminated soil, was completed. The site has been backfilled and regraded.

The Environmental Baseline Survey was completed. The installation has been divided into five parcels for property transfer. Most parcels are categorized as requiring additional investigation. Installation operations ceased on March 31, 1994.

PLAN OF ACTION

- Close the installation in early FY95
- Update the Community Relations Plan in FY95
- Design and implement RAs for Sites 1, 5, and 6 by FY96; generic remedies will be used at Sites 1 and 6
- Complete PA/SIs at all sites by FY96
- Investigate septic tanks and sample installation structures for asbestos, radon, PCBs, and lead paint
- Conduct Removal Actions at Sites 9 and 10 if sampling results identify "hot spots"

CERFA CLEAN ACREAGE

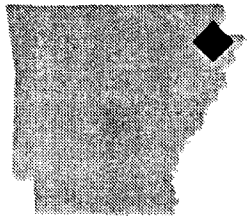


Concurred CERFA Clean Acreage –	TBD
Proposed CERFA Clean Acreage	556
Acreage Available for Transfer –	560 *
Total Acreage –	597

** Environmental Condition of Property Categories 1-4*

EAKER AIR FORCE BASE

Size:	3,771 acres (3,771 acres excess)
Mission:	Inactive; supported B-52 strategic bombers and KC-97 and 135 strato tanker operations
HRS Score:	N/A
IAG Status:	None
Contaminants:	Petroleum hydrocarbons, VOCs, and metals
Media Affected:	Groundwater and soil
Funding to Date:	$21 million



Blytheville, Arkansas

CLEANUP BACKGROUND

Eaker Air Force Base is inactive and formerly supported aircraft and tanker operations.

Prominent site types at the installation include Underground Storage Tanks (UST), aboveground storage tanks, oil-water separators, petroleum/oil/lubricant (POL) spill sites, and landfills. Other sites identified in previous investigations include a fire training area, storage areas, an explosive ordnance detonation range, a small arms firing range, a trap and skeet range, a JP-4 fuel hydrant system, and a bulk fuel storage tank farm. Petroleum hydrocarbons, VOCs, and metals have been released to groundwater and soil from these sites.

Interim Actions completed at the installation include: (1) removal of 107 USTs and abandonment-in-place of the JP-4 fuel hydrant system; (2) removal of contaminated soils at the JP-4 fuel hydrant system by using a soil farming technology; and (3) providing an interim soil cover and native vegetation for Landfill 4. The installation is fostering the use of the innovative soil farming technology because of its simple, cost-effective approach to treating contaminated soils.

Environmental studies between FY85 and FY90 identified 12 sites. In FY90, a RCRA Facility Assessment (RFA) identified 21 Solid Waste Management Units and nine Areas of Concern. In FY92, Remedial Investigation and Feasibility Study (RI/FS) field work was initiated for the 12 sites. An Administrataive Consent Order was signed in FY93, which determined that 30 sites (including the initial 12 sites) are subject to RCRA Corrective Action; therefore, these sites will be addressed under RCRA Facility Investigations (RFI). The installation was closed on December 15, 1992.

FY94 CLEANUP PROGRESS

The BRAC Cleanup Team (BCT) was established. BCT members include installation personnel and representatives of EPA and the Arkansas Department of Pollution Control and Ecology. The typical agenda of the BCT meetings includes a discussion of recent meetings and ideas for partnerships, including outreach for greater public participation. Discussions have also been held concerning comments on technical documents and progress on cleanup projects. The installation has coordinated extensively with state regulatory agencies regarding the installation cleanup program.

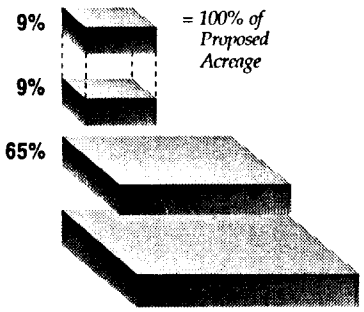
The installation has transferred all Technical Review Committee (TRC) functions to the Restoration Advisory Board (RAB) and the BCT. The RAB was formed on July 19, 1994. Organizers of the first RAB meeting solicited candidates for membership and informed the public about the purpose and mission of the RAB. The RAB membership consists of 34 stakeholders and representatives of each segment of the local community. RAB attendance averaged about 41 citizens and members per meeting, and EPA, DoD, and state regulatory agency personnel have attended each meeting. News media have also been present, as well as local, state, and federal elected officials or their designated representatives. To increase communication, part of each meeting is devoted to an open discussion period.

The installation completed a CERFA report characterizing installation property and received concurrence from regulatory agencies on the clean acreage. The installation also prepared the scope of work for conducting the RFI activities.

PLAN OF ACTION

- Continue to evaluate parcels of land for possible lease or transfer
- Begin cleanup activities at POL spill sites in FY95
- Continue removal and cleanup of remaining USTs and oil-water separators in FY95
- Close the explosive ordnance detonation range and a storage area
- Submit RFI work plan in early FY95
- Initiate and complete RFI field work in FY95 and submit draft RFI report in late FY95

CERFA CLEAN ACREAGE



Concurred CERFA Clean Acreage –	337
Proposed CERFA Clean Acreage –	337
Acreage Available for Transfer –	2,433 *
Total Acreage –	3,771

** Environmental Condition of Property Categories 1-4*

EARLE NAVAL WEAPONS STATION

NPL

(SITE A)

Size:	706 acres shoreside; 10,428 acres inland
Mission:	Handling, storage, renovations and transshipment of munitions
HRS Score:	37.21; Placed on NPL in August 1990
IAG Status:	Federal Facility Agreement signed in December 1990
Contaminants:	VOCs, semi-VOCs, heavy metals, hydrocarbons, petroleum products
Media Affected:	Groundwater and soil
Funding to Date:	$3.6 million

Colts Neck, New Jersey

CLEANUP BACKGROUND

Environmental studies completed at Earle Naval Weapons Station in FY83 identified four sites requiring further investigation. The sites contain landfills, production areas, storage areas, maintenance areas, and disposal areas. Releases, mainly of VOCs and heavy metals from landfills and production areas, impacted the soil and groundwater at the installation.

In FY87, a Site Inspection (SI) was completed and additional sites were identified. The SI identified high concentrations of contaminants in a landfill, a stream near the scrap metal landfill, and at a paint chip and sludge disposal area. The SI recommended additional characterization involving monitoring wells, soil borings, and surface water sampling. No further action was recommended for two sites.

In FY91, the installation initiated Remedial Investigation and Feasibility Study (RI/FS) activities. RI/FS activities were completed in late FY93. An interim RI draft report submitted in FY92 recommends cleanup for all sites, including capping, removal, or Long-Term Monitoring (LTM).

The installation implemented Removal Actions for several Underground Storage Tank (UST) sites. One UST site was investigated in FY91, and subsequently closed in FY92. Two USTs had spills and overfills causing contamination of surrounding soil. Contaminated soil was excavated and disposed of in FY93.

A Technical Review Committee was formed in FY90 and meetings are held periodically. The installation fostered partnerships by providing the Monmouth County Health Department with Geographic Information System maps of the installation to improve decision-making and public involvement.

FY94 CLEANUP PROGRESS

A work plan, an Action Memorandum, and an Engineering Evaluation and Cost Analysis (EE/CA) for a Removal Action were completed. RI/FS activities were also initiated for the remaining sites.

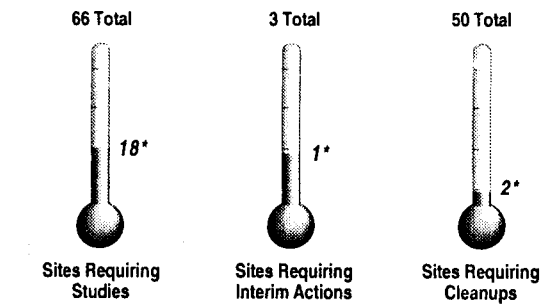
A Corrective Action Plan (CAP) was initiated for UST sites. Heating oil USTs were removed and a number of leaking USTs were identified. The CAP will be completed in FY95 and will determine whether further cleanup is necessary.

PLAN OF ACTION

- Form the Restoration Advisory Board (RAB) with input from local, state, and county organizations regarding membership; the installation and the RAB will expedite document reviews through concurrent review of draft documents, and expedite decision making throughout the cleanup process by holding progress meetings
- Complete RI/FS activities in FY96 and initiate Removal Actions between FY95 and FY96
- Begin Remedial Design activities in FY95 for RI/FS sites to be completed in FY96; RD is scheduled for some sites, to be completed in FY97
- Begin Remedial Action (RA) activities for one site in FY96; RA activities for several sites are scheduled for completion in FY98
- Design and implement the CAP for all UST sites, consisting of removal and treatment of contaminated soil and groundwater; additional action for UST sites will include piping removal and tank retrofitting

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 66
- Estimated Date of Completion = 2003



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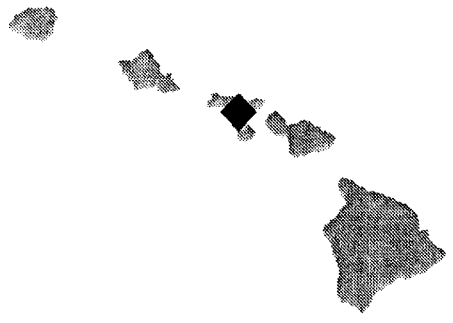
EASTERN PACIFIC NAVAL COMPUTER AND TELECOMMUNICATION AREA MASTER STATION — NPL

(NAVAL COMPUTER AND TELECOMMUNICATION AREA MASTER STATION)

Size:	2,400 acres
Mission:	Operate and maintain communications facilities and equipment for naval shore installations and fleet units in the eastern Pacific area
HRS Score:	50.00; Placed on NPL in May 1994
IAG Status:	None
Contaminants:	PCBs, lead, and mercury
Media Affected:	Soil
Funding to Date:	$2.2 million



Wahiawa, Hawaii

CLEANUP BACKGROUND

The Naval Computer and Telecommunication Area Master Station, Eastern Pacific operates and maintains communications facilities and equipment for naval shore installations and fleet units in the eastern Pacific area. The installation operates from two separate locations, the main station and receiver site at Wahiawa and the Naval Radio Transmitting Facility, Lualuelei. In support of this mission, the installation's electrical shop maintains electrical transformers and switches at sites located throughout the base. Before replacing PCB-containing transformers with non-PCB-containing transformers, transformer fluid testing methods resulted in PCB contamination of soil surrounding electrical transformers and general work areas.

In FY86, a Site Inspection (SI) identified 21 former PCB transformer sites at the installation. In FY91, a Removal Action was completed at eight transformer sites. The results of a Public Health Risk Assessment prepared for the eight transformer sites indicated no further action was required.

Elevated levels of lead and mercury contamination also have been identified at the Old Wahiawa Landfill and Building 6 Disposal Area.

To improve site management and tracking, transformer locations identified in the PA were grouped into six individual sites.

FY94 CLEANUP PROGRESS

In January, installation personnel identified four additional transformer sites as potentially contaminated with PCBs.

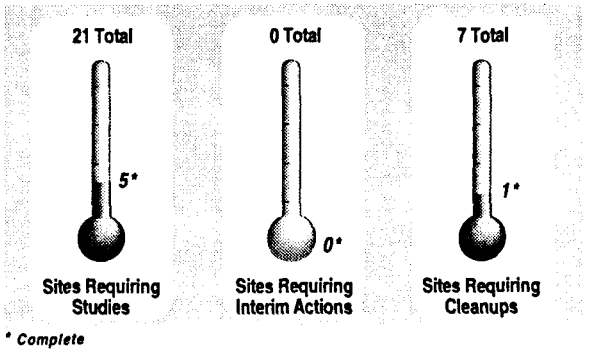
The installation awarded a contract for preparation of a Remedial Investigation and Feasibility Study (RI/FS), and subsequently prepared planning documents for the activities. The scope of RI/FS activities includes screening of Risk Assessments to determine if further action is required and will accelerate the cleanup process at the installation.

PLAN OF ACTION

- Sign the Federal Facility Agreement for the installation and form the Restoration Advisory Board in FY95
- Initiate the Public Health Assessment for the Agency for Toxic Substances and Disease Registry in FY95
- Complete RI/FS planning documents; the contract for RI/FS activities should be awarded in FY95
- Begin Removal Actions at PCB transformer sites in FY96
- Employ the innovative Base Catalyzed Decomposition Process, between FY96 and FY98, to clean up PCB-contaminated soils at three sites
- Classify all PCB transformer sites as one Operable Unit to accelerate cleanup; final Removal Actions will be implemented to accelerate the cleanup process

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 21**
- **Estimated Date of Completion = 2003**

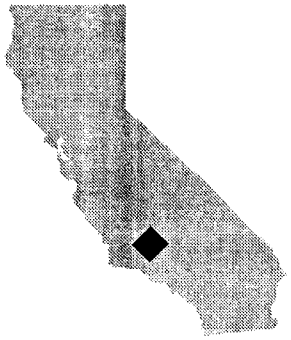


** Complete*

EDWARDS AIR FORCE BASE

NPL

Size:	300,100 acres
Mission:	Research and develop aircraft
HRS Score:	33.62; Placed on NPL in 1990
IAG Status:	Federal Facility Agreement signed in 1990
Contaminants:	Waste oils, solvents, VOCs, petroleum hydrocarbons, petroleum/oil/ lubricants, rocket fuel, and heavy metals
Media Affected:	Groundwater and soil
Funding to Date:	$70 million



Kern County, California

CLEANUP BACKGROUND

A Remedial Investigation and Feasibility Study initiated at Edwards Air Force Base in FY86 identified the following sites: leaking Underground Storage Tanks (UST); fuel pipelines; landfills; hazardous waste disposal areas; and wastewater and surface runoff collection areas.

By early FY92, a base-wide Consolidated Planning Report grouped 40 contaminated or potentially contaminated areas into seven Operable Units (OU). In FY93, a Preliminary Assessment identified an additional 100 sites, which were later grouped into 10 OUs.

In FY92, the installation also initiated a treatability study for an Interim Remedial Action to determining the best method for removing pooled jet fuel. The installation also removed 88 USTs.

RI/FS field work at OU1 was completed in FY93, and a groundwater monitoring program was initiated. Additional efforts in FY93 include: development and approval of the RI/FS work plan for OU2 by the regulatory agencies; redevelopment of existing wells at OU2 and completion of soil gas investigations. At OU3 and OU4, the installation completed Site Inspection work plans and initiated field activities.

The base-wide Programmatic Environmental Assessment was initiated in FY93. This assessment provides information to regulatory agencies for assessing the impact of cleanup activities on the natural, cultural, and physical resources at the installation.

FY94 CLEANUP PROGRESS

The Technical Review Committee was formally expanded into a Restoration Advisory Board. To accelerate cleanup, the installation combined the work plan, sampling and analysis plan, and quality assurance project plan into the Field Sampling Plan. In addition, the installation also coordinated with the regulatory agencies to negotiate proposed actions in advance.

Numerous Interim Actions were conducted at the installation including: (1) installing a groundwater extraction and treatment system at Site 16 to remove JP-4 jet fuel; (2) removing 235 USTs; (3) removing barrels of hazardous waste from five trenches at North Base and capping the site; (4) stabilizing soil at Site 34 to immobilize dioxin and other heavy metals; (5) replacing leaking JP-4 jet fuel pipelines; (6) capping the Fire Training Facility (Site 14); (7) bioventing at three sites; and (8) implementing a groundwater extraction and treatment system designed by NASA to remove VOCs.

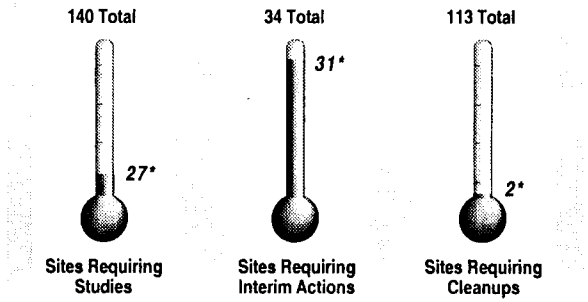
Generic remedies implemented at the installation include bioventing, groundwater extraction and treatment systems, free product removal, and capping and soil stabilization. Innovative technologies implemented at the installation during FY94 include a bioventing treatability study and an EPA SITE demonstration of the CAV-OX ultraviolet oxidation treatment system for organic contaminants.

PLAN OF ACTION

- Reduce the numbers of OUs from 10 to 3 to focus field investigation efforts
- Conduct non-time-critical Removal Actions from FY95 to FY99 for all high and medium relative risk sites using generic remedies
- Utilize bioremediation and an in-well treatment in FY95 to treat the TCE plume
- Complete installation-wide RI/FS in FY04

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 140
- Estimated Date of Completion = 2032

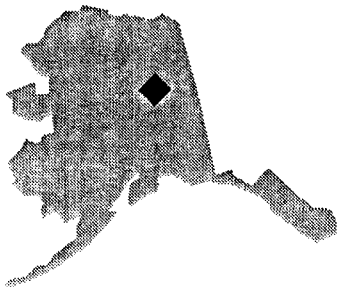


* Complete

EIELSON AIR FORCE BASE

NPL

Size:	19,790 acres
Mission:	Provide tactical air support to Pacific Air Forces
HRS Score:	48.14; Placed on NPL in 1989
IAG Status:	IAG signed in May 1991
Contaminants:	Heavy metals, petroleum/oil/lubricants, VOCs, and solvents
Media Affected:	Groundwater and soil
Funding to Date:	$39 million



Fairbanks, North Star Bourough, Alaska

CLEANUP BACKGROUND

Environmental investigations at Eielson Air Force Base began in FY82, and by FY93, the installation identified a total of 64 sites. Thirty-one of the 64 sites were grouped into six Operable Units (OU). Of the remaining sites, 24 were investigated and determined to need no further action.

Site types at the base include fire training areas, landfills, spill sites, aboveground tanks, Underground Storage Tanks (UST), and disposal pits. The most prominent site types are the result of leaks and spills from the piping and storage tanks associated with the petroleum/oil/lubricants (POL) distribution systems. Primary contaminants affecting groundwater and soil include POLs, benzene, and chlorinated solvents.

Interim Actions completed at the installation in FY90 and FY91 include the removal of four USTs, and the removal and incineration of POL-contaminated soil. Asphalt and cement were removed from a land disposal area. Bioventing was also implemented at two POL sites, and landfarming is being used to remediate POL-contaminated soils excavated during Remedial Investigation (RI) activities and Removal Actions. Four POL sites are being treated with free product removal systems, and bottled water is being provided to residents in two remote areas.

A base-wide RI and Feasibility Study (FS), completed in FY93, determined the extent of contamination on the base, and helped identify cleanup alternatives under the IAG.

The installation has developed a partnership with the Air Force Center for Environmental Excellence (AFCEE) and Utah State University to study attenuation of POLs and chlorinated solvents. Under this partnering agreement, three sites at the installation are currently being studied.

FY94 CLEANUP PROGRESS

Partnering efforts with regulatory agencies continued throughout FY94. Through quarterly Defense State Memorandum of Agreement (DSMOA) meetings, the Air Force and the state identify and resolve issues regularly.

The installation has also developed a partnership with the Army's Cold Regions Research and Engineering Laboratory to test a direct-drive, small-diameter well and drilling unit. The installation allowed the laboratory to characterize the lateral and vertical extent of several groundwater plumes. As a result of this field test, the drill rig was found to be capable of sampling wetland areas without disturbing sensitive vegetation.

Three draft Records of Decision (ROD) were completed. Five USTs were removed as part of the installation's UST removal program, and Removal Actions began at one of the landfills.

To promote the use of innovative technologies, Eielson Air Force Base presented an air sparging demonstration. To demonstrate the technology's effectiveness, a well point was driven into an area of contaminated groundwater, and air was pumped into the saturated zone. The air sparging system releases VOCs from groundwater as the rising air entrains lighter compounds.

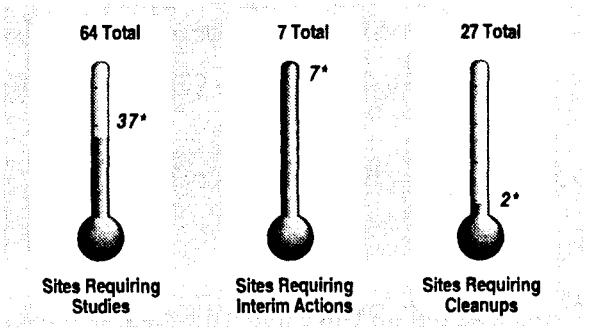
A mobile wastewater treatment system has also been set up at the facility to treat monitoring well purge water. The system will greatly reduce costs associated with hazardous waste disposal.

PLAN OF ACTION

- Sign four RODs for OU3, OU4, OU5, and base-wide
- Convert the Technical Review Committee to a Restoration Advisory Board
- Begin Remedial Action for OU2
- Expand existing bioventing units at OU1
- Establish Remedial Design contracts for OU3, OU4, and OU5

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 64
- Estimated Date of Completion = 2004



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EL TORO MARINE CORPS AIR STATION

Size:	**4,855 acres (4,855 acres excess)**
Mission:	**Serve as the primary Marine Corps jet fighter facility on the West Coast; provide materials and support for Marine Corps aviation activities; provide housing for Marine Corps personnel**
HRS Score:	**40.83; Placed on NPL in February 1990**
IAG Status:	**Federal Facility Agreement signed in October 1990**
Contaminants:	**Trichloroethene, petroleum hydrocarbons, PCBs, pesticides, herbicides, and other VOCs**
Media Affected:	**Groundwater and soil**
Funding to Date:	**$22.1 million**

Irvine, California

CLEANUP BACKGROUND

In July 1993, the BRAC Commission recommended El Toro Marine Corps Air Station undergo closure and that its aircraft, along with their dedicated personnel, equipment and support, go to Naval Air Station Miramar and Camp Pendelton Marine Corps Base. Environmental studies ongoing since FY86 identified 23 sites at the installation. Prominent site types include landfills, Underground Storage Tanks (UST), and spill sites that have released trichloroethene (TCE) and petroleum hydrocarbons to groundwater and soil.

During FY85, TCE contamination was discovered in two off-site water wells. An Interim Remedial Action (IRA) was initiated at the groundwater plume in FY89 to address groundwater contamination of the off-base wells. The treatment system consists of granular activated carbon and is still in operation. Several sites at the installation have been identified as possible source areas for VOC contamination, including the former aircraft rework activities. Other Interim Actions include capping two landfills and the incineration of drums at one site.

A Remedial Investigation and Feasibility Study (RI/FS) work plan completed in FY90 addressed 22 of the 23 identified sites. The remaining site was transferred to the RCRA Corrective Action Program. The affected sites were grouped into three Operable Units (OU).

As result of a RCRA Facility Assessment (RFA) completed in FY93, 157 Solid Waste Management Units (SWMU) were recommended for further investigation. A soil Characterization Study and subsequent Site Assessment indicated significant soil and groundwater contamination at a UST site. In FY93, the installation began several pilot scale studies to determine the most appropriate Corrective Action at the UST site. The studies include free product removal, soil vapor extraction systems, and pump tests.

A Technical Review Committee was formed in FY90. A Community Relations Plan, Information Repository, and Administrative Record were established in FY91.

FY94 CLEANUP PROGRESS

The installation formed its BRAC Cleanup Team (BCT). A joint meeting between Tustin Marine Corps Air Station and El Toro Marine Corps Air Station was held to discuss the BRAC Cleanup Plan and incorporate the President's five point plan. The installation also began work on the Environmental Baseline Survey (EBS).

A Restoration Advisory Board (RAB) was formed in April. A RAB Steering Committee was formed and a charter was developed, which was approved by the RAB. Seven RAB subcommittees were formed to provide focused review of key documents and Areas of Concern.

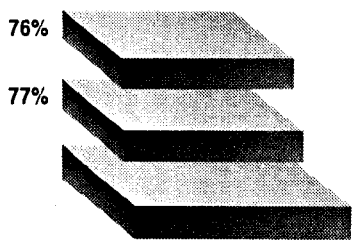
A partnering team, consisting of the Navy, EPA, and California EPA have jointly developed and reviewed draft environmental documents to successfully expedite cleanup processes. The remedies have been implemented at OU1 and at two sites at OU2. The draft RI report for OU1 was complete in July. Two IRAs were completed, including installing drainage controls and fencing one site.

Confirmation sampling for SWMUs was conducted in lieu of a RCRA Facility Investigation. SWMUs of concern have been grouped as SWMU 01 for Corrective Measures.

PLAN OF ACTION

- Complete EBS in FY95
- Complete FS for OU1 during FY95; sign Interim Record of Decision for OU1 in early FY96; and complete Remedial Design in FY96
- Complete draft RI reports for OUs 2 and 3 in FY95; and FSs in FY96
- Complete pilot studies at the UST site in FY97

CERFA CLEAN ACREAGE



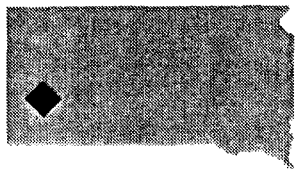
Concurred CERFA Clean Acreage –	TBD
Proposed CERFA Clean Acreage –	3,690
Acreage Available for Transfer –	3,738 *
Total Acreage –	4,855

** Environmental Condition of Property Categories 1-4*

ELLSWORTH AIR FORCE BASE

NPL

Size:	4,858 acres
Mission:	Provide long-range bombardment missiles and air refueling support
HRS Score:	33.62; Placed on NPL in August 1990
IAG Status:	Federal Facility Agreement signed in January 1992
Contaminants:	Solvents, petroleum/oil/lubricants, and lead
Media Affected:	Groundwater and soil
Funding to Date:	$20.3 million



Rapid City, South Dakota

CLEANUP BACKGROUND

Environmental studies between FY85 and FY87 identified 20 sites at Ellsworth Air Force Base. Site types include landfills, Underground Storage Tanks (UST), maintenance areas, a fire training area, and a low-level radioactive waste burial site. Groundwater and soil contamination resulted from releases of trichloroethene (TCE) and petroleum/oil/lubricants (POL) from these sites. The installation grouped the sites into 12 Operable Units (OU), which were then placed in four groups. In FY88, the installation initiated Remedial Investigation and Feasibility Study (RI/FS) activities.

In FY91, the installation constructed a pilot groundwater treatment plant for the TCE and POL contamination and removed 72 USTs. A water line was also extended from the installation to provide water for a nearby resident.

In FY93, 160 UST sites were evaluated, and 31 USTs were removed. One Removal Action at a UST site consisted of removing 50,000 gallons of POLs; 4,800 cubic yards of contaminated soil; and 20,000 gallons of water. At the low-level radioactive waste burial site, five USTs were removed.

To reduce project costs and accelerate the RI/FS schedule, the installation used field screening techniques to eliminate one year of the RI/FS activities. Field screening techniques included using a hydropunch system to collect soil gas samples and using an on-site mobile laboratory. The installation was able to identify contamination "hot spots" with this field screening technique, which ultimately accelerated the selection of soil boring locations and the installation of groundwater monitoring wells.

The installation negotiated with EPA and the state agency for shorter review times for primary documents, standard document format for the same report in each group, and concurrent review times. Review times for primary documents were shortened from 60 to 45 days, with even shorter times for less detailed documents. The installation, EPA, and the state agency also reviewed documents at the same time and discussed the review in telephone conferences and face-to-face meetings.

FY94 CLEANUP PROGRESS

In May, the Restoration Advisory Board (RAB) was formed. The RAB consists of five community members, the installation, EPA, and state agency representatives. The RAB holds quarterly meetings to receive input from the community. Partnering has been fostered through agreements with these members. Site management is also enhanced by using a management action plan.

An Interim Action of extending the installation water supply line to three private homes near the southwest portion of the base was completed. Another Interim Action consisted of removing more than 100 USTs.

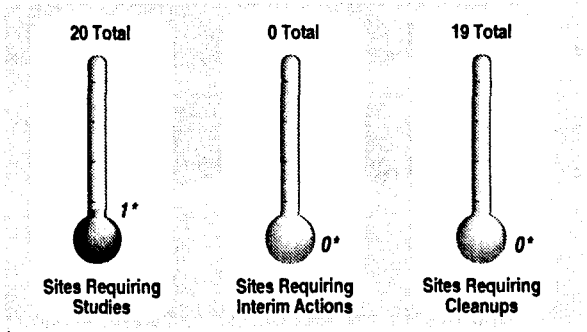
RI activities have been completed for Groups 1, 2, and 3. RI activities for Group 4 that have not been completed include the installation-wide groundwater extraction and treatment system. The installation has also initiated RD activities for Groups 1, 2, and 4 before the signing of a final Record of Decision (ROD). A pilot study for the innovative technology, soil vapor extraction (SVE), and groundwater extraction and treatment system also was initiated for Group 4.

PLAN OF ACTION

- Complete draft FS reports and Proposed Plans for Groups 1, 2, and 3 and the RI report for Group 4 in FY95
- Sign a final ROD for Groups 1, 2, and 3, complete a draft FS report and Proposed Plan for Group 4 in FY96, and sign a final ROD for Group 4 in FY97
- Continue RD activities for Groups 1, 2, and 4
- Complete the pilot study for SVE and the groundwater extraction and treatment system for Group 4 in FY95

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 20
- Estimated Date of Completion = 2004



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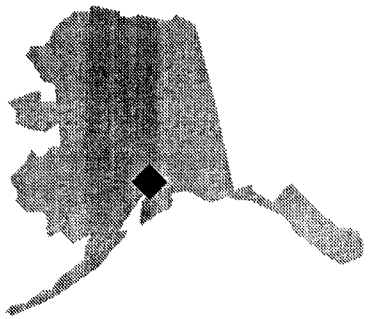
ELMENDORF AIR FORCE BASE

NPL

Size:	13,035 acres
Mission:	House the Alaskan NORAD Region; composite wing with F-15s, C-130s, E-3As, and C-12s. NORAD Region Operations Center; Rescue Coordination Center; transit Air Mobility Transports Command
HRS Score:	45.91; Placed on NPL in 1990
IAG Status:	Federal Facility Agreement signed in 1991
Contaminants:	VOCs, heavy metals, petroleum/oil/lubricants, solvents, and paints
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$46.9 million



Anchorage, Alaska

CLEANUP BACKGROUND

Environmental studies completed between FY83 and FY93 identified 52 sites at the installation which are grouped into seven Operable Units (OU). In FY93, Remedial Investigation and Feasibility Study (RI/FS) field work was conducted at three OUs, and draft RI/FS reports were completed.

One Interim Record of Decision (ROD) was signed in late FY92 for an Interim Remedial Action (IRA) involving four 1-million-gallon Underground Storage Tanks (UST) taken out of service at OU2 in FY91. The IRA consisted of extracting free petroleum product from the groundwater and treating it with air stripping, and excavating petroleum contaminated soil and treating the soil with bioventing. The excavated area was backfilled and then revegetated.

The Office of Public Affairs (OPA) serves as the Community Relations Coordinator for the installation's public involvement program. OPA serves as the focal point for all communication between the public and the installation about environmental cleanup programs, and they provide information about activities and respond to community inquiries and concerns, answering questions directly or referring the caller to persons knowledgeable about the subject.

FY94 CLEANUP PROGRESS

By FY94, 80 sites were identified at the installation: 37 CERCLA sites, 38 sites under the state program, and 5 sites requiring cleanup. Sixteen of the CERCLA sites are currently in the study phase, three sites are in the draft Record of Decision (ROD) stage, and 13 sites have no further action required. A ROD was signed for OU1, which contained five sites. Under the state program, 14 sites are still under study, 11 sites are in the Remedial Design (RD) stage, and 13 sites have no further action required. Also under the state program, six sites were identified as old construction landfills, 12 were petroleum spills, and 20 were UST sites.

To date, a total of 32 sites have been closed. Five additional sites are scheduled for Long-Term Monitoring. RI/FS work continued at OUs 3 and 6 and RI/FS reports were completed for OUs 1, 2, 4, and 5. The ROD was signed for OU1.

IRAs continued at OU2, and since FY93, more than 220 gallons of fuel has been recovered from product recovery wells and interceptor trenches. Bioventing treatability studies were completed at three sites, and the results indicate that it is an appropriate technology to clean up petroleum contaminated soil at this installation. An intrinsic remedial treatability study also was completed for OU4.

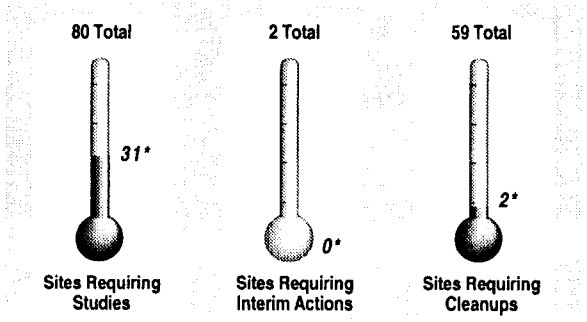
The installation completed a project to remove PCB-contaminated sediments from a storm water ditch in OU3. During RI field work, PCB contamination was identified in the ditch sediments. Because the ditch is located adjacent to an elementary school and in a residential area, an expedited response action was initiated to remove the PCBs.

PLAN OF ACTION

- Continue IRA and complete pilot studies to increase the efficiency of product recovery at OU2
- Begin Removal Action at the asphalt seep of OU1 that consists of surface removal and reuse of asphalt in road construction
- Finalize RODs for OU2 and OU5 by mid-FY95 and RODs for OU3 and OU4 by the end of FY95
- Develop RD for OU2 and OU5
- Implement Long-Term Monitoring at OU1 and OU5 and continue RI/FS for OU6

PROJECT ACCOMPLISHMENTS

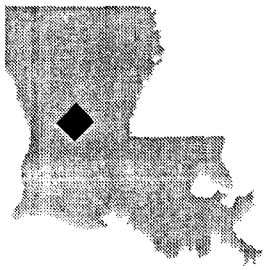
- Total Number of Sites = 80
- Estimated Date of Completion = 2017



* Complete

ENGLAND AIR FORCE BASE

Size:	2,282 acres (2,282 acres excess)
Mission:	Inactive; formerly used as a tactical fighter wing
HRS Score:	N/A
IAG Status:	None
Contaminants:	Household and industrial waste, spent solvents, fuels, waste oil, paints, pesticides, alkali, low-level radioactive waste, chlorine gas, PCBs and medical waste
Media Affected:	Soil
Funding to Date:	$15.8 million



Alexandria, Louisiana

CLEANUP BACKGROUND

In July 1991, the BRAC Commission recommended closure of England Air Force Base, the deactivation of one squadron, and transfer of the 23rd Wing along with two fighter squadrons to Pope Air Force Base, North Carolina.

Environmental studies ongoing since FY82 identified 42 sites including: landfills; Underground Storage Tanks (UST); aboveground storage tanks; fire training areas; fuel storage tanks; a JP-4 refueling system; oil-water separators; a sewage treatment pond; radioactive instrument dials; and gas training kit burial sites. Petroleum by-products, pesticides, and herbicides are the primary contaminants affecting soil.

In FY92, a RCRA Facility Assessment was conducted and resulted in the identification of 59 Solid Waste Management Units and five Areas of Concern.

Interim Actions conducted include the cleaning of JP-4 jet fuel aboveground storage tanks and the removal of USTs. Soil removal and land farming have been conducted at the installation.

Although the installation was scheduled to close in September 1993, the installation closed in December 1992. In FY93, the Technical Review Committee converted into the BRAC Cleanup Team.

FY94 CLEANUP PROGRESS

In April, the installation formed the Restoration Advisory Board (RAB). The RAB includes representatives of community groups, the Louisiana Department of Environmental Quality, EPA, and the local media. The RAB meets regularly to discuss cleanup progress and answer questions posed by the community.

The installation prepared an Environmental Baseline Survey (EBS). Approximately 1,200 acres of the property were designated CERFA clean and concurred by the state. To date, the installation has leased approximately 40 percent of the property.

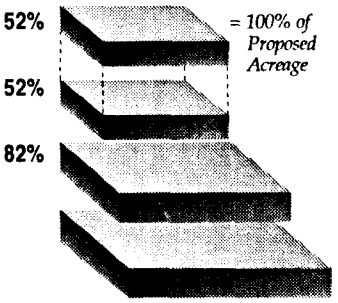
A reuse plan developed by the England Economic and Industrial Development District in January was approved by the Federal Aviation Administration for a Record of Decision supporting base-wide leasing.

Cleanup actions implemented at the installation include the removal of USTs and cleanup of oil-water separators. The oil-water separator Site Assessment and the Phase I RCRA Facility Investigation (RFI) were completed. The installation developed a work plan for the Phase II RFI. The installation completed an asbestos survey and implemented asbestos abatement at an on-base school and youth center.

PLAN OF ACTION

- Negotiate base-wide lease for the entire property; lease expected to be final in FY95; the BCT will review the EBS regarding the property lease
- Complete comprehensive survey establishing background soil concentration levels
- Continue to negotiate Phase II RFI with regulatory agencies
- Complete an assessment of aboveground storage tanks and replace one oil-water separator
- Initiate lead-based paint survey of housing and schools at the installation
- Close aircraft fueling and hydrant system and associated underground fuel lines
- Conduct Interim Actions at a fire training site and three other contaminated soil sites
- Initiate a base-wide asbestos survey

CERFA CLEAN ACREAGE



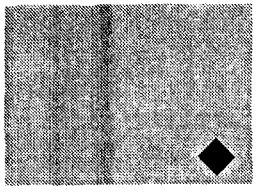
Concurred CERFA Clean Acreage –	1,191
Proposed CERFA Clean Acreage –	1,191
Acreage Available for Transfer –	1,862 *
Total Acreage –	2,282

** Environmental Condition of Property Categories 1-4*

F.E. Warren Air Force Base

NPL

Size:	5,869 acres
Mission:	Provide intercontinental ballistic missile and aerospace rescue operations
HRS Score:	39.23; Placed on NPL in 1990
IAG Status:	Federal Facility Agreement signed in September 1991
Contaminants:	Oil, solvents, metals, acids, petroleum, and explosive residues
Media Affected:	Groundwater and soil
Funding to Date:	$34 million



Cheyenne, Wyoming

CLEANUP BACKGROUND

The Air Force began cleanup activities at F.E. Warren Air Force Base in FY84 when contaminated soil was removed near a battery shop acid dry well. In FY85, a base-wide Preliminary Assessment and Site Inspection identified 25 potentially contaminated sites. Beginning in FY87, these sites were investigated during Remedial Investigation and Feasibility Study (RI/FS) activities. The RI report confirmed contaminants at 20 sites, which were subsequently divided into 10 Operable Units (OU).

Site types at the installation include Underground Storage Tanks (UST), spill sites, a fire training area, landfills, firing ranges, and ordnance areas. The RI report also identified five plumes of solvent contaminated groundwater migrating from on-site landfills and undetermined sources; the plumes cover approximately 700 acres.

Between FY84 and FY89, Removal Actions were conducted that consisted of: replacing leaking USTs and removing petroleum contaminated soil; removing trichloroethene (TCE)-contaminated soil; and removing TCE-contaminated sludges and soil. In FY92, the installation signed a Record of Decision (ROD) for OU4. The installation submitted a No Action ROD for the Acid Dry Well OU4 in FY93.

RI/FS activities continued throughout FY93. The installation used ground penetrating radar and portable x-ray fluorescence investigative techniques during the field investigation to help better characterize lead contamination in subsurface soils.

FY94 CLEANUP PROGRESS

The installation continued to maintain good communication with regulatory agencies during Technical Review Committee meetings. Scoping meetings and workshops were held with regulatory agencies to discuss final documents. Representatives from the installation attended neighborhood meetings to discuss the cleanup progress.

An air stripper was installed to treat groundwater contaminated with TCE. To minimize risks associated with contaminated groundwater plumes in the area, the installation now delivers bottled water to more than 40 families.

To accelerate cleanup, the installation implemented generic remedies such as air stripping contaminated groundwater, capping of landfills, and removing the source of contamination at spill sites.

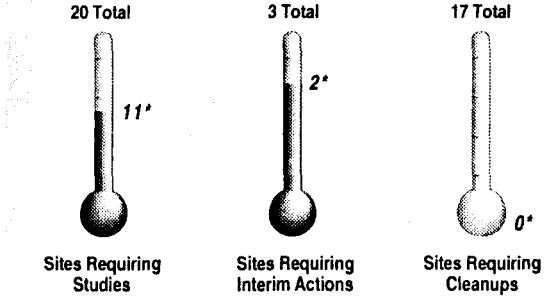
The installation began bioventing of petroleum hydrocarbon-contaminated soil at OU10. The installation submitted RI reports for OU1 and 8, and a no action ROD for OU5.

PLAN OF ACTION

- Continue implementing generic remedies including air stripping at OU2 in FY95
- Continue bioventing at OU10 in FY95
- Establish Restoration Advisory Board in early FY95
- Cap landfill at OU3 as part of the Proposed Plan and ROD
- Continue to use portable x-ray fluorescence for delineating the extent of lead-contamination in soil at OU7
- Complete FS activities for OU1, 3, 8, and 9 during FY95
- Complete RI activities for OU3, 6, 7, 9 and 10 in FY95 and for OU2 in FY97
- Submit remaining RODs for all OUs by FY98

Project Accomplishments

- Total Number of Sites = 20
- Estimated Date of Completion = 2007

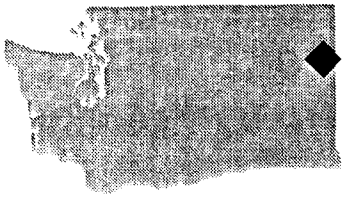


* Complete

FAIRCHILD AIR FORCE BASE

NPL

Size:	4,300 acres
Mission:	Provide aerial refueling and airlift services
HRS Score:	31.98; Placed on NPL in 1989
IAG Status:	IAG signed in 1990
Contaminants:	Solvents, fuels, oils, electroplating chemicals, cleaning solutions, corrosives, photographic chemicals, paints, thinners, pesticide residues, and PCBs
Media Affected:	Groundwater and soil
Funding to Date:	$24 million



Spokane County, Washington

CLEANUP BACKGROUND

Environmental studies beginning in FY85 identified five sites at the installation, covering 85 acres and including a French drain system, two landfills, and two industrial wastewater lagoon systems. To date, 30 sites have been identified at the installation, with the most prominent site being one of the landfills. The majority of the remaining sites at the installation involve petroleum-contaminated soils.

Interim Actions at the installation include the initiation of an extraction and treatment system for removal of trichloroethene (TCE)-contaminated groundwater in FY92. In FY93, a Removal Action consisting of 1,600 cubic yards of soils contaminated with fuels and oils was completed.

Remedial Investigation and Feasibility Study activities ongoing since FY88 were completed at one of two sites in FY93. In FY93, two Records of Decision (ROD) were signed for a combined total of eight sites. Two of the sites require no further action, two require Long-Term Monitoring (LTM) or institutional controls, and the remaining four require cleanup or LTM and institutional controls. The remaining 22 sites are still under investigation or have been determined to require no further action.

FY94 CLEANUP PROGRESS

The installation maintains a strong working relationship with both EPA and the Washington State Department of Ecology. Installation representatives communicate with these two agencies on a regular basis. EPA and the state are involved in all cleanup activity, thus, expediting the decision-making process.

The installation was an active participant in the Air Force Center for Environmental Excellence (AFCEE) bioventing technology initiative. The installation has provided five petroleum-contaminated sites for treatability studies conducted as part of this initiative. Bioventing with enhanced biodegradation has been shown to be an effective, innovative treatment technology to clean up petroleum-contaminated sites. As a result of tests at the installation, AFCEE is testing this initiative at other Air Force installations nationwide.

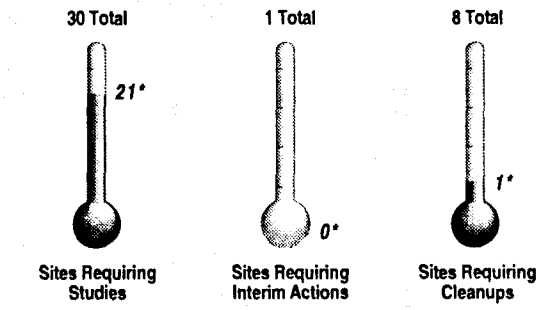
The Air Force completed Remedial Designs (RD) at two sites and began RD activities at a third site. The groundwater extraction and treatment system also continues to remediate an on-base plume of TCE.

PLAN OF ACTION

- Continue construction activities at the landfill; these activities include capping the inactive landfill and expanding the current extraction and treatment system
- Construct an additional treatment facility for the TCE-contaminated groundwater plume
- Sign a ROD at the end of FY95 for eight sites and 16 additional no further action sites
- Continue LTM and Operation and Maintenance at six sites

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 30
- Estimated Date of Completion = 2020



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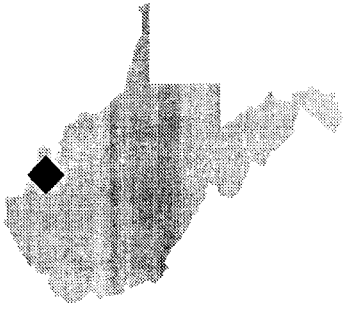
FIKE-ARTEL CHEMICAL

NPL

Size:	12 acres
Mission:	Manufacture smokeless powder
HRS Score:	36.3; Placed on NPL in 1983
IAG Status:	None
Contaminants:	Dioxin, organic and inorganic chemicals, and metals
Media Affected:	Groundwater and soil
Funding to Date:	$.4 million



Nitro, West Virginia

CLEANUP BACKGROUND

Cleanup activities at Fike-Artel Chemical have been divided into five Operable Units (OU): (1) disposal of storage tank and drum contents (OU1); (2) decontamination and disposal of storage tanks, surface drums, and aboveground structures (OU2); (3) removal of buried drums (OU3); (4) Remedial Investigation and Feasibility Study (RI/FS) of groundwater and soil (OU4); and (5) RI of the cooperative sewage treatment plant (OU 5).

In FY93, an RI was completed at OU1. Private Potentially Responsible Parties (PRP) and EPA are the lead on all cleanup activities.

FY94 CLEANUP PROGRESS

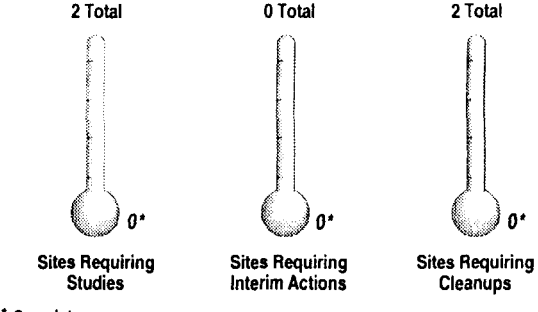
RI activities began at OU2 in March. For OU3, 20 PRPs associated with the site signed an agreement with EPA to remove 7,000 to 16,000 buried drums.

PLAN OF ACTION

- Begin the PRP-led RI/FS for OU 4 in FY95; the schedule for completing RI work at OU5 is not finalized at this time
- Resolve DoD liability, if any, in the current settlement and litigation process

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 2
- Estimated Date of Completion = 2003



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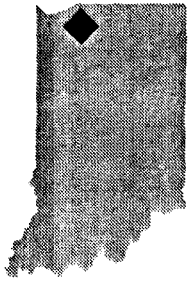
FISHER-CALO

NPL

Size:	443 acres
Mission:	Manufacture ordnance
HRS Score:	52.05; Placed on NPL in September 1983
IAG Status:	None
Contaminants:	VOCs, solvents, PCBs, inorganic chemicals, and PAHs
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$.4 million (funding based on one NPL site)



La Porte, Indiana

CLEANUP BACKGROUND

Environmental studies conducted in FY82 identified 11 areas of contamination, including eight areas of soil contamination and three groundwater contamination plumes. Surface soils are contaminated with solvents, inorganic compounds, and PCBs. Groundwater is contaminated with VOCs. Surface water samples indicate the presence of inorganic compounds, and sediment samples contain PCBs.

A Remedial Investigation (RI) was completed in FY89, and a Feasibility Study (FS) was completed in FY90. A Record of Decision (ROD) designating the selected cleanup alternative was issued in late FY90. A Consent Decree entered into by EPA and the Potentially Responsible Parties (PRP) associated with the site requires the PRPs to conduct Remedial Design and Remedial Action (RD/RA). The PRPs filed a lawsuit against DoD in FY92. The PRPs and EPA are the lead for this site.

FY94 CLEANUP PROGRESS

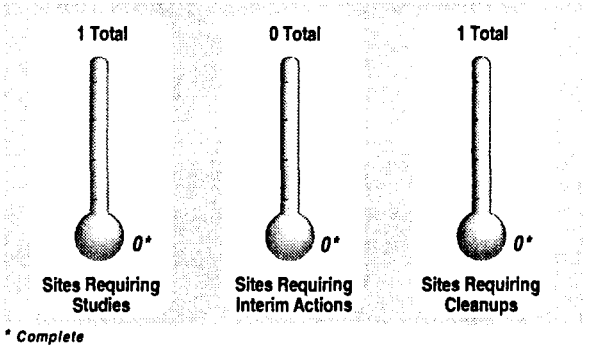
RD activities conducted include the design of a groundwater extraction and treatment system and a soil flushing or soil vapor extraction system.

PLAN OF ACTION

- Complete RD in FY95
- Begin the following RA efforts in FY95: (1) excavate and incinerate soils containing semi-VOCs and PCBs, (2) sample incinerator ash, (3) implement soil flushing or soil vapor extraction for soils contaminated with VOCs, (4) groundwater extraction and treatment, and (5) removal of storage tanks, drums and other miscellaneous containers; the PRPs will conduct RA efforts
- Resolve DoD liability issues pending at the Fisher-Calo site

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 1
- Estimated Date of Completion = 2006



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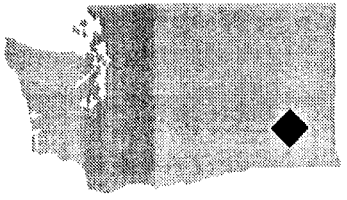
FORMER LARSON AIR FORCE BASE

NPL

(MOSES LAKE WELLFIELD CONTAMINATION SITE)

Size:	9,607 acres
Mission:	Inactive; formerly served as tactical air command, air transport, and strategic air command; and provided pilot training
HRS Score:	50.00; Placed on NPL in October 1992
IAG Status:	None
Contaminants:	Trichlorethylene, jet fuel, tetraethyl lead, and radioactive materials
Media Affected:	Groundwater and soil
Funding to Date:	$2.4 million



Moses Lake, Washington

CLEANUP BACKGROUND

Larson Air Force Base served as a tactical air command base, then as a military air transport facility, and a strategic air command base. The installation was sold to the Port of Moses Lake in 1966. It is currently operated by Grant County Airport, which is a regional aviation, industrial, and educational facility. The Moses Lake Wellfield is a privately-owned water supply for 70 residents of the community of Skyline. The Wellfield property adjoins the former Larson Air Force Base. As a result, approximately ten percent of the installation is included in what is called the Moses Lake Wellfield Contamination Site.

Environmental studies beginning in FY87 identified four sites, including: 11 Underground Storage Tanks (UST) and associated contaminated soil; a trichlorethylene (TCE)-contaminated groundwater plume; an area containing low-level radioactive wastes; and two disposal areas containing tetraethyl lead. In FY88, the TCE was detected in the Moses Lake Wellfield.

In FY91, a Phase I Remedial Investigation (RI) was initiated to delineate the TCE plume and to identify potential source areas that require further characterization. In FY93, the Phase I RI was completed.

In FY92, 11 USTs were removed. In FY93, an Engineering Evaluation and Cost Analysis (EE/CA) was initiated to evaluate the drinking water system.

FY94 CLEANUP PROGRESS

Cleanup at the installation is currently being addressed by the Seattle and Omaha Districts of the Army Corps of Engineers (COE); the Seattle District is overseeing the technical work and the Omaha District is leading the DoD liability investigation and negotiation efforts.

An Interim Remedial Action was conducted by the Port of Moses Lake to provide bottled water to the community on a voluntary basis.

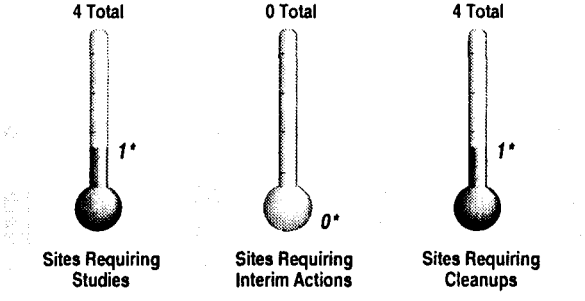
The Omaha District COE initiated a Potentially Responsible Party (PRP) search. Three additional rounds of groundwater sampling were conducted as an addendum to the Phase I RI. The EE/CA for the drinking water system was completed and distributed for public comment, and a public meeting was conducted.

PLAN OF ACTION

- Finalize the PRP search and cost allocation effort
- Negotiate a cost-sharing agreement with other PRPs to fund the cleanup
- Develop partnering agreements with federal and state regulatory agencies
- Finalize the addendum to the Phase I RI to include additional sampling results

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 4
- Estimated Date of Completion = 2004



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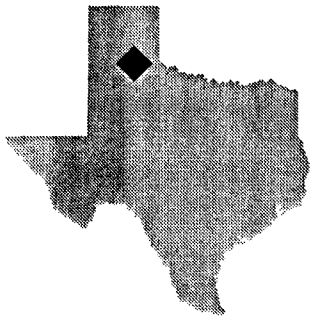
FORMER PANTEX ORDNANCE PLANT

NPL

Size:	16,000 acres
Mission:	Produce and store military weapons
HRS Score:	51.22; Placed on NPL in May 1994
IAG Status:	Under negotiation
Contaminants:	VOCs, semi-VOCs, heavy metals, UXO, and explosives
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$3.4 million



Pantex Village, Texas

CLEANUP BACKGROUND

The former Pantex Ordnance Plant, located about 13 miles northeast of Amarillo, Texas, began operations as an Army Ordnance Corps facility in 1942. The northern two-thirds of the property is currently owned by DOE. Operations include fabrication, assembly, testing, and disassembly of nuclear ammunition and weapons. Past and present operations include burning of chemical wastes in unlined pits, burial of wastes in unlined landfills, and discharging of plant wastewaters into on-site surface waters.

Environmental studies have been ongoing since FY88. A Preliminary Assessment and Site Inspection (PA/SI) completed in FY90 identified nine portions of the property as possible Areas of Emphasis (AOE) for investigations. These AOEs were identified based on locations of previous production, storage, and disposal activities and on information gathered in an SI of the former Pantex Ordnance Plant. Some of the identified AOEs contained potential ordnance and explosive waste.

From FY93 to FY94, an Interim Action was conducted to remove ordnance explosives waste from soil to a depth of three feet at three AOEs.

FY94 CLEANUP PROGRESS

A Phase I Remedial Investigation and Feasibility Study (RI/FS) began for two AOEs which consisted of sampling surface and subsurface soil, sediment, surface water, and groundwater. Six groundwater monitoring wells were installed to a depth of approximately 300 feet. Initial conclusions from the RI report indicate that explosives, mercury, lead, chromium, and chlordane are the contaminants of concern.

An Engineering Evaluation and Cost Analysis (EE/CA) was conducted for four AOEs where non-time critical Removal Actions may be required.

In November, representatives from the Army participated in a public meeting held by DOE to address analytical results of groundwater sampling. Results indicated the presence of contaminants in the Ogallala Aquifer underlying the site.

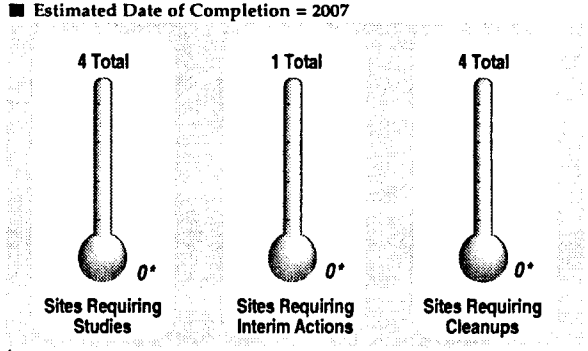
In addition to the $3.4 million expended by DoD through FY94, DOE has expended $20.8 million on cleanup activities at the installation.

PLAN OF ACTION

- Complete final Phase I RI in early FY95
- Determine Potentially Responsible Parties (PRP) for site contamination and the percentage of waste generated by each PRP at the property
- Continue removal of ordnance explosive waste; however, the Phase II RI/FS will be put on hold pending the outcome of PRP/HTRW records search
- Complete the final EE/CA report, addressing four AOEs where non-time critical Removal Actions may be required in FY95

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 4**
- **Estimated Date of Completion = 2007**



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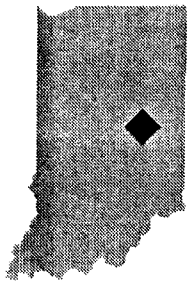
FORT BENJAMIN HARRISON

Size:	2,501 acres (2,357 acres excess)
Mission:	House U.S. Army Soldier Support Center; provide personnel, financial, and soldier physical fitness administration and training
HRS Score:	N/A
IAG Status:	None
Contaminants:	VOCs, fuel hydrocarbons, petroleum products, pesticides, and heavy metals
Media Affected:	Groundwater and soil
Funding to Date:	$7 million



Lawrence, Indiana

CLEANUP BACKGROUND

In July 1991, the BRAC Commission recommended closure of Fort Benjamin Harrison; the realignment of the Soldier Support Center to Fort Jackson, South Carolina; and retention of the Department of Defense Finance and Accounting Service, Indianapolis Center. Following closure, about 2,357 acres will be returned to the community for redevelopment.

The primary sites types identified in previous environmental studies include spill areas, Underground Storage Tanks (UST), fire training areas, aboveground storage tanks, hazardous waste storage areas, firing ranges, and maintenance shops. Petroleum products, pesticides, and heavy metals are the primary contaminants of concern.

Phase I of a RCRA Facility Investigation (RFI) and an environmental investigation began in FY92.

FY94 CLEANUP PROGRESS

The Restoration Advisory Board (RAB) was formed and includes a wide variety of representatives from surrounding communities and other special interest groups, including a Native American group. The RAB held one meeting, primarily addressing organizational issues. RAB members are currently reviewing investigation reports to become familiar with environmental issues at the installation.

The BRAC Cleanup Team (BCT) was formed and completed the initial version of the BRAC Cleanup Plan (BCP). To expedite decision-making and enhance the effectiveness of the BCT's oversight of environmental cleanup, the Army reduced the number of draft reports undergoing internal review before distributing them to other members of the BCT. The Army and regulatory agencies conduct reviews concurrently. The Army prepares responses to comments received from BCT members and obtains BCT concurrence before reports are completed.

The BCT maintains a productive working relationship with the Fort Harrison Transition Task Force (Task Force), which serves as the community-based land reuse authority. The Task Force consists of members from the surrounding communities, and representatives from the county and state. The Task Force produced a reuse plan to assist in preparing the Environmental Impact Statement (EIS). Public meetings have been held to solicit input on the EIS, and comments have been incorporated in the final versions of the EIS documents.

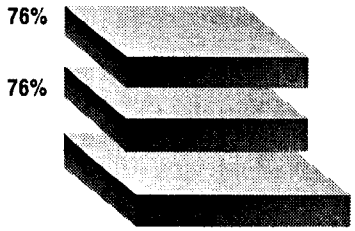
The Army completed a CERFA investigation of the environmental condition of the installation to identify clean parcels. The installation and the federal and state regulatory agencies are currently negotiating issues regarding the CERFA clean designations.

Interim Actions are underway to prevent contaminant migration to groundwater and to clean a storage building contaminated with pesticides. The installation landfill was closed, capped, and monitoring activities began. The installation removed 26 USTs.

PLAN OF ACTION

- Revise BCP in FY95
- Complete base closure on October 1, 1996
- Finalize Land Reuse Plan
- Initiate Phase II of the RFI and environmental investigation
- Complete Interim Action at pesticide storage building and firing range
- Continue landfill monitoring activities

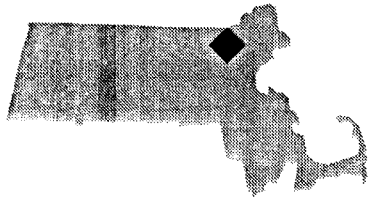
CERFA CLEAN ACREAGE



Concurred CERFA Clean Acreage –	0
Proposed CERFA Clean Acreage –	1,903
Acreage Available for Transfer –	1,903 *
Total Acreage –	2,501

** Environmental Condition of Property Categories 1-4*

Size:	9,283 acres (excess acreage TBD)
Mission:	Provide Army Reserve and National Guard personnel training; support Army Security Agency Training Center and School
HRS Score:	42.24; Placed on NPL in 1989
IAG Status:	IAG signed in June 1991
Contaminants:	VOCs, heavy metals, petroleum products, PCBs, pesticides, herbicides, and explosive compounds
Media Affected:	Groundwater and soil
Funding to date:	$38.4 million



Fort Devens, Massachusetts

CLEANUP BACKGROUND

In July 1991, the BRAC Commission recommended that Fort Devens be closed. Currently, the installation is making significant progress in its environmental and base closure programs and is scheduled to close in July 1997.

Environmental investigations at Fort Devens identified landfills, vehicle and equipment maintenance and storage yards, the Defense Reutilization and Marketing Office scrapyard, motor pools, and Underground Storage Tanks (UST) as the main site types. Environmental investigations have determined that site soil is contaminated with heavy metals, petroleum, and PCBs, and groundwater is contaminated with heavy metals and solvents.

The installation prioritizes sites according to potential risk or high potential for reuse. Several Interim Actions have been completed at the installation. Contaminated soil and USTs have been removed, a landfill has been capped, and soil vapor extraction has also been implemented. The installation has streamlined the document review process by having the Army and regulatory agencies review documents concurrently and by preparing only one draft report and one final report.

Significant progress in investigations has been made by partnering with regulatory agencies, reuse groups, and the public. Also, as a result of an accelerated IAG and Federal Facility Agreement schedule, the last Remedial Action will be completed in FY98, instead of FY02, which was the original projection.

Cooperating Agency Status has been granted to the Massachusetts Government Land Bank, the U.S. Fish and Wildlife Service, and the four surrounding communities: Ayer, Harvard, Lancaster, and Shirley. A Memorandum of Agreement signed by the Army and these organizations outlined the roles and responsibilities of each member; it also formulated a Primary Coordination Team for the installation's disposal and reuse Environmental Impact Statement (EIS). The team consists of one or more representatives from each agency. The disposal and reuse EIS also incorporates public input received at workshops and meetings.

FY94 CLEANUP PROGRESS

The installation formed its Restoration Advisory Board (RAB) in February. The RAB meets regularly to discuss site status and cleanup progress.

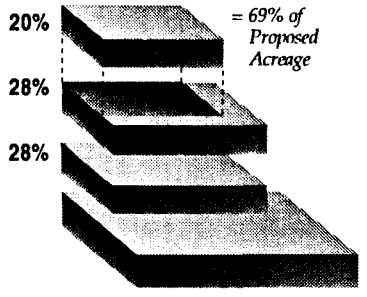
An information exchange meeting between the Fort Ord and the installation BRAC Cleanup Teams (BCT) was held to share lessons learned regarding soil cleanup techniques, public involvement, property transfer, and accelerated cleanup. As a result of the meeting, the installation decided to pursue a "plug in" Record of Decision (ROD) for soil cleanup similar to the Fort Ord ROD.

As of FY94, the installation had completed 22 Removal Actions and five other cleanup actions. In addition to these activities, the installation demonstrated the use of innovative technologies, including a pilot soil treatment facility and solicited for proposals from the University of Massachusetts and Tufts University to demonstrate innovative field investigation techniques.

PLAN OF ACTION

- Continue to coordinate with other agencies through partnerships such as the Executive Steering Committee established by the installation; the committee is comprised of upper level installation managers, EPA, the Massachusetts Government Land Bank, and the state
- Continue environmental investigations through FY95
- Complete three RODs

CERFA CLEAN ACREAGE



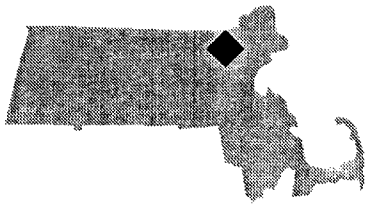
Concurred CERFA Clean Acreage –	1,828
Proposed CERFA Clean Acreage –	2,637
Acreage Available for Transfer –	2,637 *
Total Acreage –	9,283

** Environmental Condition of Property Categories 1-4*

FORT DEVENS-SUDBURY ANNEX

NPL

Size:	2,291 acres
Mission:	Train troops and test ordnance, material, and equipment
HRS Score:	35.57; Placed on NPL in February 1990
IAG Status:	IAG signed in June 1991
Contaminants:	VOCs, PCBs, pesticides, and heavy metals
Media Affected:	Groundwater and soil
Funding to Date:	$7.4 million



Middlesex County, Massachusetts

CLEANUP BACKGROUND

Fort Devens-Sudbury Annex is a subpost of Fort Devens, located in eastern Massachusetts about 20 miles west of Boston and 12 miles southeast of Fort Devens. In FY80, a Preliminary Assessment and Site Inspection (PA/SI) identified 11 sites. Site types include: an old landfill; disposal and dump areas; a fire training pit; ordnance test areas; a leach field; Underground Storage Tanks (UST); a drum storage area; a burning ground area; and a chemical research and development area. In FY86, Remedial Investigation and Feasibility Study (RI/FS) activities confirmed groundwater contamination at two sites. The primary contaminants at the installation include VOCs and pesticides affecting groundwater and soil.

Interim Actions conducted at the installation include the removal of drums, petroleum-contaminated soil, and a UST. In the mid-1980s, the installation excavated fuel-contaminated soil at a burning ground area and PCB-contaminated soil from a transformer storage area.

A Technical Review Committee (TRC) was formed in FY90 that meets quarterly. The TRC has greatly improved site management, and has helped foster partnerships with EPA and state regulatory agencies. Through the TRC, local environmental groups have participated in the review process of the installation cleanup program. The TRC has improved the decision-making process by resolving outstanding issues through regular meetings between Fort Devens-Sudbury Annex, EPA, and the state regulatory agency. Fort Devens-Sudbury Annex has also helped to reduce regulatory impediments with EPA and the state by adhering to preestablished state cleanup level standards for soil.

FY94 CLEANUP PROGRESS

By the end of FY94, Fort Devens-Sudbury Annex identified 72 sites. Action at these sites includes: signed no further action Decision Documents for 16 sites; initiated RIs for five sites and FSs for an additional five sites; performed supplemental SIs for 22 sites; and planned Removal Actions for eight sites. Removal Actions conducted include removing 2,300 tons of contaminated soil, 15 tons of debris, 107 abandoned drums, and 13 abandoned oil USTs.

The installation has fostered public involvement by publishing its first newsletter and cleanup brochure and distribution of advertisements for TRC meetings. The installation initially distributed newsletters to 4,800 area residents but now expects to increase the distribution for future newsletters. All TRC meetings are more widely advertised and announced in five local newspapers.

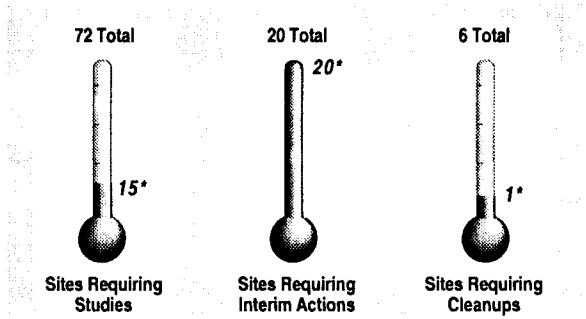
The installation successfully completed off-post groundwater sampling of private drinking water wells. Analytical results indicated that past releases to groundwater and soil had not affected the private wells. Analytical results were mailed to local residents, and a public meeting was held to discuss the results and any possible concerns about drinking water in the area. The installation fostered a partnership with EPA by having EPA participate in the groundwater sampling; the installation collected split samples so that EPA could verify analytical results. Both analyses were statistically the same.

PLAN OF ACTION

- Complete FSs, Records of Decision, and Remedial Designs for all sites designated as Group A in FY95
- Complete RI/FS for all sites designated as Group B in FY95
- Acquire regulatory concurrence on 19 no further action sites in FY95
- Complete supplemental SI report for 21 sites in early FY96

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 72
- Estimated Date of Completion = 2010



* Complete

FORT DIX

NPL

Size:	31,085 acres
Mission:	Provide training and reserve support
HRS Score:	37.40; Placed on NPL in 1987
IAG Status:	Federal Facility Agreement signed in September 1991
Contaminants:	Heavy metals, petroleum/oil/lubricants, and chlorinated solvents
Media Affected:	Groundwater and soil
Funding to Date:	$20 million

Pemberton Township, New Jersey

CLEANUP BACKGROUND

In FY77, the Army conducted a study involving a records search and an installation assessment to assess the installation's environmental program for use, storage, treatment, and disposal of toxic and hazardous materials. The study recommended no further investigations for the sites. However, the sites were reevaluated because the Records Search did not address industrial contamination.

In FY79 and FY82, the Fort Dix Sanitary Landfill and 16 other sites were reevaluated. These sites included storage areas, Underground Storage Tanks (UST), landfills, lagoons, impact areas, and an incinerator. Heavy metals, petroleum/oil/lubricants (POL), and chlorinated solvents were released from these sites to soil and groundwater. The installation placed a series of groundwater monitoring wells around the perimeter of the Fort Dix Sanitary Landfill, and VOCs were detected in the downgradient wells.

The installation used the Site Characterization and Analysis Penetrometer System (SCAPS) to perform site characterizations and field screening activities at several sites in FY93. USTs and associated contaminated soils were removed from seven sites.

The installation established successful partnering relationships with state and local regulatory agencies. A Technical Review Committee (TRC) was formed upon the initiation of the Remedial Investigation and Feasibility Study (RI/FS). Members from the installation, EPA, the state, the Pinelands Commission, and the surrounding community meet quarterly to discuss technical issues, project direction, and scheduling for the installation's cleanup program. The TRC has provided continuity to the cleanup program.

FY94 CLEANUP PROGRESS

As part of a Remedial Action (RA), the installation began constructing a multi-layer cap over the Fort Dix Sanitary Landfill. Construction of a passive gas venting system and sedimentation and erosion control features will continue for two years.

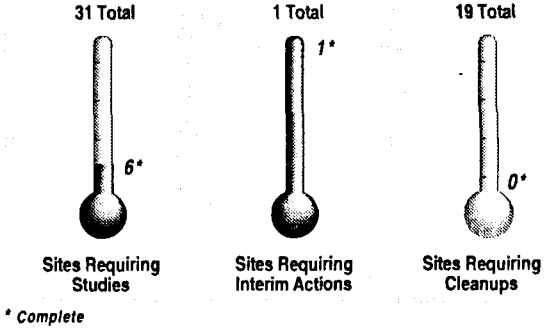
The installation began an accelerated evaluation and characterization of contamination at a former magazine storage and degreasing area. The installation is evaluating the site on an expedited basis because of possible off-post migration of contaminants. The installation also removed USTs and associated contaminated soil. RI/FS activities are ongoing at 14 sites.

PLAN OF ACTION

- Perform UST surveys
- Design and install groundwater extraction and treatment systems to address groundwater contamination
- Begin RD/RA activities and Long-Term Monitoring
- Conduct additional sampling at the 4400 Motor Pool Area and the Property Disposal Office Landfill
- Complete cleanup activities by the end of FY97

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 31**
- **Estimated Date of Completion = 2040**



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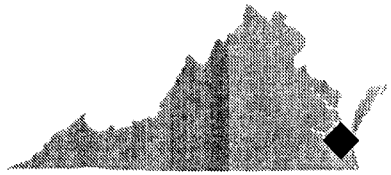
FORT EUSTIS

PROPOSED NPL

Size:	**8,228 acres**
Mission:	**House the Army Transportation Training Center; provide training in rail, marine and all other modes of transportation and in amphibious operations**
HRS Score:	**50.00; Placed on NPL in December 1994 (in FY95)**
IAG Status:	**None**
Contaminants:	**Petroleum products, PCBs, VOCs, pesticides, heavy metals, and PAHs**
Media Affected:	**Groundwater, surface water/sediments, and soil**
Funding to Date:	**$34.5 million**



Newport News, Virginia

CLEANUP BACKGROUND

Fort Eustis houses a transportation training center, which includes equipment maintenance, fuel and oil storage, and fire training. Previous investigations have identified 26 sites, including landfills, Underground Storage Tanks, pesticide storage areas, range and impact areas, and surface impoundments. The migration of contaminants from some of these sites to creeks and estuaries, and the potential migration through surface water and the upper water table to the James River, are of greatest concern at the installation.

Analytical results from samples conducted in FY87 and FY90 indicated the presence of PCBs, pesticides, PAHs, and lead in onsite surface water and sediments. In FY90, the installation conducted a Feasibility Study (FS) for the closure of two landfills, and in FY93, the installation began the selected Remedial Action (RA), which consisted of capping with a polyethylene liner and top soil.

A Remedial Investigation (RI) at four sites located near estuaries on the installation began in FY90. The RI revealed heavy metal, PCB, and petroleum product contamination. In FY92, a Preliminary Assessment and Site Inspection was completed at eight additional sites where suspected soil contaminants include fuel and oils, pesticides, and VOCs. In FY93, further studies were conducted to determine the full extent of the contamination at all of these sites.

The installation also conducted further studies as part of an Ecological Assessment of estuary sediments and adjacent wetlands.

FY94 CLEANUP PROGRESS

Army and regulatory agency personnel are working closely to expedite cleanup. The installation regularly solicits EPA and state regulatory agency review of scopes of work to ensure consensus on the planned approach.

Interim Remedial Actions (IRA) were completed at the Felker Airfield Tank Farm, where about 3,800 cubic yards of soil contaminated with JP-4 fuel was removed and placed into a bioremediation cell at the installation. IRAs also included removing 29,000 gallons of waste oil from a waste oil storage tank site and excavating 150 cubic yards of contaminated soil and placing it in the installation's bioremediation cell.

Cleanup activities at the two landfills were completed. A total of nearly 76 acres were capped with a polyethylene liner and top soil. Long-Term Monitoring and Operation and Maintenance will continue at both sites.

The Army also identified petroleum contamination at the installation service station and a free-product plume underlying the area.

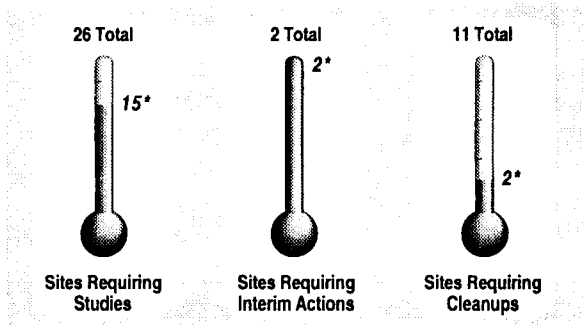
RI field work used geoprobe techniques to collect soil and groundwater samples. This technique, which requires no borings, greatly reduces potential exposure and the disruption of contaminated media. When used, in conjunction with a mobile analytical laboratory, this technique is faster, safer, and more economical than the drilling typically required for sampling and well installation.

PLAN OF ACTION

- Establish the Technical Review Committee in early FY95 and hold an initial partnering meeting to lay the groundwork for negotiation of the Federal Facility Agreement
- Complete the Information Repository, which will include the Administrative Record for the installation
- Remove free-product from groundwater under the installation service station, while continuing the design of the groundwater treatment system in FY95
- Complete studies currently underway, including the RI and Ecological Assessment at the estuary sites and the confirmatory studies conducted in FY93
- Conduct an FS to assess the removal of contaminated sediments from on-site wetlands areas

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 26**
- **Estimated Date of Completion = 2010**



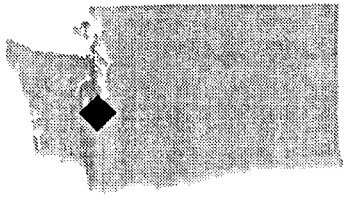
** Complete*

FORT LEWIS

NPL

(LANDFILL NO. 5 AND LOGISTICS CENTER)

Size:	86,176 acres
Mission:	House the I Corps Headquarters; plan and execute Pacific, NATO, or other contingency missions; provide troop training, airfield, medical center, and logistics
HRS Score:	42.78 (Landfill No. 5); Placed on NPL in August 1987 35.48 (Logistics Center); Placed on NPL in December 1989
IAG Status:	IAG signed in January 1990
Contaminants:	VOCs, heavy metals, waste oils and fuels, coal liquification wastes, PAHs, solvents, and battery electrolytes
Media Affected:	Groundwater and soil
Funding to Date:	$26.3 million



Fort Lewis, Washington

CLEANUP BACKGROUND

Two sites identified at Fort Lewis were placed on the NPL after investigations revealed soil and groundwater contamination, Landfill No. 5 and the Logistics Center. Sites identified during past environmental studies include landfills, disposal pits, contaminated buildings, and spill sites.

As a result of past waste management practices, primary contaminants of concern include organic solvents, heavy metals, and fuels.

Cleanup activities at Fort Lewis include both generic remedies, such as soil vapor extraction, and innovative technologies, such as low temperature thermal desorption. In FY91, closure of a drinking water well at the Logistics Center was implemented as an Interim Action.

A Record of Decision (ROD) for the Logistics Center was signed in FY90. By FY93 wells were installed for the shallow groundwater extraction and treatment system identified in the ROD. The system is expected to be fully operational by FY95.

In FY92, a ROD was signed for no further action at Landfill No. 5. Long-Term Monitoring (LTM) is currently ongoing at this site.

FY94 CLEANUP PROGRESS

Many concerns surrounding the solvent-refined coal pilot plant Remedial Design (RD) have been quickly resolved through regular meetings between Fort Lewis, EPA, and the Seattle District, U.S. Army Corps of Engineers. This regular communication has resulted in minimal schedule delays.

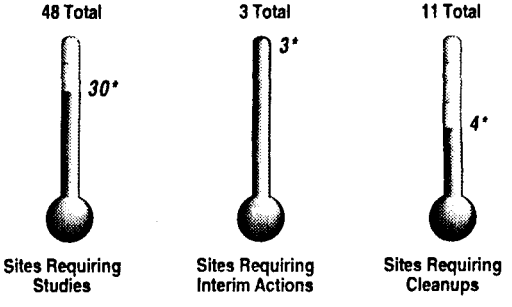
A ROD was signed for Landfill No. 4 and the solvent-refined coal pilot plant. Fort Lewis is currently conducting a pilot-scale study for soil vapor extraction and groundwater sparging at Landfill No. 4, and a full-scale RD is underway. The design of a low temperature thermal desorption system for soil remediation at the solvent-refined coal pilot plant is also underway.

PLAN OF ACTION

- Begin removing lead-contaminated soil and start up the shallow groundwater extraction and treatment system at the Logistics Center
- Submit an Explanation of Significant Difference from the ROD for no treatment of the lower aquifer at the Logistics Center
- Complete RD and continue interim monitoring at Landfill No. 4 and the solvent-refined coal pilot plant; and complete the pilot-scale study at Landfill No. 4
- Continue LTM at Landfill No. 5; the installation hopes to have Landfill No. 5 removed from the NPL in FY95
- Continue to use generic remedies and innovative technologies for cleanup activities

PROJECT ACCOMPLISHMENTS

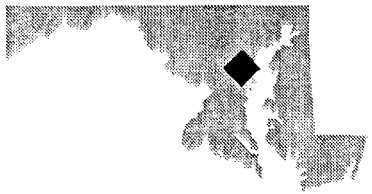
- Total Number of Sites = 48
- Estimated Date of Completion = 2025



* Complete

FORT MEADE

Size:	13,680 acres (8,520 acres excess)
Mission:	House Headquarters for the First U.S. Army
HRS Score:	N/A
IAG Status:	None
Contaminants:	Heavy metals, petroleum hydrocarbons, VOCs, asbestos, and UXO
Media Affected:	Groundwater and soil
Funding to Date:	$29.1 million



Fort Meade, Maryland

CLEANUP BACKGROUND

In December 1988, the BRAC Commission recommended that the range and training areas, including the airfield at Fort Meade, be closed in order to realign Fort Meade from an active Army post to an administrative center. The primary tenant of the new administrative center at Fort Meade is the National Security Agency (NSA). The primary site types consist of landfills, petroleum and hazardous waste storage areas, Underground Storage Tanks (UST), aboveground storage tanks, areas where asbestos was used in construction, and UXO areas.

The Army has transferred a total of 8,100 acres of property formerly used as training areas to the Department of the Interior. The Army continues to oversee cleanup of the property.

The installation began Remedial Investigation and Feasibility Study (RI/FS) activities for two sites in FY88. The draft RI report identified the need for additional characterization. RIs are continuing at the installation. In FY91, the installation also began a UXO survey.

FY94 CLEANUP PROGRESS

The BRAC Cleanup Team (BCT) was formed; it has improved communication between EPA, state, and Army personnel. The installation is currently in the process of forming its Restoration Advisory Board. The initial version of the BRAC Cleanup Plan was also completed.

At six of the eight sites, Remedial Design and Remedial Action (RD/RA) activities have been undertaken concurrently with RI/FS activities. For one of the other sites, RI/FS activities have been completed and design of generic remedial alternatives (landfill capping) has begun. A Risk Assessment was also initiated for UXO study areas.

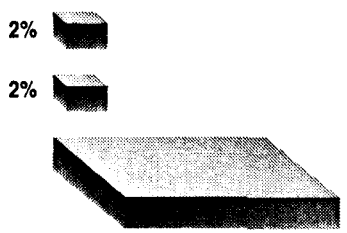
Interim Actions completed included a survey of 7,600 acres of UXO areas, and the removal of USTs and contaminated soil.

The installation conducted a CERFA evaluation of the environmental condition of property, and a final report was issued. The evaluation did not designate any property as CERFA clean, primarily because RI/FS work is still being conducted for portions of the property. A number of acres, however, while not classified as CERFA clean, present no threat to human health and environment and will be available for transfer after completion of all environmental investigation activities.

PLAN OF ACTION

- Remediate UXO areas in FY95 following the completion of the Risk Assessment and RD work plan
- Develop reuse plan for the Tipton Army Airfield; this activity will precede any RD activity at UXO areas
- Submit Finding of Suitability to Lease for Tipton Army Airfield to regulatory agencies for review
- Lease 336 acres to Anne Arundel County to be used as an airport in FY95

CERFA CLEAN ACREAGE



Concurred CERFA Clean Acreage –	0
Proposed CERFA Clean Acreage –	225
Acreage Available for Transfer –	225 *
Total Acreage –	13,680

** Environmental Condition of Property Categories 1-4*

FORT MONMOUTH

(BRAC PARCEL)

Size:	251 acres (excess acreage TBD)
Mission:	House the Headquarters of the Army Communications and Electronics Command
HRS Score:	N/A
IAG Status:	None
Contaminants:	Petroleum hydrocarbons, VOCs, semi-VOCs, metals, radon, PCBs, asbestos, and lead paint
Media Affected:	Groundwater and soil
Funding to Date:	$2 million

Monmouth County, New Jersey

CLEANUP BACKGROUND

Fort Monmouth houses the headquarters of the Army Communications and Electronics Command. The installation includes the Main Post, Charles Wood area, and the Evans area. In July 1993, the BRAC Commission recommended the realignment and partial closure of Fort Monmouth. The realignment involves closing the entire Evans Area (215 acres), transferring a portion of the Charles Wood Area (36 acres) to the Navy, and relocating personnel from the Evans Area and Vint Hill Farms Station to the Main Post and Charles Wood Area. Fort Monmouth has been divided into six parcels of land to accelerate the realignment and partial closure.

Environmental studies identified 37 sites in the Main Post, Charles Wood, and Evans areas. The prominent site types include landfills, Underground Storage Tanks (UST), hazardous waste storage areas, PCB spill areas, asbestos areas, and radiological storage and spill areas. Primary contaminants released to groundwater and soil include petroleum hydrocarbons and heavy metals.

Interim Actions completed include the removal of USTs and PCB transformers. In late FY93, the installation conducted an enhanced Preliminary Assessment and Site Inspection (PA/SI).

FY94 CLEANUP PROGRESS

The installation formed its BRAC Cleanup Team (BCT) and completed the version I BRAC Cleanup Plan (BCP).

The CERFA report was completed that identified 245 acres as CERFA clean. The installation received regulatory agency concurrence from the state on the CERFA clean acreage.

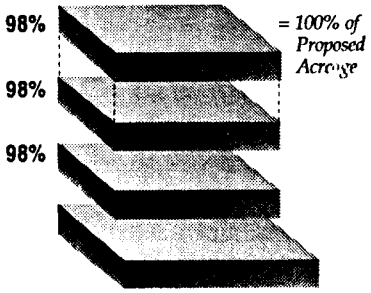
An enhanced PA of the BRAC parcels was completed that identified 32 sites at the Evans area and eight sites at the Olmstead Housing area. Of these sites, two at the Olmstead Housing area and 15 at the Evans area are continuing to the SI stage.

Fort Monmouth initiated an SI for non-BRAC sites that includes 13 sites at the Main Post and 10 sites at the Charles Wood area.

PLAN OF ACTION

- Implement Remedial Investigation, as necessary
- Implement Remedial Design and Remedial Action activities
- Complete decommissioning plan for the radiation sources in FY95
- Complete the revised BCP in FY95
- Complete reuse plan in FY96
- Complete Public Involvement and Response Plan in FY95

CERFA CLEAN ACREAGE



Concurred CERFA Clean Acreage –	245
Proposed CERFA Clean Acreage –	245
Acreage Available for Transfer –	245 *
Total Acreage –	251

** Environmental Condition of Property Categories 1-4*

FORT ORD

Size:	28,039 acres (27,287 acres excess)
Mission:	Formerly housed the 7th Light Infantry Division undergoing transition to support the Defense Language Institute currently at the Presidio of Monterey, California
HRS Score:	42.24; Placed on NPL in February 1990
IAG Status:	Federal Facility Agreement signed in July 1990
Contaminants:	VOCs, petroleum hydrocarbons, heavy metals, and pesticides
Media Affected:	Groundwater and soil
Funding to Date:	$63.5 million

Marina, California

CLEANUP BACKGROUND

Since 1917, Fort Ord has served primarily as a training and staging installation for infantry units. In July 1991, the BRAC Commission recommended that Fort Ord be closed and that the 7th Infantry Division be moved to Fort Lewis.

In FY87, a hydrogeological investigation identified the sanitary landfills at Fort Ord as potential sources of contamination for the city of Marina's backup drinking water supply well. In FY89, Remedial Investigation and Feasibility Study (RI/FS) activities were initiated for the landfills. In FY90, a Preliminary Assessment and Site Inspection (PA/SI) identified 61 sites at the installation. Site types include landfills, 200 Underground Storage Tanks (UST), motor pools, housing yards, a fire training area, an 8,000-acre impact area, and explosive ordnance disposal areas. Petroleum hydrocarbons and VOCs have migrated to groundwater.

Interim Actions at the installation have concentrated on removing limited areas of petroleum-contaminated soil. The installation has also completed a time-critical Removal Action involving the removal of 40 buried drums.

An installation-wide RI/FS was initiated in FY90. The Army accelerated site cleanups through the use of a hydropunch system for groundwater sampling. This process eliminated extensive drilling and installation of groundwater monitoring wells. Other acceleration techniques included use of mobile laboratory standard guidelines for field investigations to decrease the time spent on determining the number of soil samples necessary.

The installation also standardized the technology screening process. A "rolling Remedial Investigation" process was developed that allows a RI Phase II study to begin without the actual completion of the RI Phase I study. RI/FS activities for the installation have been completed one year ahead of schedule.

In FY93, the RI/FS activities for the landfills were completed. The installation worked closely with the EPA to complete a "plug in" no further action Record of Decision (ROD) which will streamline the cleanup process.

FY94 CLEANUP PROGRESS

In February, the Restoration Advisory Board (RAB) was formed. Members of the RAB were selected from various affected communities. The BRAC Cleanup Team (BCT) gave a series of workshops to orient RAB members to the RI/FS process and to acquaint them with the sites.

The decision-making process has been improved through distributing data summary packages before partnering meetings to allow regulatory agencies the time to review information in advance. Also, project managers from EPA and the state regulatory agency work exclusively on the installation cleanup. All regulatory agencies have been involved from the beginning in developing the work plans, particularly for the Ecological Risk Assessment.

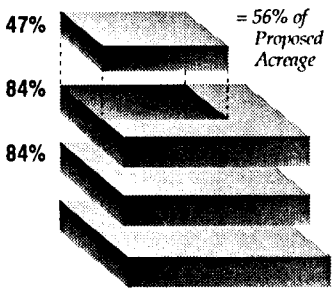
In March , an interim ROD was completed and approved by the regulatory agencies. The ROD addresses areas of soil contamination at the installation through excavation, treatment, and disposal. In addition, the landfill ROD was signed by the regulatory agency and the Remedial Design was initiated. The draft installation-wide RI/FS was completed. The installation also completed the CERFA evaluation which identified 44 percent of the installation's property as being eligible for transfer and reuse.

An Interim Action involving the removal of about 4,000 cubic yards of contaminated soil for bioremediation at the Fritzsche Army Air Field Operable Unit (OU) was completed. Bioremediation of soil is being used at other sites at the installation.

PLAN OF ACTION

- Initiate cleanup for sites identified in base-wide RI/FS in FY96
- Begin groundwater extraction and treatment systems at landfills in FY95
- Sign a no action ROD for 18 sites and a ROD for the Fritzsche Army Air Field OU in mid FY95
- Submit an installation-wide ROD in FY96

CERFA CLEAN ACREAGE



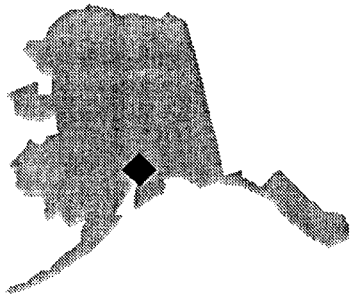
Concurred CERFA Clean Acreage –	13,122
Proposed CERFA Clean Acreage –	23,500
Acreage Available for Transfer –	23,500 *
Total Acreage –	28,039

** Environmental Condition of Property Categories 1-4*

FORT RICHARDSON

NPL

Size:	64,470 acres
Mission:	House the 6th Light Infantry Division
HRS Score:	50.00; Placed on NPL in May 1994
IAG Status:	IAG signed in November 1994
Contaminants:	White phosphorus, PCBs, heavy metals, petroleum/oil/lubricants, solvents, dioxins, chemical agents, UXO, explosives, and pesticides
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$35.3 million



Anchorage, Alaska

CLEANUP BACKGROUND

Since World War II, Fort Richardson has supported combat unit training and operations (primarily light infantry). These activities have contaminated soil, sediment, surface water, and groundwater with petroleum/oil/lubricants (POL), solvents and pesticides. In addition, portions of a 2,500-acre wetland that serves as an ordnance impact area is contaminated with white phosphorous; the wetland provides habitat for waterfowl.

Preliminary Assessments and Site Inspections completed in FY83 identified 38 sites. Removal Actions include elimination of a source of PCB contamination in soil, several Underground Storage Tank (UST) sites and over 20,000 cubic yards of POL-contaminated soil. The soil was treated using a thermal desorption treatment system.

The Army has taken several actions to foster partnerships with stakeholders and state and federal agencies. One of the earliest cooperative agreements between the installation and state and federal agencies was in FY88 with the formation of the Eagle River Flats Task Force. The task force served in an advisory role in addressing waterfowl mortality concerns in the Eagle River Flats wetlands which had served as a munitions impact area since World War II.

The task force has fostered community involvement, improved relations between the installation and the public, and served as an apolitical scientific body that provides effective and objective input.

FY94 CLEANUP PROGRESS

The task force was transformed into the Eagle River Flats Biological Technical Assistance Group (BTAG). The BTAG united seven agencies to establish common goals to solve environmental problems at Eagle River Flats. Through a contract with the Cold Region Research and Engineering Laboratory (CRREL), several agencies have been conducting scientific research to satisfy CERCLA requirements and develop remedial techniques for cleaning up the Eagle River Flats.

Barriers to restrict waterfowl populations from entering contaminated wetlands were constructed. Other actions taken in the wetlands included draining ponds, dredging sediments, and installing bentonite caps to reduce white phosphorous contamination.

In-progress Remedial Investigation and Feasibility Study (RI/FS) activities are delineating groundwater plumes containing POL, solvents and pesticides. The Army used soil vapor extraction technologies to remove solvents from soils, and air sparging and bioventing techniques to remediate POL-contaminated soil.

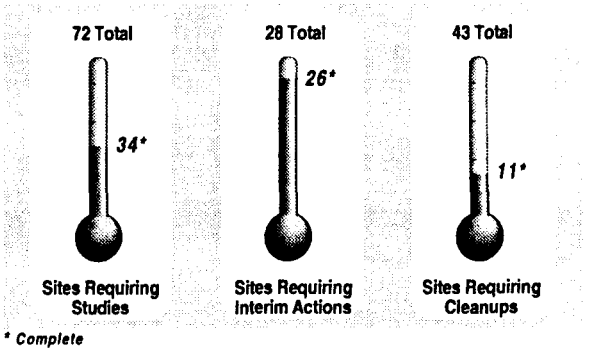
The Army also cleaned up seven rolled steel containers, believed to be 1950's-era U.S. Army Chemical Agent Identification Sets, from old disposal trenches. The Army also removed 33 USTs, 17 of which required release investigations. In addition, approximately 7,500 cubic yards of POL-contaminated soil from UST investigations were treated in a bioremediation cell.

PLAN OF ACTION

- Combine the Eagle River Flats Task Force and the BTAG in order to expand the group's partnership base
- Expand public participation in the Fort Richardson restoration program through establishment of a Restoration Advisory Board
- Facilitate implementation of CERCLA requirements through Federal Facility Agreement signed in FY94 between the Army and state and federal regulatory agencies
- Begin a treatability study for dredging white phosphorus at the Eagle River Flats in FY95
- Continue RI activities for four OUs in FY95

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 72
- Estimated Date of Completion = 2010

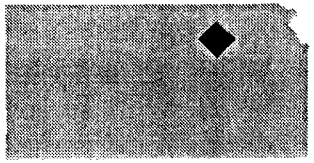


* Complete

FORT RILEY

NPL

Size:	101,000 acres
Mission:	Train and support operations for an Infantry Division
HRS Score:	33.79; Placed on NPL in 1990
IAG Status:	IAG signed in August 1990; effective in February 1991
Contaminants:	VOCs, pesticides, and lead
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$28.7 million



Junction City, Kansas

CLEANUP BACKGROUND

The most significant sites identified at the installation include a former firing range, a former pesticide storage facility, a dry cleaning facility area, a closed landfill, and a former fire training area. Many of these sites were used to support the installation's mission.

Environmental studies at the installation have been ongoing since FY74. Studies conducted in FY74 and FY86 identified soil and sediment contaminated with pesticides at the pesticide storage facility. From FY84 to FY90, groundwater monitoring detected VOC contamination.

In FY91, Remedial Investigation and Feasibility Study (RI/FS) activities at the pesticide storage facility and a landfill were initiated. In FY92, RI/FS activities were initiated for the dry cleaning facility area. In FY93, an Expanded Site Inspection was initiated for the former fire training area. The site is adjacent to the installation boundary where off-post groundwater contamination was documented. In FY93, an Engineering Evaluation and Cost Analysis was completed for the closed landfill and the pesticide storage facility.

Fort Riley organized a Technical Review Committee (TRC) and met for the first time in FY92. Meetings are held approximately twice a year.

FY94 CLEANUP PROGRESS

A partial Removal Action completed at the closed landfill consisted of stabilizing the bank of the Kansas River. Removal Actions completed at the former firing range and the pesticide storage facility were followed by off-site disposal of soil contaminated with lead and pesticides.

The installation submitted a final RI/FS report for the closed landfill, and a final RI report for the pesticide storage facility. The installation accelerated subsurface soil and soil gas sampling during Site Inspection (SI) and RI/FS activities by using an on-site laboratory to analyze samples, on-post screening of analytical results to determine further sampling locations, and a hydropunch system for sampling activities.

The installation completed SIs at five other high-priority sites, closed Custer Hill landfill under RCRA, and submitted a postclosure groundwater monitoring plan.

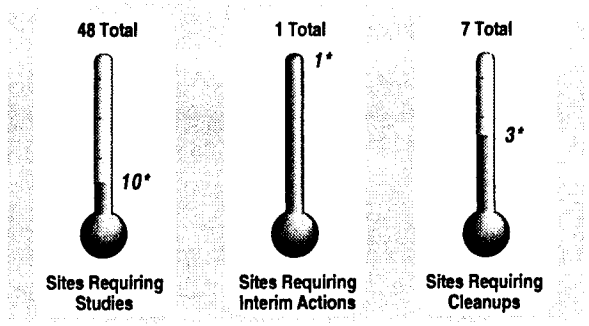
The installation conducted pilot-scale tests for soil vapor extraction (SVE) at the dry cleaning facility area and bioventing and SVE at the fire training area. To date, the installation has not determined possible treatment alternatives for groundwater remediation.

PLAN OF ACTION

- Complete Record of Decision (ROD) for the closed landfill and pesticide storage facility in FY95
- Complete Proposed Plan for the pesticide storage facility in FY95
- Begin Proposed Plan and RODs for other sites in FY95 and complete in FY96
- Continue cover repair at the Southwest Funston Landfill and Removal Actions in FY95 including soil backfilling, grading and seeding
- Begin Interim Actions including soil treatment in FY95 and begin operation of a groundwater treatment system in FY96
- Finalize RI report for the dry cleaning facility area; the ROD for the facility should be completed by FY97

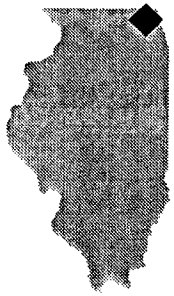
PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 48**
- **Estimated Date of Completion = 2020**



* *Complete*

Size:	712 acres (608 acres excess)
Mission:	Formerly provided administrative and logistical support; currently an Army Reserve installation
HRS Score:	N/A
IAG Status:	None
Contaminants:	VOCs, metals, fuel hydrocarbons, PAH, thallium, and UXO
Media Affected:	Groundwater and soil
Funding to Date:	$14 million



Fort Sheridan, Illinois

CLEANUP BACKGROUND

From 1887 to 1950, Fort Sheridan conducted cavalry and infantry training. From 1953 to the early 1970's, all NIKE systems in the upper mid-west were supplied and underwent service maintenance at Fort Sheridan. From 1973 to 1993, the installation provided administrative and logistical support. Currently, 90 acres are used as an Army Reserve base.

In December 1988, the BRAC Commission recommended closure of Fort Sheridan. The BRAC Commission also recommended relocation of the Headquarters, Fourth Army; and the Headquarters, United States Army Recruiting Command to Fort Benjamin Harrison, Indiana.

Sites identified through previous environmental studies include landfills, pesticide storage areas, Underground Storage Tanks (UST), asbestos-containing material, PCB-containing transformers, and UXO areas. Petroleum hydrocarbons, VOCs, and PAHs are affecting groundwater and soil.

Early cleanup actions conducted at the installation include the removal of USTs, contaminated soil, and asbestos, and the closure design for Landfills 6 and 7.

Remedial Investigation and Feasibility Study (RI/FS) activities began in FY90. The installation submitted a draft RI report in FY92. The report identified the following areas for potential cleanup: groundwater and soil contamination at two gas stations, soil contamination at an auto workshop and storage area, soil and groundwater contamination at three landfills, VOC and metal contamination in storm sewers, and soil contamination at coal storage areas.

FY94 CLEANUP PROGRESS

The BRAC Cleanup Team (BCT) was formed and reviewed and approved a list of nominations for membership on the Restoration Advisory Board (RAB). Membership considerations emphasized gender distribution, representation of minority and socially disadvantaged groups, and inclusion of environmental protection and business interest organizations.

The installation completed an Environmental Baseline Survey that identified 304 acres as CERFA clean property, including a golf course. EPA and the state regulatory agency require a Site Inspection of the golf course prior to concurrence of the CERFA clean designation. The draft BRAC Cleanup Plan was also completed.

Residents of the Fort Sheridan area formed the Fort Sheridan Joint Planning Commission and began developing a reuse plan and soliciting public comment. A final reuse plan was completed and approved.

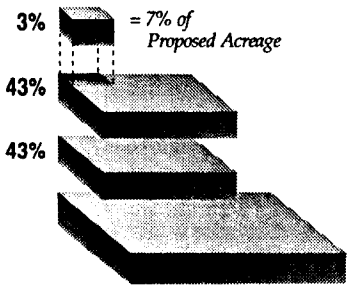
A UXO survey was conducted that identified UXO at the Landfill 2 Area. This 50-acre area was used as a small arms range, an open burning/open detonation area, and possibly as a mortar impact area. A time-critical Removal Action was initiated to remove any remaining ordnance; however, this effort has been placed on hold due to regulatory agency and DoD policy differences.

The RI has not been finalized; however, meetings with the state have resolved the principal issues related to quality assurance plans, background sampling, waste classification, and groundwater classification, that have delayed the RI.

PLAN OF ACTION

- Conduct first RAB meeting on January 17, 1995; the newly appointed RAB members will be requested to solicit new members to add the representation of minority and socially disadvantaged groups to the RAB
- Finalize RI/FS quality assurance plan, thereby allowing further sampling and preparation of the final RI/FS report by FY96
- Initiate closure of Landfills 6 and 7

CERFA CLEAN ACREAGE



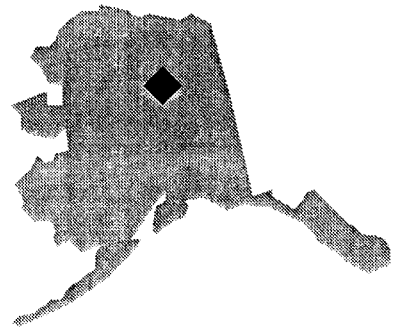
Concurred CERFA Clean Acreage –	22
Proposed CERFA Clean Acreage –	304
Acreage Available for Transfer –	304
Total Acreage –	712 *

** 192 Acres Transferred Before CERFA*

FORT WAINWRIGHT

NPL

Size:	917,993 acres
Mission:	House the Headquarters of the 6th Light Infantry Division
HRS Score:	50.00; Placed on NPL in 1990
IAG Status:	Federal Facility Agreement signed in November 1991
Contaminants:	Petroleum/oil/lubricants, heavy metals, solvents, pesticides, paints, UXO, ordnance compounds, and chemical agents
Affected Media:	Groundwater and soil
Funding to Date:	$39.8 million



Fairbanks, Alaska

CLEANUP BACKGROUND

Since World War II, Fort Wainwright has housed many light infantry brigades with the most recent being the 1st Brigade, 6th Infantry Division (Light). Numerous installation operations which supported the military mission have contributed to soil and groundwater contamination.

A Preliminary Assessment and Site Inspection (PA/SI) completed in FY83, an Installation Assessment completed in FY91, and an Installation Action Plan identified many site types. Site types include the following: a chemical agent dump, drum burial sites, leaking Underground Storage Tanks (UST), a railroad car offloading facility, an open burning and open detonation (OB/OD) area, a former emergency ordnance disposal site, solvent groundwater plumes, petroleum/oil/lubricant (POL) plumes, and a pesticides soil contamination site. The installation divided the sites into five Operable Units (OU) to facilitate the site investigation. A Remedial Investigation and Feasibility Study (RI/FS) began in FY89.

In FY93, SIs were completed at 30 sites. Of the 30 sites, 15 required no further action. In FY93, a Removal Action at four sites removed over 500 drums, which reduced a source of subsurface soil and groundwater contamination. Also in FY93, an Interim Remedial Action (IRA) employed bioremediation and thermal desorption to clean up over 50,000 cubic yards of POL-contaminated soil.

An innovative ground-penetrating radar (GPR) technology has been used to effectively determine unique environmental conditions at the installation. Improved antennae on the GPR have been used to delineate discontinuous permafrost layers, groundwater levels, depth to bedrock, thickness of POL groundwater plumes, and potential thaw and chemical transport zones. The GPR has located buried drums and delineated additional drum burial sites.

In FY92, a Federal Facility Agreement was signed between the Army, EPA, and the state. Also in FY92, the Army and the state signed a Two-Party Agreement specifically addressing petroleum contamination, which is generally associated with leaking USTs or surface spills of petroleum products.

The installation has fostered partnerships with various stakeholders. In FY90, a Technical Review Committee (TRC) was established. The TRC involves the public in decision-making and encourages partnering by effectively linking the installation to the community. In addition to partnering with the community, a Memorandum of Agreement has been established with the Cold Regions Research Laboratory. This cooperative agreement allows the Cold Regions Research Laboratory to conduct scientific research at the installation and develop new cleanup techniques.

FY94 CLEANUP PROGRESS

The installation project managers maintain open communication with federal, state, and local regulatory agencies. Cooperative, joint efforts are conducted with other agencies to expedite the cleanup process at the installation.

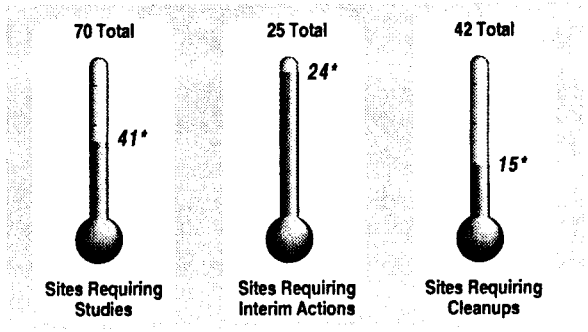
The installation continued RI/FS activities that included the delineation and definition of POL and solvent groundwater plumes and soil contamination cleanup technologies, including soil vapor extraction, groundwater sparging, and bioventing. The installation also removed 22 USTs contributing to groundwater and soil contamination.

PLAN OF ACTION

- Continue partnering efforts, effective communication, and cooperative joint ventures with federal, state, and local regulatory agencies in FY95
- Continue implementation of cleanup technologies, including ground penetrating radar, soil vapor extraction, groundwater sparging, and bioventing in FY95
- Initiate cleanup of soil and groundwater contamination using innovative technology, such as bioremediation and thermal desorption
- Continue RIs at five OUs in FY95; finalize Records of Decision and begin Remedial Design

PROJECT ACCOMPLISHMENTS

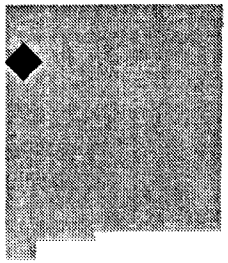
- **Total Number of Sites = 70**
- **Estimated Date of Completion = 2010**



* Complete

FORT WINGATE DEPOT ACTIVITY

Size:	21,812 acres (21,812 acres excess)
Mission:	Inactive; formerly stored, shipped, and received ammunition components and spare parts and disposed of obsolete or deteriorated explosives and ammunition
HRS Score:	N/A
IAG Status:	None
Contaminants:	Explosive compounds, UXO, PCBs, pesticides, heavy metals, asbestos, and lead-based paint
Media Affected:	Groundwater and soil
Funding to Date:	$8.8 million



Gallup, New Mexico

CLEANUP BACKGROUND

From 1949 to 1993, Fort Wingate demilitarized munitions. Munitions transported to the installation were disassembled, and hot water was used to flush their contents. The wash water containing the explosive compounds was pumped into storage and drying tanks, and overflow from the tanks was drained into leaching beds.

Past waste handling practices resulted in large volumes of operational ordnance and explosive waste being deposited on site. UXO has been discovered both on site and off-site on adjacent Indian Lands. Areas of environmental concern include a former firing range, UXO area, PCB and pesticide spill areas, the former TNT washout facility, open burning and open detonation (OB/OD) areas, and the old deactivation furnace area. Soil samples taken in FY81 from the former TNT washout facility contained explosives and heavy metals.

Interim Remedial Actions have been conducted, including the removal of six Underground Storage Tanks (UST) from the former fueling station building in FY93. An investigation to determine the nature and extent of petroleum contamination at and around the former fueling station was completed in FY93.

Additionally, quantities of munitions and munitions-related materiel were treated by burning or detonation. These operations were conducted in the OB/OD areas located within the west central portion of the property.

FY94 CLEANUP PROGRESS

The BRAC Cleanup Team (BCT) was formed in February and meets every three months. The BCT has improved communication among team members and has significantly accelerated the cleanup process by expediting document review. The BCT is currently revising the BRAC Cleanup Plan.

The Restoration Advisory Board (RAB) was formed in August. To ensure that community representation on the RAB reflects the diversity of stakeholders, membership nominations were solicited through letters sent to various community leaders. Notices in local newspapers advertised the RAB formation and invited interested community members to participate. The Administrative Record is also being developed.

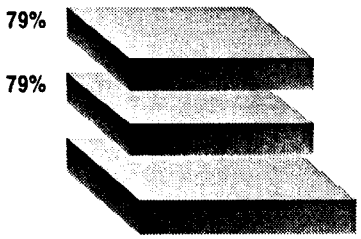
Remedial Investigation (RI) activities conducted to date have indicated that 5 of the 48 areas investigated will require cleanup. Remedial Action is currently in the planning phase.

In April, a total of 17,279 acres were identified as CERFA clean. Also in April, the state regulatory agency completed its review of the Modification of Interim Status Closure.

PLAN OF ACTION

- Complete draft final version of the RI and Feasibility Study (FS) in FY95; the proposed cleanup for the TNT washout facility, which involves capping the former TNT washout lagoon, is being reevaluated in response to comments from regulatory agencies, and a revised cleanup alternative will be submitted as part of the final RI/FS report
- Address regulatory agencies' concern about the debris piles and other sites not previously addressed as part of the RI/FS
- Address on and off-site UXO concerns
- Sign a Record of Decision which documents the cleanup alternative selection by the end of the fourth quarter of FY95
- Respond to regulatory agency comments on the Closure Work Plan for the OB/OD areas and initiate field investigations
- Prepare public notices and schedule public meetings
- Transfer the installation property by the end of FY95

CERFA CLEAN ACREAGE



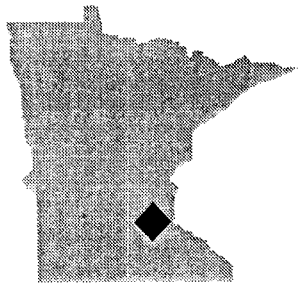
Concurred CERFA Clean Acreage –	0
Proposed CERFA Clean Acreage –	17,279
Acreage Available for Transfer –	17,279 *
Total Acreage –	21,812

** Environmental Condition of Property Categories 1-4*

FRIDLEY NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT

NPL

Size:	82.6 acres
Mission:	Design and manufacture advanced weapons systems; government-owned, contractor-operated
HRS Score:	30.83; Placed on NPL in November 1987
IAG Status:	Federal Facility Agreement signed in March 1991
Contaminants:	Petroleum/oil/lubricants and VOCs
Media Affected:	Groundwater and soil
Funding to Date:	$10.7 million



Fridley, Minnesota

CLEANUP BACKGROUND

Between FY83 and FY88, groundwater investigations identified trichloroethene (TCE) in groundwater at Fridley Naval Industrial Reserve Ordnance Plant. In FY83, a Preliminary Assessment (PA) was completed for four sites. As a result of the PA, the foundry core butt disposal area was closed, and the other three sites are being handled as Operable Unit (OU) 1. Another site, the Area C Solid Waste Management Unit, is physically located at the installation, but is the responsibility of the present contractor who is tracking and funding the site.

Site types at the installation include the following: waste disposal trenches, old sanitary sewer lines, and a foundry core butt disposal area. Primary wastes and contaminants associated with these site types include petroleum/oil/lubricants, solvents, plating sludges, construction debris, and foundry sands.

In FY88, Remedial Investigation (RI) activities were completed for OU1 for groundwater cleanup only. Feasibility Study (FS) activities were completed in FY88, and a Record of Decision (ROD) was signed in FY90.

RI activities for soil contamination were initiated in FY92 at OU1 and were completed in FY93. FS activities were initiated in FY93 with a completion date scheduled for FY94. RI/FS activities for the other sites have been initiated.

Interim Remedial Actions (IRA) have been implemented at three sites. One completed in FY84 removed 43 drums and 200 cubic yards of contaminated soil. Another completed in FY92 removed 32 drums and 500 cubic yards of contaminated soil. A third IRA, initiated at three sites, included installing a groundwater extraction and treatment system, which began operating in FY90 and will continue past FY99.

In FY93, a Technical Review Committee (TRC) was formed. Members include EPA Region 5; Southern Division, Naval Facilities Engineering Command; Minnesota Pollution Control Agency; Army Corps of Engineers Omaha District; County of Anoke; City of Fridley; the contractor; and the installation. A Community Relations Plan (CRP) was finalized in FY91.

FY94 CLEANUP PROGRESS

FS activities were completed for soil cleanup. The generic remedy of soil vapor extraction was selected and will be installed according to EPA guidance. The groundwater extraction and treatment system continued to operate.

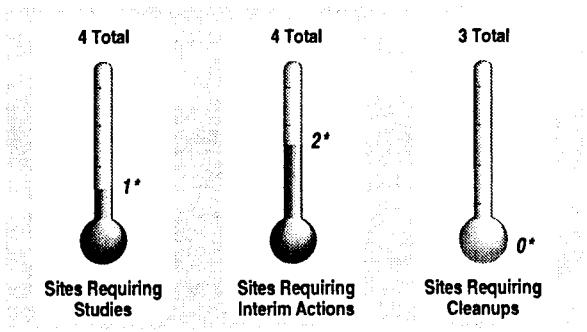
The installation is currently updating the CRP.

PLAN OF ACTION

- Convert TRC to a Restoration Advisory Board in FY95
- Complete updated CRP in FY95
- Compile an Administrative Record and an Information Repository; the repository is scheduled to be moved to the city of Fridley's office building in FY95
- Sign ROD for soil cleanup activities in FY95; Remedial Design activities for soils will start in FY95 and will be completed in September 1995; Remedial Action activities are expected to begin by FY97
- Install a permanent groundwater system in FY96 to discharge treated groundwater to the Mississippi River, instead of discharging to the sanitary sewer system

PROJECT ACCOMPLISHMENTS

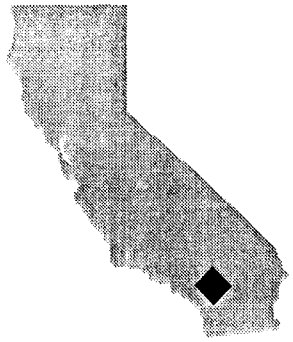
- Total Number of Sites = 4
- Estimated Date of Completion = 2003



* Complete

GEORGE AIR FORCE BASE

Size:	5,339 acres (5,339 acres excess)
Mission:	Inactive; formerly provided tactical fighter operations support
HRS Score:	33.62; Placed on NPL in February 1990
IAG Status:	Federal Facility Agreement signed in October 1990
Contaminants:	Petroleum/oil/lubricants, VOCs, and lead
Media Affected:	Groundwater and soil
Funding to Date:	$52.9 million



Victorville, California

CLEANUP BACKGROUND

Environmental investigations conducted at George Air Force Base (AFB) since FY81 have identified the following site types: landfills, petroleum spill sites, Underground Storage Tanks (UST), waste storage and disposal units, and fire training areas. Chlorinated solvents such as trichloroethene (TCE) and tetrachloroethene (PCE) have migrated from sites and contaminated groundwater and soil. The sites were subsequently grouped into three Operable Units (OU).

Remedial Investigation and Feasibility Study (RI/FS) activities began in FY84 and have been accelerated through the use of field screening techniques, including a hydropunch system and an on-site laboratory.

In FY91, the installation implemented an Interim Remedial Action (IRA) that consisted of installing nine groundwater extraction wells and an air stripper system for OU1. Also in FY91, 113 Solid Waste Management Units (SWMU) were identified in a RCRA Facility Assessment. In FY92, the installation prepared an Engineering Evaluation and Cost Analysis (EE/CA) for the removal of free petroleum product from groundwater in OU2. The installation also initiated an IRA for OU2 that consisted of a pumping system to remove the free product.

In FY93, IRAs continued at OU1 and OU2. The installation and regulatory agencies resolved a dispute over cleanup standards for OU1. The installation completed a final draft FS and Proposed Plan for the OU, and initiated an Environmental Baseline Survey that is still ongoing.

Other Interim Actions the installation has conducted include the removal of over 80 USTs and associated contamination; cleanup and closure of a hazardous waste storage yard; and an IRA to remove and dispose of 10 USTs, piping and appurtenances, and contaminated soil associated with a liquid fuel distribution system.

The BRAC Cleanup Team (BCT) was formed in FY92. BCT members accelerated the review process by shortening document review times. The involvement of the regulatory community in the initial scoping of RI/FS activities, Human Health and Ecological Risk Assessments, and Remedial Design and Remedial Action (RD/RA) has further streamlined decision-making.

George AFB closed on December 15, 1992. The Land Reuse Plan has not been finalized; however, the BCT considers future land uses outlined in the draft plan when making decisions regarding technology selection and cleanup levels.

FY94 CLEANUP PROGRESS

The Technical Review Committee was converted to the Restoration Advisory Board (RAB) in February. The RAB consists of community members, as well as representatives from the installation, federal, and state regulatory agencies, and meetings are held every three months. To address community concern, the installation prepared a fact sheet that explained the locations of sites and demonstrated the lack of risk to children attending the on-base school.

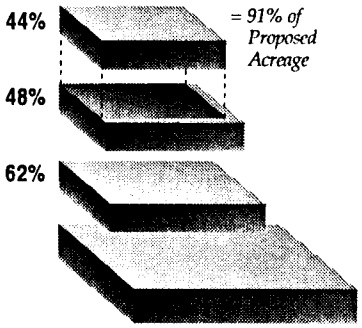
The installation performed Interim Actions that consisted of removing 15 USTs and excavating and closing a low-level radioactive waste disposal site.

The Air Force and regulatory agencies signed a final Record of Decision (ROD) for OU1. For OU3, RI/FS activities continued, and the installation initiated RD for two sites within the OU: the fire training area and the POL leach field.

PLAN OF ACTION

- Install additional extraction wells for OU1 in FY95
- Continue work on the groundwater modeling treatability study for OU2
- Complete the RI/FS for OU3 and sign a ROD in FY96
- Remove and dispose of 11 of the 17 remaining USTs on the installation

CERFA CLEAN ACREAGE

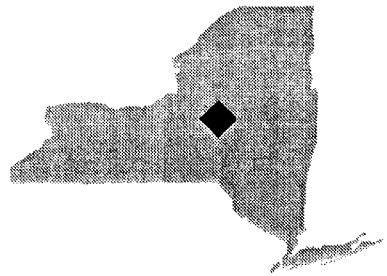


Concurred CERFA Clean Acreage –	2,330
Proposed CERFA Clean Acreage –	2,570
Acreage Available for Transfer –	3,325 *
Total Acreage –	5,339

** Environmental Condition of Property Categories 1-4*

GRIFFISS AIR FORCE BASE

Size:	3,896 acres (2,295 acres excess)
Mission:	Operate air refueling and long-range bombardment facility
HRS Score:	34.20; Placed on NPL in 1987
IAG Status:	*Federal Facility Agreement signed in June 1990*
Contaminants:	VOCs, heavy metals, PCBs, grease, degreasers, caustic cleaners, dyes, penetrants, pesticides, and solvents
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$42.6 million



Rome, New York

CLEANUP BACKGROUND

In FY81, a Preliminary Assessment and Site Inspection (PA/SI) identified 54 sites at the Griffiss Air Force Base. Site types include landfills, Underground Storage Tanks (UST), fire training areas, disposal pits, and spill areas. Releases of PCBs, VOCs, pesticides, metals, and petroleum products have occurred from these sites and have contaminated the soil, groundwater, and surface water at the installation. Possible off-base groundwater contamination also was identified.

Between FY86 and FY91, Interim Actions included (1) modifications to a landfill cap and (2) removal of contaminated soil and USTs from the tank farm, various disposal pits, and the area adjacent to an aircraft nosedock. Between FY91 and FY92, an Interim Remedial Action involved constructing an $8 million alternate water distribution system for off-base residents.

Remedial Investigation and Feasibility Study (RI/FS) activities were originally scheduled for completion in FY93, but a year-long dispute over new Areas of Concern (AOC) delayed the completion of the activities. The dispute over AOCs was resolved in FY93, and an RI work plan was submitted to EPA and the state regulatory agency.

FY94 CLEANUP PROGRESS

In February, the BRAC Cleanup Team (BCT) and Restoration Advisory Board (RAB) were formed. The BCT holds monthly project meetings with representatives of the installation, EPA, the state, the installation's service center, and cleanup contractors. Issues are resolved quickly, thereby expediting the cleanup process at the installation.

RAB meetings are also held at different locations to increase public participation and interest. RAB meetings are informal and have an open forum format to allow the public to ask questions and voice their concerns. Discussions at the meetings focus on the installation cleanup program and redevelopment plans.

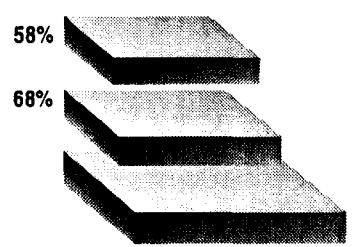
RI activities were initiated at 31 sites. To date, about 3,900 acres has been realigned and 93 percent will be available for transfer. The Griffiss Redevelopment Planning Council developed a reuse plan that is pending approval from EPA and state regulatory agencies.

The installation also completed an Environmental Baseline Survey (EBS) and is awaiting regulatory agency concurrence of CERFA clean designations.

PLAN OF ACTION

- Complete RI report and begin FS activities in FY95
- Begin Interim Actions including (1) removing 41 USTs and any associated contaminated soil, (2) conducting source Removal Actions, and (3) replacing PCB transformers
- Finalize the Land Reuse Plan and the EBS report
- Release final Environmental Impact Statement in FY95

CERFA CLEAN ACREAGE

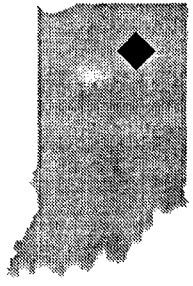


Concurred CERFA Clean Acreage –	TBD
Proposed CERFA Clean Acreage –	2,256
Acreage Available for Transfer –	2,642 *
Total Acreage –	3,896

** Environmental Condition of Property Categories 1-4*

GRISSOM AIR FORCE BASE

Size:	3,181 acres (1,342 acres excess)
Mission:	Refueling wing, formerly housed a bombardment wing
HRS Score:	N/A
IAG Status:	None
Contaminants:	Household and industrial waste, spent solvents, fuels, waste oil, pesticides, lead, silver, munitions, and asbestos
Media Affected:	Groundwater and soil
Funding to Date:	$7.6 million



Peru, Indiana

CLEANUP BACKGROUND

In July 1991, the BRAC Commission recommended realignment of Grissom Air Force Base (AFB) and transfer of a portion of the base to the Air Force Reserve Component. Following closure, about 1,300 acres will be returned to the community for redevelopment. The Air Force will retain about 1,400 acres for military activities.

Sites identified through previous investigations include Underground Storage Tanks (UST), a hydrant system, fire training areas, landfills, and a fuel sludge weathering site.

Remedial Investigation and Feasibility Study activities began in FY89. Prominent sources of contamination identified include leaking or abandoned USTs, which have contributed petroleum contamination to groundwater and soils. Interim Actions conducted at the installation include UST removals, contaminated soil removal, and skimming free product from groundwater.

FY94 CLEANUP PROGRESS

The BRAC Cleanup Team (BCT) was formed. Regulatory agencies have been involved since the start of the planning and decision-making process and have provided comments on proposed cleanup actions prior to implementation. The state regulatory agency representative also participates in various installation activities, including site visits with contractors, review of draft documents, and participation in early discussions on the approach to cleanup. The installation has also fostered partnerships with other agencies, including the U.S. Army Corps of Engineers (COE), which the installation uses as a contracting service center, and the Air Force Center of Environmental Excellence.

The Grissom Redevelopment Authority meets bimonthly to address reuse and socioeconomic issues. Approximately 48 percent of the installation will be available after the reuse Record of Decision (ROD) is signed.

A draft property reuse plan has been prepared. Reuse of the property will depend on the final reuse plan.

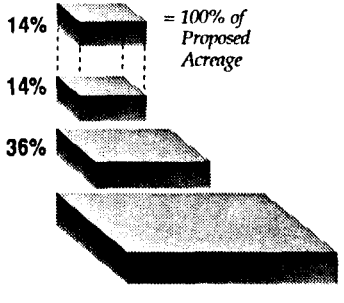
Grissom AFB prepared a BRAC Cleanup Plan outlining current and future strategies and planning efforts for all environmental programs at the installation. Remedial Actions implemented at the base in FY94 focused on soil and groundwater remediation. Interim Actions include soil bioventing and air sparging for contaminated groundwater; however, due to high groundwater levels and limited areas of influence, both bioventing and air sparging have had limited success. Currently, natural attenuation is being studied as an alternative for groundwater cleanup. The installation anticipates that more than one type of cleanup will be required.

On September 30, Grissom AFB closed as scheduled.

PLAN OF ACTION

- Form Restoration Advisory Board in FY95
- Begin Long-Term Monitoring of groundwater
- Determine if the in-place storm drainage system is an efficient and effective groundwater treatment system at the two fire training areas
- Remove remaining USTs
- Conduct Site Inspections and Corrective Action Plans for groundwater contamination associated with a gas station and soil contamination at the fuel hydrant system

CERFA CLEAN ACREAGE



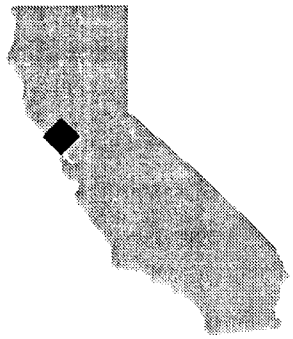
Concurred CERFA Clean Acreage –	442
Proposed CERFA Clean Acreage –	442
Acreage Available for Transfer –	1,139 *
Total Acreage –	3,181

** Environmental Condition of Property Categories 1-4*

HAMILTON ARMY AIRFIELD

BASE CLOSURE 1988

Size:	702 acres (702 acres excess)
Mission:	Conduct reserve training
HRS Score:	N/A
IAG Status:	None
Contaminants:	VOCs, metals, fuel hydrocarbons, PCBs, and pesticides
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$3.9 million



Novato, California

CLEANUP BACKGROUND

In December 1988, the BRAC Commission recommended closure of approximately 700 acres at the Hamilton Army Airfield, as well as the relocation of the airfield's mission. A small portion of the property will be retained by the U.S. Coast Guard Strike Force.

Sites identified in previous investigations include Underground Storage Tanks (UST), burn pits, aboveground storage tanks, on- and off-shore fuel lines, a former sewage treatment plant, a pump station, an aircraft maintenance and storage facility, and a revetment area. Petroleum hydrocarbons, metals, VOCs, and PCBs are affecting groundwater, surface water and soils.

Interim Actions conducted at the installation include removal of USTs and aboveground storage tanks, removal of low-level radioactive drums, and removal of contaminated soil and asbestos. The installation also removed a former sewage treatment plant.

Remedial Investigation and Feasibility Study (RI/FS) activities began in FY90. Phase I RI field work was completed in FY91 and Phase II was completed in FY92.

FY94 CLEANUP PROGRESS

The BRAC Cleanup Team (BCT) was formed, and the BCT meets monthly and prepares meeting minutes and agendas to facilitate and improve communication within the team. The BCT is also streamlining cleanups by implementing Engineering Evaluations and Cost Analyses (EE/CA) for cleanup actions instead of conducting a typical RI/FS.

The Restoration Advisory Board (RAB) was formed and has developed operating procedures and agendas that include scheduling installation tours and presenting briefings on the site status to RAB members.

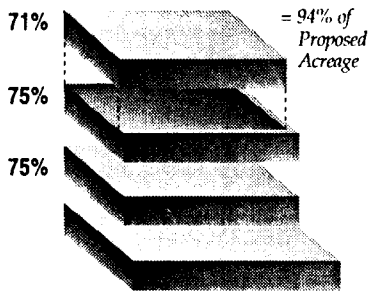
In April, the installation finalized the Environmental Baseline Survey (EBS) that identified a majority of the acreage as CERFA clean and suitable for transfer; the CERFA clean designations were approved by state regulatory agencies. The installation also prepared a BRAC Cleanup Plan outlining current and future strategies and planning efforts for all environmental programs at the installation.

Cleanups implemented at the installation include removal of JP-4 jet fuel lines from the property. On September 30, 1994, the installation closed as scheduled.

PLAN OF ACTION

- Prepare EE/CAs, Remedial Designs, and begin cleanup for five sites contaminated with metals and petroleum/oils/lubricants
- Conduct treatability studies to determine the most effective and cost-efficient cleanup alternative for contaminants in soil and sediments; prepare EE/CAs and Remedial Designs for four sites
- Complete the draft Environmental Impact Statement for the installation in early FY95
- Complete additional RI work at five sites
- Develop a Land Reuse Plan; potential reuse scenarios include transfer of a portion of the property for use by the Veterans Administration; the Department of Interior proposes transferring the entire property to the Fish and Wildlife Service to protect wetlands

CERFA CLEAN ACREAGE



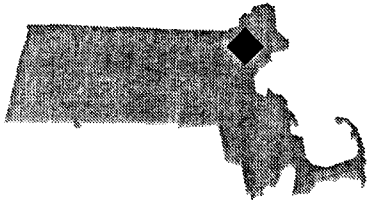
Concurred CERFA Clean Acreage –	500
Proposed CERFA Clean Acreage –	530
Acreage Available for Transfer –	530 *
Total Acreage –	702

** Environmental Condition of Property Categories 1-4*

HANSCOM AIR FORCE BASE

NPL

Size:	826 acres
Mission:	Support the Electronic System Center
HRS Score:	50.00; Placed on NPL in May 1994
IAG Status:	None
Contaminants:	VOCs, chlorinated solvents, gasoline, jet fuel, tetraethyl lead, and PCBs
Media Affected:	Groundwater and surface water/sediments
Funding to Date:	$23.4 million



Bedford, Massachusetts

CLEANUP BACKGROUND

Hanscom Air Force Base operations generated, used, and disposed numerous hazardous substances such as chlorinated solvents, fuel, aromatic solvents, tetraethyl lead, and PCBs. Fourteen possible sources of contamination at the installation include a former industrial wastewater treatment system, a former filter bed area, a jet fuel residual and tank sludge area, two landfills, three former fire training areas, a paint waste disposal area, a mercury spill area, nine Underground Storage Tanks (UST), and a PCB transformer storage area. Groundwater and surface water contamination are likely to be the results of these sources.

In FY84, environmental studies identified 13 sites at Hanscom Air Force Base. Remedial Investigation and Feasibility Study (RI/FS) and Remedial Design and Remedial Action (RD/RA) activities were completed for five sites. In FY91, RI/FS activities for the remaining eight sites were conducted, and RI/FS activities for three sites were completed. An additional nine sites were identified after FY91; and RIs were completed at six of those nine sites in FY93. No further action Decision Documents were submitted to regulatory agencies for approval for three sites.

In FY90, the installation began cleanups for three sites; these included a treatment system to remove VOCs in groundwater, replacing leaking fuel tanks, and excavating and disposing 1,425 tons of contaminated soil.

The Technical Review Committee (TRC) was formed in FY92.

FY94 CLEANUP PROGRESS

The installation and the state regulatory agency developed a sound relationship through an open exchange of ideas and information by including agency personnel as participating members of the Restoration Advisory Board (RAB). The RAB was created from the TRC and held its initial meeting on November 29. To promote RAB membership, a notice was placed in local papers, and all respondents were accepted. The Chief of the Environmental Flight Program presents a review at the quarterly meeting of the installation's Environmental Protection committee.

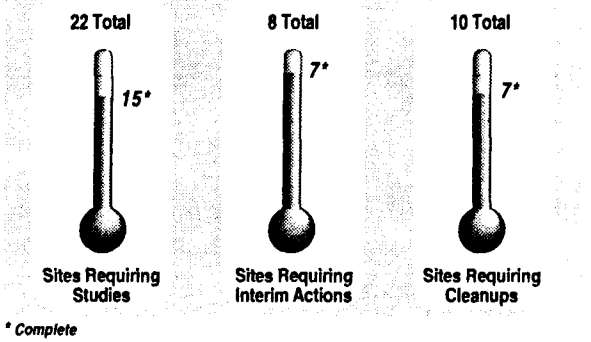
The installation conducted an Interim Remedial Action at a petroleum products spill site involving installation of a soil vapor extraction system. A Risk Assessment and an FS were completed for one site, and the RD was completed and approved by EPA. A cleanup involving removal of a leaking oil-water separator was completed. The installation also removed soil from two UST sites and no further action is planned.

PLAN OF ACTION

- Continue Long-Term Monitoring of a landfill and groundwater treatment system
- Continue involving regulatory agencies in the implementation of the management plan and document review process
- Continue pilot study evaluating ultraviolet oxidation technology as an alternative to air stripping currently used at the groundwater treatment facility
- Close the two UST sites

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 22
- Estimated Date of Completion = 2020



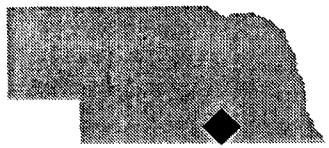
* Complete

HASTINGS GROUNDWATER CONTAMINATION SITE

NPL

(FORMERLY BLAINE NAVAL AMMUNITION DEPOT)

Size:	48,753 acres
Mission:	Produce, load, and store ammunition
HRS Score:	42.24; Placed on NPL in 1986
IAG Status:	None
Contaminants:	Explosive compounds, VOCs, PAHs, heavy metals, and UXO
Media Affected:	Groundwater and soil
Funding to Date:	$27.9 million



Hastings, Nebraska

CLEANUP BACKGROUND

Previous operations at Hastings Groundwater Contamination Site, formerly Blaine Naval Ammunition Depot, resulted in groundwater and soil contamination. The installation designated five Operable Units (OU) including: three OUs for the 2,900-acre Hastings East Industrial Park (HEIP) subsite; one OU for the former location of the Naval Yard Dump, the general refuse disposal area, the Bomb and Mine Complex production facility, and the burn pit areas; and another OU covering a 40,000 acre area.

In FY90 and FY91, the Army Corps of Engineers conducted environmental studies and clearance operations for ordnance and explosive waste and ordnance-related contamination. A Removal Action was completed at the Naval Yard Dump in FY90.

Also in FY90, the soil sampling, installation of monitoring wells, and geophysical surveys were conducted for the HEIP subsite Remedial Investigation (RI). The HEIP subsite RI was completed that same year, and a Record of Decision (ROD) to remove surface soils was signed; however, predesign studies for the selected Remedial Action (RA) revealed that aspects of the cleanup decision needed modification. Additional investigation of the HEIP subsite was conducted in FY91 and FY92.

FY94 CLEANUP PROGRESS

Two Remedial Designs (RD) for the HEIP subsite addressed removal and treatment of surface soils and vadose zone soil vapor extraction (SVE). EPA and the Nebraska Department of Environmental Quality approved the Proposed Plan for amendment of the original soil removal ROD; and the amended ROD underwent a public review and comment process. The newly proposed cleanup alternative is cost-effective and easier to implement.

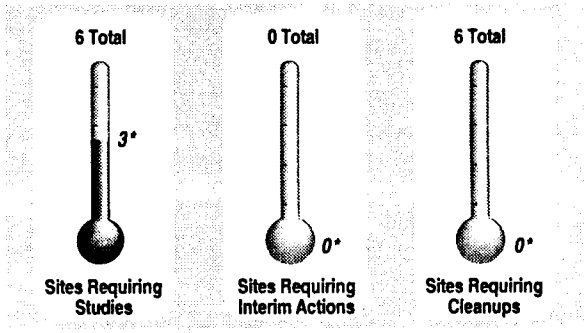
For two of the OUs, RI and Feasibility Study (FS) activities continued. The installation implemented a pilot study of a groundwater air sparging technology for the HEIP subsite and an environmental study of the 40,000-acre area. A time-critical Removal Action was conducted in the vicinity of the air sparging pilot study. Engineering Evaluations and Cost Analyses were also performed to assess alternatives for cleanup in several areas.

PLAN OF ACTION

- Complete the air sparging pilot study; results will support critical decisions regarding the groundwater RI/FS
- Complete the environmental study for the 40,000-acre area and initiate the RI
- Finalize the ROD amendment governing the removal of soil from the HEIP subsite
- Complete the RD for the HEIP subsite soil removal, and initiate the RA
- Complete the RD for SVE; RA will begin in FY96

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 6**
- **Estimated Date of Completion = 2050**

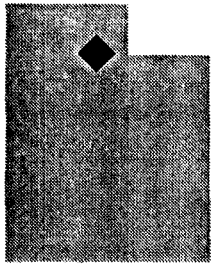


** Complete*

HILL AIR FORCE BASE

NPL

Size:	6,666 acres
Mission:	Provide logistics support for weapons systems
HRS Score:	49.94; Placed on NPL in 1987
IAG Status:	IAG signed in April 1991
Contaminants:	VOCs, sulfuric acid, chromic acids, and petroleum wastes
Media Affected:	Groundwater and soil
Funding to Date:	$63.8 million



Ogden, Utah

CLEANUP BACKGROUND

Between FY82 and FY87, Preliminary Assessment and Site Inspection (PA/SI) activities were completed for 85 sites at Hill Air Force Base. Of the 85 sites identified, 31 have been grouped into eight Operable Units (OU). Site types include: disposal pits; landfills; surface impoundments; Underground Storage Tanks (UST); fire training areas; firing ranges; discharge and wastewater ponds; a contaminated building; a munitions dump; and spill sites. Contaminants consist primarily of VOCs. A 100-acre groundwater plume contaminated with trichloroethene (TCE) is migrating off-base.

An Interim Remedial Action (IRA) to treat groundwater was installed in FY85 and FY86. In addition, 1,200 gallons of TCE were recovered from OU2 in FY93. In FY85, one of the discharge and wastewater ponds in OU3 was capped. An IRA was implemented at OU6 in FY93 to recover and treat TCE migrating into a pond located off-base.

The Remedial Investigation and Feasibility Study (RI/FS) is on hold for OU1 pending resolution of additional requirements requested by a citizens group. In FY93, the RI/FS for OU2 was completed. The Remedial Design and Remedial Action (RD/RA) for OU2 was completed in FY93 and included an asphalt cap to prevent infiltration and leaking of contaminants.

FY94 CLEANUP PROGRESS

A Restoration Advisory Board (RAB) was formed which consists of representatives of eight cities that surround the installation. A facilitator chosen by the Air Force was retained by the RAB for FY95. The installation began using the Internet electronic mail system to communicate with a variety of parties and transfer files, allowing a real time sharing of data and report language, reducing mail and freight delays.

An IRA was implemented at OU2 to remove over 29,000 gallons of free-phase, dense, nonaqueous phase liquids. Work continued on the Record of Decision (ROD) for OU3. The RI/FS for OU4 was completed and RD started.

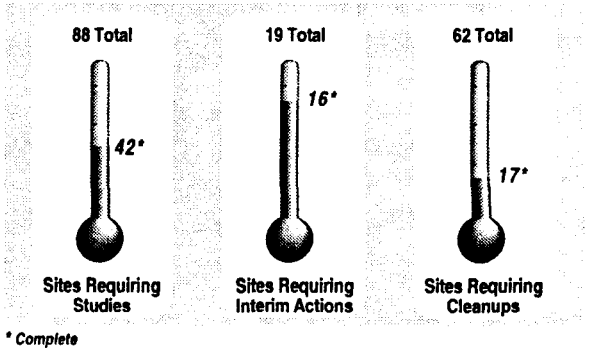
Horizontal drains installed as part of a technology demonstration project collected about 3.5 million gallons of TCE-contaminated groundwater from a nearby hillside. A sparging trench and a downgradient air stripping system were installed to intercept and treat the migrating groundwater at OU5. An Engineering Evaluation and Cost Analysis was completed for OU6 in FY94 to evaluate the treatment of a TCE-contaminated groundwater plume. Air sampling was conducted in the basements of nearby residents. Bioventing also was applied as a generic remedy at all UST sites where conditions were appropriate.

PLAN OF ACTION

- Implement "running review" of documents to expedite the review time and have interactive discussions; revise documents without formal commenting process to save time for all parties
- Conduct pilot tests during RI/FS phases to allow data collection and a better understanding of technology application and capacity to meet cleanup goals
- Complete RI/FS for OU5, OU6, and OU8
- Complete Phase II of the RD/RA for OU4
- Complete the RODs for OU2 through OU8 in FY95 and FY96
- Complete RD/RA for OU2 through OU8

PROJECT ACCOMPLISHMENTS

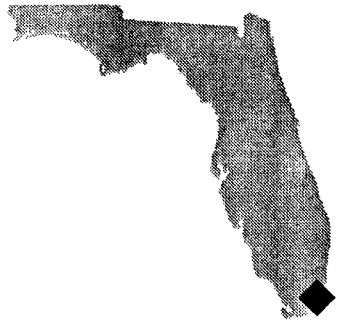
- Total Number of Sites = 88
- Estimated Date of Completion = 2050



* Complete

HOMESTEAD AIR FORCE BASE

Size:	2,940 acres (2,055 acres excess)
Mission:	Recovery from Hurricane Andrew and preparation for base realignment
HRS Score:	42.40; Placed on NPL in 1990
IAG Status:	Federal Facility Agreement signed in March 1991
Contaminants:	Heavy metals, VOCs, cyanide, and PCBs
Media Affected:	Groundwater and soil
Funding to Date:	$15 million



Homestead, Florida

CLEANUP BACKGROUND

In FY86, a Preliminary Assessment and Site Inspection identified 26 sites in three major areas of concern: the fire training area, the residual pesticide disposal area, and the electroplating waste disposal area. Sites identified in previous investigations include the JP-4 jet fuel leak area, a landfill, PCB spill area, Underground Storage Tanks (UST), aboveground storage tanks, and oil-water separators. Primary contaminants at the installation include metals, VOCs, pesticides, PCBs, and solvents; these contaminants have affected area groundwater and soils. Prominent sources of contamination include more than 350 leaking fuel storage tanks.

In July 1993, the BRAC Commission recommended that Homestead Air Force Base be closed. The 31st Fighter Wing will inactivate, and all other operations will be relocated. Approximately 1,000 acres at Homestead are identified as CERFA clean, and additional acres are being investigated to determine their CERFA designation. None of the property has been leased or transferred.

Remedial Investigation and Feasibility Study activities began in FY87; additional field investigations occurred in FY92 and FY93.

FY94 CLEANUP PROGRESS

Homestead Air Force Base has successfully reduced regulatory impediments by conducting informal partnering sessions to discuss draft plans and follow-up conference calls to discuss any problems or difficulties. In addition, all state and local agencies channel their comments through the Florida Department of Environmental Protection, and all federal agencies communicate through the EPA Region IV program manager.

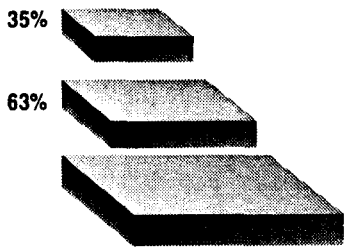
The BRAC Cleanup Team (BCT) holds monthly review meetings and conducts weekly conference calls. The Restoration Advisory Board (RAB), which maintains contact with several environmentally active community organizations, was formed. The installation has also formulated a Land Reuse Plan which identifies how the installation's property will be disposed.

Interim Actions at the installation include UST removal, contaminated soil removal, groundwater extraction and treatment operations, and removal of oil-water separators. Cleanup alternatives currently being considered as treatment options include natural attenuation, thermal treatment, and bioventing.

PLAN OF ACTION

- Remediate all Solid Waste Management Units and oil-water separator sites
- Continue Long-Term Monitoring of tanks
- Perform Remedial Design of two Operable Units
- Sign a master lease with the Dade County Aviation Commission

CERFA CLEAN ACREAGE



Concurred CERFA Clean Acreage –	TBD
Proposed CERFA Clean Acreage –	1,036
Acreage Available for Transfer –	1,849 *
Total Acreage –	2,940

** Environmental Condition of Property Categories 1-4*

HUNTERS POINT ANNEX

Size:	937 acres (493 acres on land) (937 acres excess)
Mission:	Inactive; formerly repaired and maintained ships
HRS Score:	48.77; Placed on NPL in November 1989
IAG Status:	Federal Facility Agreement signed in September 1990, revised in January 1992
Contaminants:	Heavy metals, PCBs, petroleum hydrocarbons, VOCs, and semi-VOCs
Media Affected:	Soil
Funding to Date:	$78.5 million

San Francisco, California

CLEANUP BACKGROUND

In July 1991, the BRAC Commission recommended closure of the Treasure Island Naval Station Hunters Point Annex. The installation has since been divided into five parcels to facilitate studies, cleanup, and transfer of the property. Environmental studies identified 59 CERCLA sites and five Underground Storage Tank (UST) sites. Site types include landfills and land disposal areas, primarily containing heavy metals and VOCs that are affecting groundwater, surface water, sediments, and soil.

The installation conducted several Removal Actions and Interim Remedial Actions (IRA). Drums have been removed from one site, soil removed from six sites, and tanks removed from two sites. In FY91, the installation removed or closed in place 23 of the 51 USTs.

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. Based on the test results, a full scale demonstration using the grit was completed in FY93. The Navy intends to use this technology at other installations.

The installation has negotiated a Memorandum of Understanding with the city of San Francisco to facilitate transfer of the property.

FY94 CLEANUP PROGRESS

The BRAC Cleanup Team (BCT) was formed and has helped improve communication and partnering among the team members from the installation, EPA, and the state. The BCT also has helped expedite cleanup; for example, small areas of contamination can now be excavated during the investigation process, eliminating the need to revisit the site. The BCT is looking into using "plug-in" Records of Decision (ROD) to streamline the decision-making process. The installation also uses field variances, which allow the BCT to approve changes to the field work plan, thus, shortening the review and approval process. The BRAC Cleanup Plan was also prepared.

The installation formed its Restoration Advisory Board (RAB) which includes a wide variety of local community groups and provides a forum for diverse opinions to be directed to the BCT and to resolve issues. Typically, RAB meetings address specific issues regarding cleanup of the installation.

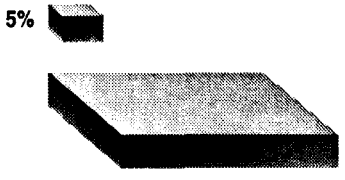
Removal of equipment, sunken baths, all aboveground structures, foundations, and soil contaminated with zinc and chromate began at the Pickling and Plate Yard.

An additional 23 USTs were removed or closed in place.

PLAN OF ACTION

- Complete the Remedial Investigation and Feasibility Study (RI/FS) activities at one site in FY95; complete RI/FS activities for 20 sites by FY97
- Finish a soil removal that is currently underway at one site in FY95; complete seven additional soil removals by FY99 and two tank removals by FY97
- Finalize three RODs in FY95 for three parcels
- Implement generic remedies, such as a slurry wall and landfill cap, a base-wide vacuum of storm sewer system sediments, and base-wide removal of contamination "hot spots"
- Implement six IRAs and 52 Remedial Designs and Remedial Actions
- Complete all Corrective Actions for all of the UST sites by FY02

CERFA CLEAN ACREAGE



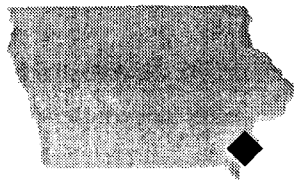
Proposed CERFA Clean Acreage–	0
Acreage Available for Transfer –	49 *
Total Acreage –	937

** Environmental Condition of Property Categories 1-4*

Iowa Army Ammunition Plant

NPL

Size:	19,127 acres
Mission:	Load, assemble, and pack munitions
HRS Score:	29.73; Placed on NPL in August 1990
IAG Status:	IAG signed in December 1990
Contaminants:	Explosives, heavy metals, and VOCs
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$14.5 million



Middletown, Iowa

CLEANUP BACKGROUND

In 1941, the Iowa Army Ammunition Plant was constructed to load, assemble, and pack various conventional ammunition and fusing systems. During installation operations, industrial process wastewaters and by-products were disposed at the installation. Site types identified include surface impoundments, production areas, landfills, and a fire training pit. The primary source of contamination resulted from placing explosives and waste containing heavy metals directly on soil. Explosive contaminants and heavy metals migrated through the soil into the groundwater. The installation also identified minor amounts of VOC contamination at the installation.

In FY80, a Preliminary Assessment and Site Inspection (PA/SI) was conducted. In FY91, a subsequent PA/SI identified 40 sites of possible contamination. Of the 40 sites, 33 sites required further studies. In FY92, Remedial Investigation and Feasibility Study (RI/FS) activities began. In FY93, the installation completed supplemental subsurface soil and groundwater studies for the RI/FS.

The installation is increasing community awareness through public meetings with the installation's Technical Review Committee (TRC), and quarterly meetings with EPA Region 7 and the Army Environmental Center.

FY94 CLEANUP PROGRESS

Cleanup activities included closing one cell of a landfill, removing aboveground treatment tanks, and removing lead-contaminated soil from drainage ditches. A cleanup of an abandoned coal storage yard consisted of removing contaminated soil, backfilling with clean soil, and revegetating the area with native grasses. The installation accelerated supplemental sampling of subsurface soil and groundwater for the RI/FS report by using a mobile sampling drill rig and an on-site laboratory for the screening of analytical results.

When contamination of the off-post private drinking water wells was found, the installation, in coordination with the local public water utility, funded a project connecting the residents with a public water supply. The project was accelerated by frequent communication and meetings with EPA, state and local agencies, and the Army Corps of Engineers.

The installation is considering using two innovative technologies to treat explosives-contaminated soil: a bioslurry reactor and soil composting.

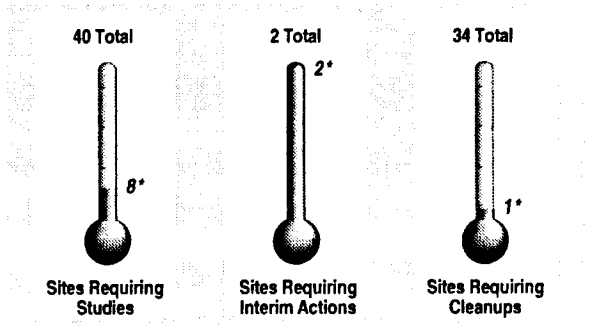
The installation began installing a "pink water" recycling system to treat industrial process wastewater. The recycling system will reuse treated wastewater and eliminate discharges to drainage ditches.

PLAN OF ACTION

- Remove and temporarily store before treatment approximately 35,000 cubic yards of explosives—contaminated soil from two surface impoundments
- Consolidate remaining RI/FS site into more manageable Operable Units to facilitate cleanup
- Complete the Record of Decision (ROD) addressing soil cleanup by FY96
- Complete the ROD for addressing groundwater cleanup by FY97
- Remove contaminated soils at the pesticide pit and explosive sumps

Project Accomplishments

- **Total Number of Sites = 40**
- **Estimated Date of Completion = 2027**

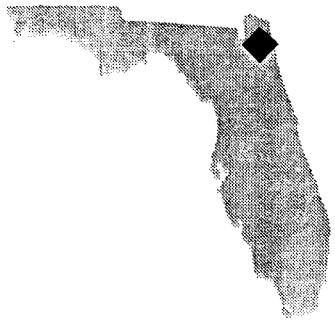


** Complete*

JACKSONVILLE NAVAL AIR STATION

NPL

Size:	3,820 acres
Mission:	Maintain and operate facilities; provide services and materials to support aviation activities and aircraft overhaul operations
HRS Score:	31.02; Placed on NPL in December 1989
IAG Status:	Federal Facility Agreement signed in October 1989
Contaminants:	Waste solvents, acids and caustics, cyanide, heavy metals, low-level radioactive wastes, oil, paint, PCBs, pesticides, phenols, and radioisotopes
Media Affected:	Groundwater and soil
Funding to Date:	$30.7 million



Jacksonville, Florida

CLEANUP BACKGROUND

Operations at Jacksonville Naval Air Station include the following site-types: fire training areas; waste storage and disposal areas; transformer storage areas; radioactive waste disposal; and other miscellaneous support and maintenance activities. Past and present activities at the installation have generated solvents, sludges from on-site treatment plants, and low-level radioactive waste. Over the years, contaminants from these waste streams have migrated into nearby soils and local groundwater supplies.

To simplify and expedite the cleanup process, three Operable Units (OU) were defined based on geographic location, type and nature of contaminants, and media contaminated. OU1 consists of two disposal pits, OU2 consists of six sites and is known as the Wastewater Treatment Plant Area, and OU3 consists of five sites and is known as the Industrial Area In addition, the installation has ten Underground Storage Tank (UST) sites.

The installation has completed Preliminary Assessments (PA) for 40 sites and Site Inspections (SI) for 42 sites. Thirteen sites proceeded to the Remedial Investigation and Feasibility Study (RI/FS) phase.

The Technical Review Committee (TRC), formed in FY88, meets twice a year and is in the process of converting to a Restoration Advisory Board (RAB), which is expected to be in place by FY95. In FY91, a Community Relations Plan (CRP) was completed, and an Administrative Record and Information Repository were established for the installation. The installation also has published nine fact sheets, including two that were distributed in FY94.

In FY93, a Remedial Response Decision System was finalized and introduced as a management tool to identify environmental sites at the installation. This system is an innovative approach to determining the need for cleanup actions. The system establishes guidelines and criteria for evaluating existing site data and proposing remedial response activities.

FY94 CLEANUP PROGRESS

Since early FY94, the installation has established a partnering arrangement with EPA and the Florida Department of Environmental Protection. The team meets regularly to discuss current and future initiatives and to resolve any problems that may have arisen. As a result of the partnering agreement with the federal and state regulatory agencies, the installation has been successful in reducing the amount of time required to review documents. In general, the partnership has been successful in accelerating the installation's cleanup program.

The Radiological Affairs Support Office 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. The installation anticipates that soil removals will be required to reduce the radiological concerns at nine sites. One site was fenced in January to prevent unauthorized access to radiological contamination.

A Removal Action consisted of removing contaminated soil and waste containers from the Gas Hill Building 159. An Interim Record of Decision (ROD) was signed for two OUs.

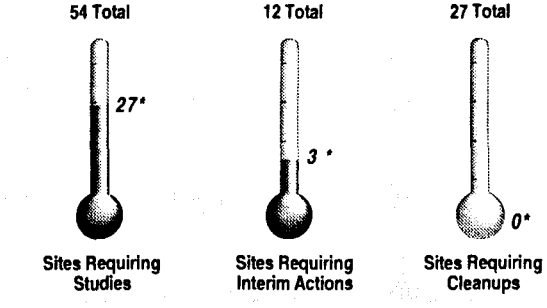
The Remedial Response Decision system became operational, and the first remedial decision is expected in FY95.

PLAN OF ACTION

- Complete RI/FS activities for OU1 and finalize ROD for OU1 by the end of FY95
- Issue a signed Interim ROD for OU2 in FY95
- Complete RI/FS activities for OU3 in FY97
- Complete radiological surveys and Removal Actions for all sites by the end of FY95

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 54
- Estimated Date of Completion = 2003

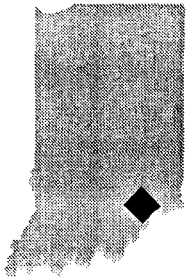


* Complete

JEFFERSON PROVING GROUND

BASE CLOSURE 1988

Size:	55,265 acres (55,265 acres excess)
Mission:	Production acceptance testing of ammunition, weapons, and their components
HRS Score:	N/A
IAG Status	None
Contaminants:	Solvents, petroleum products, heavy metals, depleted uranium, and UXO
Media Affected:	Groundwater and soil
Funding to Date:	$8.6 million



Madison, Indiana

CLEANUP BACKGROUND

In December 1988, the BRAC Commission recommended closing the Jefferson Proving Ground (JPG) in Madison, Indiana. The BRAC Commission also recommended relocating JPG's mission of evaluating ammunition to the Yuma Proving Ground in Arizona.

Sites identified through previous environmental studies include: landfill and disposal areas; hazardous waste storage areas; fire training areas; Underground Storage Tanks (UST); and asbestos in buildings. Contaminants present at the installation include depleted uranium, solvents, PCBs, heavy metals, VOCs, and petroleum hydrocarbons. Interim Actions conducted at the installation include landfill closure, removal of USTs, and contaminated soil excavation.

FY94 CLEANUP PROGRESS

The BRAC Cleanup Team (BCT) formed in January, and the Restoration Advisory Board (RAB) was formed in March. Copies of the final draft Remedial Investigation (RI) south of the firing line were provided to the RAB for review and comment. As part of the Community Relations Plan for the installation, the Army Environmental Center and the Indiana Department of Environmental Management Public Affairs Office conducted community interviews regarding the environmental cleanup of the facility. The BRAC Environmental Coordinator (BEC) is concentrating efforts through the BCT and the cleanup process to address cleanup issues related to areas south of the firing line at the installation.

In July, the installation submitted the final draft RI report for the sites south of the firing line. In response, the regulatory agencies requested significant additional studies to improve the characterization of contaminants at the RI sites. In an effort to minimize the delays associated with additional studies, the Army is initiating efforts to conduct Interim Actions at higher risk sites.

A Finding of Suitability to Lease (FOSL) report was prepared for a 4,300-acre area located in the south part of the installation and consisting primarily of the cantonment area. In addition, a Finding of Suitability to Transfer (FOST) report was prepared for the old pumphouse located in downtown Madison, Indiana. Both reports are being reviewed by EPA, the state, and the Army.

The field demonstration portion of the UXO technology demonstration was completed in August. Demonstration contractors used innovative technologies to attempt to locate mock ordnance items in the subsurface.

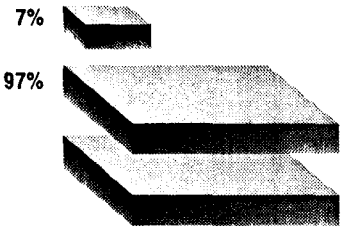
The Army Test and Evaluation Command is managing a contract for preparation of a Depleted Uranium (DU) Decommissioning Plan to address the DU impact range at the installation.

The installation reuse authority submitted a proposed redevelopment plan for the installation to the Army. A meeting was held allowing the community to present the Proposed Plan identifying a parcel of property for redevelopment.

PLAN OF ACTION

- Receive approval for FOST and FOSL in FY95
- Obtain concurrence on CERFA clean acreage
- Prepare a draft Environmental Impact Statement (EIS) for reuse and disposal
- Continue UXO technology demonstration
- Proceed with DU Commissioning Study
- Close installation as scheduled on September 30, 1995
- Start studies and cleanup of contaminated sites identified in the RI

CERFA CLEAN ACREAGE



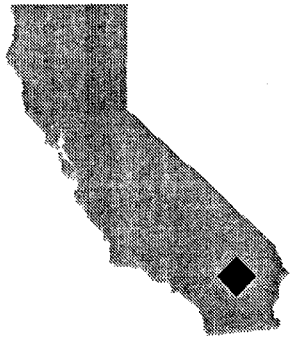
Concurred CERFA Clean Acreage –	0
Proposed CERFA Clean Acreage –	3,941
Acreage Available for Transfer –	53,786 *
Total Acreage –	55,265

** Environmental Condition of Property Categories 1-4*

JET PROPULSION LABORATORY

NPL

Size:	176 acres
Mission:	Conduct research and develop aeronautics, rocketry, and space exploration technology
HRS Score:	50.00; Placed on NPL in October 1992
IAG Status:	IAG signed in 1992
Contaminants:	Trichloroethane, trichloroethene, tetrachloroethene and various other organic and inorganic chemicals
Media Affected:	Groundwater
Funding to Date:	$.5 million



Pasadena, California

CLEANUP BACKGROUND

In 1980, samples from the city of Pasadena drinking water wells were found to be contaminated with VOCs. NASA and the California Institute of Technology initiated an environmental study to determine if the Jet Propulsion Laboratory was a potential source of the contaminants. A Preliminary Assessment and Site Inspection was conducted, and an Expanded Site Inspection was completed in FY90.

The study and cleanup of the laboratory site is divided into three Operable Units (OU): the study and cleanup of on-site groundwater contamination (OU1); the study and cleanup of on-site contamination sources (OU2); and the study and cleanup of off-site groundwater contamination (OU3). In addition, the installation has identified eight waste disposal areas. A Remedial Investigation and Feasibility Study (RI/FS) work plan was prepared by NASA and submitted for EPA approval. NASA is the lead agency for the RI.

FY94 CLEANUP PROGRESS

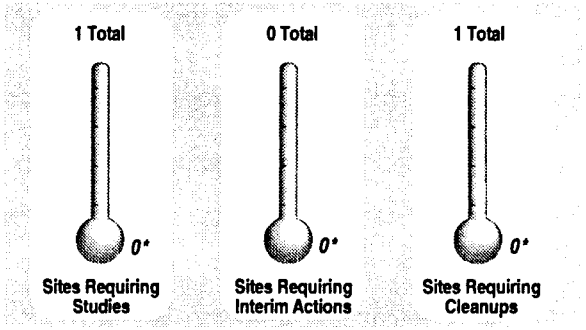
RI/FS activities began with the installation of groundwater monitoring wells at OU1. RI field work at OU3 was also initiated. Activities at OU2 have been postponed pending resolution of outstanding issues.

PLAN OF ACTION

- Resolve potential DoD liability by continuing Potentially Responsible Party investigation
- Issue Record of Decision (ROD) stipulating selection of appropriate cleanup alternatives upon completion of RI/FS; design and implementation of the selected cleanup alternative will begin after the ROD is issued

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 1
- Estimated Date of Completion = 1999



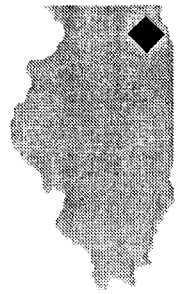
* Complete

JOLIET ARMY AMMUNITION PLANT

NPL

(LAP AREA AND MANUFACTURING AREA)

Size:	23,544 acres
Mission:	Manufacture, load, assemble, and pack munitions and explosives
HRS Score:	35.23 (Load-Assemble-Package Area); Placed on NPL in 1989 32.08 (Manufacturing Area); Placed on NPL in 1987
IAG Status:	IAG signed in June 1989
Contaminants:	Explosives, heavy metals, and VOCs
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$15.1 million



Wilmington, Illinois

CLEANUP BACKGROUND

Joliet Army Ammunition Plant served as one of the largest munitions and explosives manufacturers in the Midwest. Installation operations have included explosives manufacturing and munitions loading, assembling, and packing (LAP) shipment for off-site use by the military. Two sites at the installation were placed on the NPL: (1) the 14,385-acre LAP Area and (2) the 9,159-acre Manufacturing Area.

Sites located in the Manufacturing and LAP Areas have been consolidated into two Operable Units (OU), one that includes groundwater contamination and another for soil and sediment contamination. Environmental studies in FY88 identified a total of 53 sites, including 35 in the LAP Area and 18 in the Manufacturing Area. Prominent site types within the two areas include ash piles, landfills, open burn-open detonation areas, and surface impoundments. Contaminants identified in past studies of the two major areas include explosives, toluene, lead, and PCBs.

An Interim Remedial Action (IRA) in FY85 removed more than seven million gallons of explosive-contaminated water from the Red Water Lagoon. After disposing of the water off-site, the Army dredged the lagoon, removed the sludge and liner, and capped the entire area with a clay cap. IRAs in FY93 also included capping two ash piles.

A bioslurry reactor innovative treatment technology demonstration also started in FY93. The demonstration was conducted at a site where soils are contaminated with explosive materials. The Army should complete the initial phase of the demonstration in FY95.

FY94 CLEANUP PROGRESS

The Joliet Arsenal Citizens Planning Commission developed and approved a future land use plan for the installation. The installation adopted the plan for cleanup and disposal purposes. A bill to implement the plan was submitted to Congress and is anticipated to be enacted in early FY96.

To augment the bioslurry technology demonstration, the installation began a partnering initiative to further demonstrate an innovative treatment technology for explosive-contaminated soil. Representatives of the Army, EPA, and Clean Sites, Inc. developed the partnership of public and private entities. The partnership has selected a technology and will complete the demonstration in FY96.

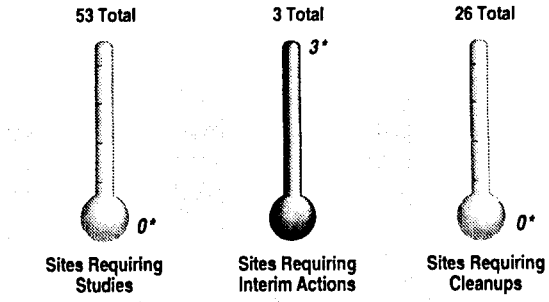
A Phase II Remedial Investigation (RI) for the Manufacturing Area was completed and approved by the regulatory agencies.

PLAN OF ACTION

- Submit Feasibility Studies for the Manufacturing and LAP Areas to regulatory agencies for review in FY96
- Finalize Record of Decision documents in FY97

PROJECT ACCOMPLISHMENTS

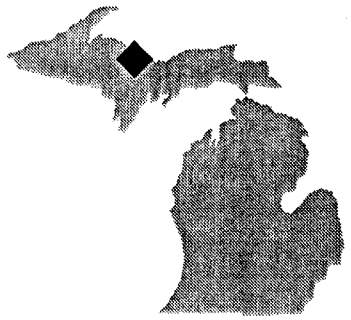
- Total Number of Sites = 53
- Estimated Date of Completion = 2003



* Complete

K.I. Sawyer Air Force Base

Size:	5,215 acres (5,215 acres excess)
Mission:	Conduct long range bombardment and air refueling operations
HRS Score:	N/A
IAG Status:	None
Contaminants:	Petroleum, pesticides, heavy metals, and solvents
Media Affected:	Groundwater and soil
Funding to Date:	$16.6 million



Marquette, Michigan

CLEANUP BACKGROUND

In July 1993, the BRAC Commission recommended closure of K.I. Sawyer Air Force Base, inactivation of the 410th Wing, and transfer of B-52H aircraft to Barksdale Air Force Base, Louisiana.

Environmental studies have been ongoing since FY84. Sites identified through previous studies include landfills, fire training areas, Underground Storage Tanks (UST), spill sites, drainage pits, and a drainage pond. Petroleum hydrocarbons, trichloroethene, tetrachloroethene, methyl ethyl ketone, and heavy metals are the primary contaminants affecting soil and groundwater.

Interim Actions conducted at the installation to date include the removal of 41 USTs, the replacement of 27 new USTs, and the removal and cleanup of more than 7,000 cubic yards of contaminated soil. An Interim Remedial Action (IRA) was completed at a petroleum/oil/lubricants (POL) storage area to remove JP-4 jet fuel from groundwater. An IRA bioventing pilot-scale system was installed in the fire training area and POL area.

FY94 CLEANUP PROGRESS

The BRAC Cleanup Team (BCT), formed in early FY94, holds meetings periodically to address critical issues affecting the cleanup program. Formation of the BCT has facilitated cleanup efforts at the installation by improving communication with regulatory agencies at all stages of cleanup, including program management, funding priorities, technical requirements, and expediting the document review and approval process. The BCT is involved throughout the review process, allowing early identification and resolution of issues affecting cleanup.

In January, the Restoration Advisory Board (RAB) was formed. The installation solicited RAB members by placing notices in local newspapers and on radio stations and by contacting public interest groups. Members were selected to ensure a variety of interests were represented. RAB meetings are held periodically and address general issues related to the cleanup program, as well as specific issues such as the strategies of the Remedial Investigation and Feasibility Study (RI/FS) and the Remedial Design and Remedial Action (RD/RA). Other issues discussed during the RAB meetings include funding status, project prioritization, and scheduling of the public comment period.

The installation completed an Environmental Baseline Survey (EBS) and identified approximately 2,800 acres at the installation as CERFA clean. Several sites at the base have been grouped into Operable Units based on their location. K.I. Sawyer Base Conversion Authority has been formed to coordinate and oversee transfer of the installation property to the community. The Conversion Authority completed a draft reuse plan for the installation. In addition, an IRA was implemented where 14 extraction wells were installed and a wastewater treatment facility was constructed. This treatment facility commenced operation in June and is presently treating approximately 1.5 million gallons of groundwater daily.

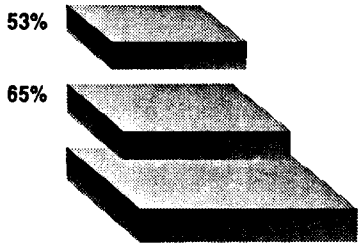
The Michigan Technological University Environmental Department is currently experimenting with using ultraviolet light to destroy trichloroethene in groundwater at the installation.

Representatives from EPA and the Michigan Department of Natural Resources were present during the RI/FS field work to answer questions and resolve issues.

PLAN OF ACTION

- Complete the regulatory agency review of the EBS in January 1995; the installation expects to receive regulatory agency concurrence of CERFA clean acreage in FY95 when property transfers begin
- Complete a final reuse plan by early FY95
- Continue soil bioventing at two fire training areas; a fuel recovery system to skim JP-4 fuel should be in operation in FY95
- Close installation on September 30, 1995 as scheduled

CERFA Clean Acreage



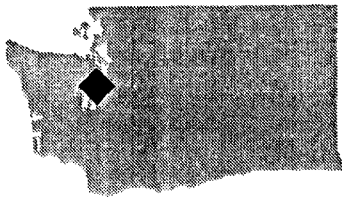
Concurred CERFA Clean Acreage –	TBD
Proposed CERFA Clean Acreage –	2,790
Acreage Available for Transfer –	3,405 *
Total Acreage –	5,215

** Environmental Condition of Property Categories 1-4*

KEYPORT NAVAL UNDERSEA WARFARE CENTER

NPL

Size:	340 acres
Mission:	Test, prove, overhaul, and issue torpedoes
HRS Score:	32.61; Placed on NPL in October 1989
IAG Status:	Federal Facility Agreement signed in 1990
Contaminants:	VOCs, heavy metals, petroleum hydrocarbons, herbicides, fuel, and pesticides
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$16 million



Keyport and Indian Island, Washington

CLEANUP BACKGROUND

Operations at the installation ended in FY91. Operations, including plating, torpedo refurbishing, and improper disposal practices, contributed to contamination found at the installation. Environmental investigations since FY84 have identified several site types, including Underground Storage Tanks (UST), sumps, spill sites, and an underground trench.

The installation has made significant progress in its environmental program. In mid FY92, a Removal Action was completed at a chromate spill site. An underground trench and several sumps were excavated and chromium-contaminated soil was removed and replaced with clean fill.

Ongoing environmental investigations conducted under CERCLA have identified 12 sites. RCRA Corrective Action is being performed for one site at the installation, and another is being studied under the UST program. A RCRA Facility Investigation (RFI) was initiated for Site 23 in mid FY91 and will be completed in FY95. Site 23 consists of hazardous waste storage tanks and sumps at 83 locations identified during the RCRA Facility Assessment conducted in early FY91. Probable contaminants at Site 23 include solvents and petroleum/oil/lubricants sludge.

In FY89, the installation formed a Technical Review Committee (TRC), established an Administrative Record at the Engineering Field Activity, Northwest, and created an Information Repository at the County Library. A Community Relations Plan was completed in late FY90. Since then, several fact sheets have been completed, a door-to-door community survey has been conducted, and six open houses and workshops have been held. 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.

FY94 CLEANUP PROGRESS

One UST site at the installation consists of 21 USTs in the cleanup program. Groundwater is being monitored for evidence of petroleum contamination, and subsurface soil samples were collected. Remedial Design (RD) is underway and expected to be complete in early FY95. Three Interim Measures have been implemented at the installation, including UST removals, soil removals, and piping removal. In some cases, the Interim Measure may consist of UST and soil removal; in others the Interim Measure may involve in-situ remediation of contaminated soil. To meet regulatory agency requirements, groundwater treatment may be performed based on results of groundwater monitoring currently being conducted.

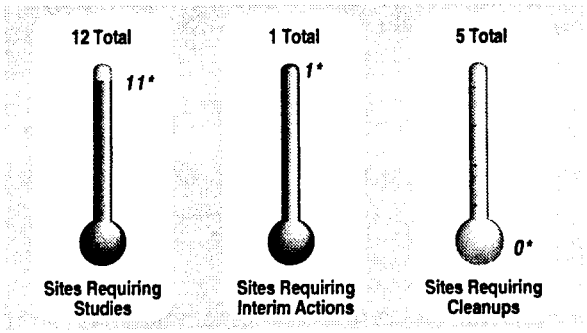
In September, a Record of Decision (ROD) was signed for five sites at the installation. Remedial Investigation and Feasibility Study (RI/FS) activities were completed for six sites in early FY93. No other RI/FS activities are currently planned for the installation. The installation also vacated buildings found to have unacceptable indoor air quality.

PLAN OF ACTION

- Establish Long-Term Monitoring programs for three sites and implement the ROD signed in FY94
- Complete RD for two sites in FY95 and for one site in FY96; the installation is considering bioremediation of petroleum- and metal-contaminated soils at the plating shop (Site 8); Site 8 will also require additional soil removal, which is expected to be completed in FY98
- Complete Remedial Action for all the sites by FY98
- Establish a Restoration Advisory Board (RAB) in early FY95
- Complete Corrective Action, consisting of removal and closure in place of USTs and storage tanks at Site 23 in FY95

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 12**
- **Estimated Date of Completion = 2003**



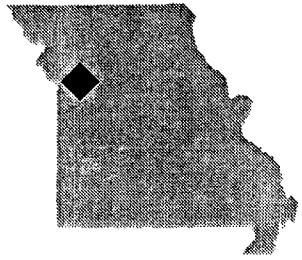
* *Complete*

LAKE CITY ARMY AMMUNITION PLANT

NPL

(NORTHWEST LAGOON)

Size:	3,955 acres
Mission:	Manufacture, store, and test small arms munitions; government-owned, contractor-operated
HRS Score:	33.62; Placed on NPL in 1987
IAG Status:	IAG signed in September 1989
Contaminants:	Explosives, heavy metals, solvents, and petroleum/oil/lubricants
Media Affected:	Groundwater and soil
Funding to Date:	$34.8 million



Independence, Missouri

CLEANUP BACKGROUND

The Lake City Army Ammunition Plant's operations include the manufacture, storage, and testing of small arms munitions. Primary site types include abandoned disposal pits, sumps, burning grounds, firing ranges, old lagoons, old dumps, and closed RCRA lagoons. In FY79, the Initial Assessment Study was conducted at the installation, and in FY89, a Preliminary Assessment and Site Inspection identified 73 sites that were subsequently consolidated into 35 sites for further investigation.

Testing at seven representative areas identified groundwater contaminated with VOCs, explosives, and heavy metals. Placement of the installation on the NPL triggered a Remedial Investigation and Feasibility Study (RI/FS). The RI/FS focused on four Operable Units (OU), including the Northeast Corner OU, Area 18, Area 8, and an installation-wide OU.

In FY93, the installation drafted RIs for Area 18 and the Northeast Corner OUs. An FS was also drafted for Area 18, and at the Northeast Corner OUs in FY93.

The installation has used a Technical Review Committee (TRC) to present and discuss information related to the cleanup program. The TRC includes a representative of the local community as well as installation personnel. Presentations and discussions at the TRC meetings typically cover the Administrative Record, technical reports, and cleanup program progress.

FY94 CLEANUP PROGRESS

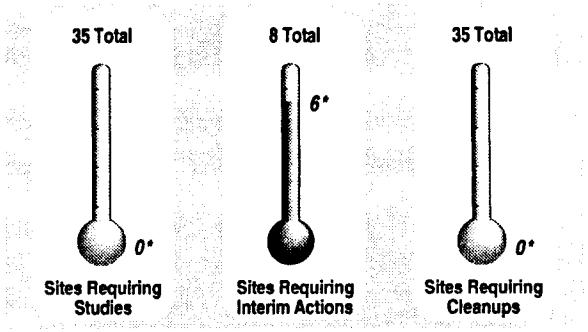
After preparing an Engineering Evaluation and Cost Analysis document, the installation is planning to conduct two Removal Actions. They include a groundwater extraction and treatment in Area 18 and a landfill cover and leachate collection system in the Northeast Corner OUs. These Removal Actions will expedite the final cleanup. To resolve disputes concerning the Area 18 and Northeast Corner OUs, the installation revised RIs. A draft RI Report was also completed for the solid waste landfill in Area 8 and the installation-wide OU.

PLAN OF ACTION

- Complete remaining RI/FS activities between FY94 and FY97
- Continue Removal Actions at Area 18 and the Northeast Corner OU into FY96 with concurrent development and approval of the final ROD for these OUs
- Complete RODs for Area 8 and the installation-wide OUs and begin Remedial Actions (RA) by FY98
- Complete all RA activities by FY99

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 35**
- **Estimated Date of Completion = 2024**



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LAKEHURST NAVAL AIR WARFARE CENTER

NPL

(AIRCRAFT DIVISION)

Size:	7,382 acres
Mission:	Develop and test weapons systems and their components
HRS Score:	50.53; Placed on NPL in 1987
IAG Status:	Federal Facility Agreement signed in October 1989
Contaminants:	Acids, fuels, PCBs, pesticides, herbicides, photographic chemicals, refrigerants, solvents, and waste oils
Media Affected:	Groundwater and soil
Funding To Date:	$23.6 million

Lakehurst, New Jersey

CLEANUP BACKGROUND

Preliminary Assessment and Site Inspection activities, beginning in FY83, identified 45 sites at Lakehurst Naval Air Warfare Center. From FY90 to FY93, Remedial Investigation and Feasibility Study (RI/FS) activities were completed at 33 sites. The installation successfully implemented a bioremediation technique in FY83 and an innovative soil washing technology in FY88. The installation also acquired its own in-house groundwater contaminant modeling expertise to predict potential plume migration. Many early actions and several Interim Remedial Actions (IRA) have been completed at the installation, including 24 Removal Actions.

Eleven sites are being treated by four on-site groundwater extraction and treatment facilities, six sites require future groundwater monitoring, and two sites require no further action.

FY94 CLEANUP PROGRESS

The installation continues to pursue a cleanup approach that combines innovative technology application and computer modeling with strong partnerships and working relationships among the Navy, regulatory agencies, and the community.

The installation conducted the first on-site asphalt batch treatment of excavated soil at an NPL site in New Jersey. An in-house design of bioremediation and vapor extraction systems for three sites at the installation was also completed. An environmental engineering information system (ENVEIS) equipped with state-of-the-art computer hardware and software has facilitated the ability of installation environmental managers to manipulate data and make informed decisions.

A Restoration Advisory Board (RAB) was established and meetings are held regularly. RAB members solicit public involvement through the local newspaper and poster displays throughout the community.

Partnerships were established with the U.S. Geological Survey, Rutgers University, the New Jersey Department of Environmental Protection, and the Pinelands Commission to study the use of composted biosolids to minimize disturbances that may occur during site recovery. For example, these materials may be used for capping or fill material. The installation is also conducting a program with Princeton University to determine how aircraft emissions affect tree mortality.

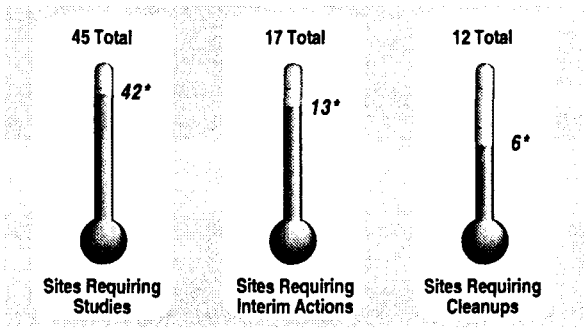
The RI/FS was completed for seven sites, a Record of Decision (ROD) was signed for one site, a Remedial Design was completed for one site, final phases of the cleanup began at four sites, and all Underground Storage Tank (UST) removals were completed or are under contract for completion.

PLAN OF ACTION

- Construct and start three bioremediation and vapor extraction systems, remove all USTs, and construct a new water treatment facility to provide additional capacity
- Complete RI/FSs at two sites in FY95 and one in FY96
- Complete no further action RODs for two sites in FY96
- Complete cleanups for four sites in FY95 and two sites in FY96
- Complete RDs for two sites in FY96

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 45**
- **Estimated Date of Completion = 2003**



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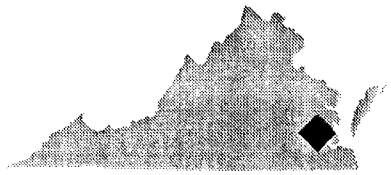
LANGLEY AIR FORCE BASE

NPL

(INCLUDES THE NASA LANGLEY RESEARCH CENTER)

Size:	3,152 acres
Mission:	House the Air Combat Command Headquarters, F-15 Fighter Wing, 74th Tactical Control Facility, 480th Reconnaissance Technical Group, and National Aeronautics and Space Administration (NASA)
HRS Score:	50.00; Placed on NPL in June 1994
IAG Status:	Federal Facility Agreement under negotiation
Contaminants:	Petroleum products, chlordane, polychlorinated bi- and terphenyls, heavy metals, and solvents
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$16.7 million



Hampton, Virginia

CLEANUP BACKGROUND

Langley Air Force Base and the NASA Langley Research Center make up the installation. Langley Air Force Base has been an airfield and aeronautical research center since 1917 and is the home base for the First Tactical Fighter Wings. NASA Langley Research Center is a research center that conducts about 270 operations and operates wind tunnels.

In FY81, a Preliminary Assessment and Site Inspection identified 25 sites. Following studies identified a total of 45 sites at the installation. Site types include landfills, Underground Storage Tanks (UST), a bulk fuel distribution system, and storm sewers.

Additional investigations have detected petroleum contamination migrating to Tabb Creek before migrating to the Back River and ultimately to the Chesapeake Bay. The most significant sites are landfills adjacent to Tabb Creek and a storm sewer that discharges into Back River.

In FY85, the installation conducted Confirmation Studies to address petroleum contamination in groundwater. The initial studies resulted in the discovery of additional fuel contamination and free product plumes. In FY89, the fuel distribution system was replaced, and contaminated sediments in the storm sewers were investigated.

Removal Actions were conducted to remove free product at eight sites in FY89 and FY90. Corrective Action Plans for these petroleum-contaminated sites were submitted to the Commonwealth of Virginia between FY89 and FY91. Removal Actions have also included removing USTs at these sites. Removal Actions to remediate soil and groundwater have been initiated at three other sites, and additional actions at the sites have removed abandoned USTs and free product and installed a groundwater treatment plant to remove emulsified fuel from groundwater. The treatment plant is currently operational, and Operation and Maintenance (O&M) is expected to continue for an additional five to seven years.

In early FY93, Site Inspections (SI) were initiated at 33 sites. Remedial Action (RA) construction began at six sites, and construction began on a second groundwater treatment plant to remove a free product plume at two sites. USTs and piping associated with the bulk fuel distribution system were also cleaned and capped or removed during FY93.

FY94 CLEANUP PROGRESS

In February, the Restoration Advisory Board (RAB) was formed. The RAB holds meetings quarterly, and community groups have been active participants in an oversight initiative. This oversight initiative will reduce the amount of oversight required by regulatory agencies, improve the decision-making process, and expedite the document review process.

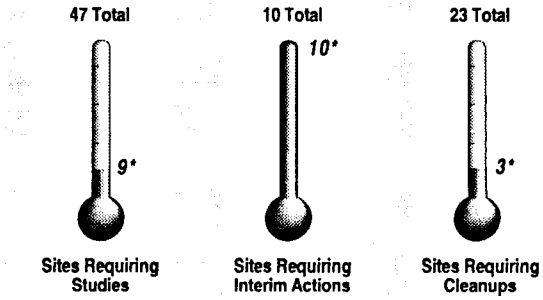
The installation removed contaminated sediments from a portion of the storm sewers. About 600 cubic yards of contaminated sediments were removed in an effort to protect human health and ecological receptors in the Back River. The installation also continued SIs and RA construction activities.

PLAN OF ACTION

- Sign a Federal Facility Agreement in FY95
- Reduce number of submittals for the RI/FS to expedite the document review process
- Implement a soil vapor extraction system to remove unleaded gasoline from soil near a filling station
- Complete RA construction activities at Sites 26 and 28
- Continue O&M of groundwater treatment plants

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 47**
- **Estimated Date of Completion = 2004**



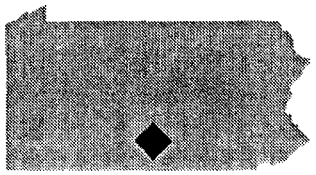
** Complete*

LETTERKENNY ARMY DEPOT

NPL

(PROPERTY DISPOSAL OFFICE AND SOUTHEAST AREA)

Size:	19,243 acres
Mission:	Store, maintain, and decommission ammunition; rebuild and store tracked and wheeled vehicles, storage and maintenance of missiles
HRS Score:	34.21 (Southeast Area); Placed on NPL in 1987 37.51 (Property Disposal Office); Placed on NPL in 1989
IAG Status:	IAG signed in February 1989
Contaminants:	VOCs, heavy metals, petroleum/oil/lubricants, and asbestos
Media Affected:	Groundwater and soils
Funding to Date:	$56.6 million



Franklin County, Pennsylvania

CLEANUP BACKGROUND

Letterkenny Army Depot contains a wide variety of contaminated sites, including ammunition and disposal areas, disposal lagoons and trenches, an oil burn pit, open burning/open demolition areas, a TNT washout plant, a scrapyard, landfills, industrial wastewater treatment plant lagoons, and industrial wastewater sewer lines. Two NPL sites, the Property Disposal Office (PDO) Area and the Southeast Area are located in the southern portion of the installation.

The installation has concentrated on removing source areas. The following activities have been completed: use of extensive dye tracer studies to characterize groundwater, surface water, and sewer system migration pathways; the use of innovative technologies, such as in-situ soils volatilization and low temperature thermal treatment; and removal of the industrial wastewater treatment plant lagoons that were used to dispose of waste solvents.

In FY91, the installation completed Site Inspection (SI) field work at the Ammunition Area, and signed a no further action Record of Decision (ROD) for an Operable Unit (OU) at the PDO. The installation also signed a ROD recommending accelerated Remedial Action (RA) to treat soils contaminated with VOCs using low temperature thermal treatment. Cleanup at this site began in FY93.

Remedial Investigation and Feasibility Study (RI/FS) activities were expanded at the PDO to include two additional OUs.

FY94 CLEANUP PROGRESS

The RI/FS for VOC-contaminated groundwater at the PDO-OU2 was completed in February. The installation began RI field work for the Mercury Detections Rocky Spring Lake and the off-PDO groundwater OU. The installation started RI field work for five OUs in the Southeast Area (SE). During RI work at SE-OU5, Area A was found to be 10 times larger than anticipated; additional delineation effort is planned for the Spring of 1995.

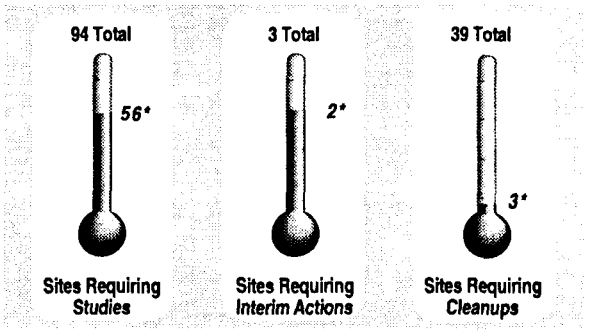
An off-post dye study is currently being conducted to identify contaminant migration pathways from southeast area sources to groundwater and surface water.

PLAN OF ACTION

- Remove lead-contaminated soil at the PDO Playground and sediment from the Spring House at Rocky Spring
- Cap treated soils at SE-OU1 in FY95
- Complete the PDO-OU2 Proposed Plan and ROD in FY95 and install a groundwater treatment plant
- Complete field work at all OUs and begin Remedial Design and Remedial Action
- Complete the design of the off-post treatment plant at Rowe Spring in FY95; construct the plant and connect the Helman and Witmer Springs to the system in FY96
- Begin to perform Ammunition Area RI field work in late FY95
- Finalize the Proposed Plan for treating VOC-contaminated groundwater at PDO by FY95

PROJECT ACCOMPLISHMENTS

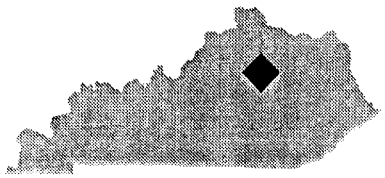
- Total Number of Sites = 94
- Estimated Date of Completion = 2099



* Complete

LEXINGTON-BLUEGRASS ARMY DEPOT

Size:	780 acres (780 acres excess)
Mission:	Conduct light industrial operations, including various paint stripping, metal plating, etching, and anodizing operations
HRS Score:	N/A
IAG Status:	None
Contaminants:	VOCs, semi-VOCs, heavy metals, PCBs, pesticides, and herbicides
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$6.7 million



Lexington, Kentucky

CLEANUP BACKGROUND

In December 1988, the BRAC Commission recommended closing the Lexington-Bluegrass Army Depot, and the scheduled closure date is September 30, 1995. The Army began environmental studies in FY90 and identified 67 sites requiring further investigation; activities recommended included additional soil, groundwater, and Underground Storage Tank (UST) investigations. A RCRA Facility Assessment (RFA) also conducted in FY90 identified 30 Solid Waste Management Units and two Areas of Concern.

As a result of the RFA findings, field work for the RCRA Facility Investigation (RFI) and Corrective Measures Study (CMS) began in FY90 and were completed in mid-FY93. Sampling data from the initial phase of the RFI indicated groundwater, soil, and sediment contamination at six sites: the new landfill, the industrial and sanitary waste disposal landfill, the old landfill, industrial waste lagoons, the old and new industrial wastewater treatment plant. Initial results of an ongoing groundwater investigation demonstrated the need for soil cleanup and potential long-term groundwater treatment.

FY94 CLEANUP PROGRESS

A BRAC Cleanup Team (BCT) was formed and monthly meetings are held. The BCT includes the installation BRAC Environmental Coordinator and representatives of EPA and the state regulatory agency. The BCT also holds in-progress review meetings for technical documents to accelerate cleanup. The installation completed the draft Environmental Baseline Survey and the BRAC Cleanup Plan.

In March, a draft Finding of Suitability to Lease was submitted to the regulatory agencies to initiate the installation's lease with the Commonwealth of Kentucky. An interim lease was signed with the Commonwealth in July for the entire 780 acres. The lease includes specific restrictions on land use and an option for purchase.

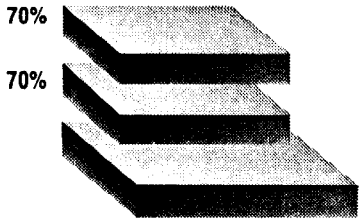
Removal Actions conducted at the installation included removing USTs, contaminated soil, PCB transformers, and asbestos. The installation has contracted the capping of three landfills, abating lagoons, cleanup of the old industrial wastewater treatment plant, and other areas of concern.

In April, the installation submitted draft and final RFI reports to the regulatory agencies for review. The installation also submitted a draft CMS and draft groundwater investigation report. Because the regulatory agencies are requiring further investigation at some sites, a Phase II RFI and CMS will be performed.

PLAN OF ACTION

- Form Restoration Advisory Board in FY95
- Begin cleanups at selected sites undergoing Phase II RFI and CMS activities
- Commence cleanup of the old wastewater treatment plant and the plating shop area
- Continue installation-wide asbestos Removal Actions
- Complete the Finding of Suitability to Transfer for selected buildings to be transferred to the Commonwealth of Kentucky by September 1995

CERFA CLEAN ACREAGE



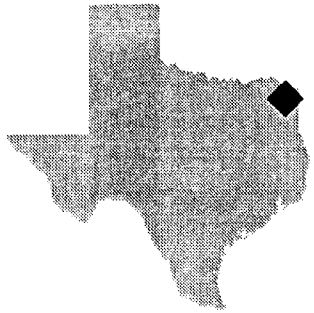
Concurred CERFA Clean Acreage –	0
Proposed CERFA Clean Acreage –	545
Acreage Available for Transfer –	545 *
Total Acreage –	780

** Environmental Condition of Property Categories 1-4*

LONE STAR ARMY AMMUNITION PLANT

NPL

Size:	15,546 acres
Mission:	Load, assemble, and pack ammunition
HRS Score:	31.85; Placed on NPL in 1987
IAG Status:	IAG signed in September 1990
Contaminants:	VOCs, petroleum, heavy metals, and explosives
Media Affected:	Groundwater and soil
Funding to date:	$10.7 million



Texarkana, Texas

CLEANUP BACKGROUND

The Lone Star Army Ammunition Plant loads and packs munitions. Between 1943 and 1944, the Old Demolition Area was used to destroy faulty or nonstandard explosives. Environmental studies beginning in FY78 identified the Old Demolition Area to be contaminated with explosives and metals. Subsequently, the Old Demolition Area was placed on the NPL in July 1987. The Old Demolition Area is the only CERCLA site at the installation.

Other sites investigated under RCRA include: surface impoundments, landfills, fuel storage areas, and load lines. Investigations have shown that soil at some of these sites is contaminated with solvents, metals, and explosives, while groundwater is known to be contaminated at one site.

In FY92, a RCRA Facility Investigation began for RCRA Corrective Action sites. Also in FY92, Corrective Action was completed on an Underground Storage Tank.

The installation formed a Technical Review Committee (TRC) that includes representatives of the installation, the state, EPA, and local community leaders. The TRC meets quarterly to discuss current and proposed environmental actions under CERCLA.

To accelerate environmental investigations, the installation has streamlined the review process for documents and has conducted mini field investigations to gather additional site data between major scheduled field efforts.

FY94 CLEANUP PROGRESS

The installation used rotosonic drilling, an innovative technique, during the field investigation of the Old Demolition Area. Rotosonic drilling methods enhanced the quality of recovered cores. The improved quality of the investigative data aided the installation in negotiations with the regulatory agencies for Phase IV of the Remedial Investigation (RI) field work. The University of Texas is currently conducting a biodegradation study of explosive and metal contaminated soils from the installation.

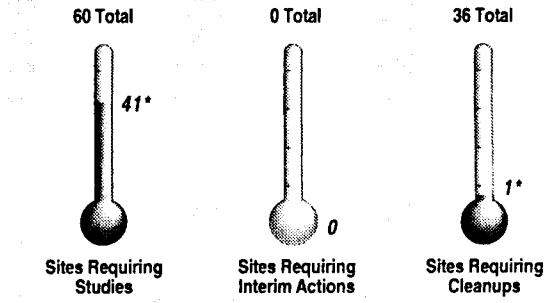
The installation has also undertaken several Interim Actions. The installation closed two surface impoundments, installed industrial treatment facilities to treat wastewater before discharging it, and removed its bulk fuel storage area and service station.

PLAN OF ACTION

- Continue the Phase IV RI at the Old Demolition Area, including soil boring and monitoring well installation accompanied by analytical sampling
- Obtain regulatory agency approval and commence biota sampling at the Old Demolition Area
- Commence the Phase IV field work in the spring of FY95
- Continue RFI

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 60
- Estimated Date of Completion = 2024



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LONG BEACH NAVAL STATION AND NAVAL HOSPITAL

Size:	1,533 acres (1,533 acres excess)
Mission:	Overhaul, repair, and convert surface craft
HRS Score:	N/A
IAG Status:	None
Contaminants:	Petroleum hydrocarbons, paints, solvents, asbestos, trichloroethene, and battery acid
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$13 million

Long Beach, California

CLEANUP BACKGROUND

In July 1991, the BRAC Commission recommended that Long Beach Naval Station be closed and that ship-support functions and a parcel of land be transferred to the Long Beach Naval Shipyard. The installation's ships will be reassigned to other Pacific Fleet home ports. Between FY92 and FY93, the Preliminary Assessment and Site Inspection (PA/SI) identified nine sites, including eight CERCLA sites and one Underground Storage Tank (UST) site. The most prominent site types are disposal pits that have affected the groundwater, soil, and sediments.

The installation completed SIs for seven sites. Remedial Investigation and Feasibility Study (RI/FS) activities began for these seven sites in FY93. The installation completed a Removal Action at a UST site to minimize free product contamination; 13,500 gallons of free product and water were extracted from the site.

In FY91, the installation published a community relations brochure to strengthen the relationship between the installation and the local community . A Technical Review Committee (TRC) was established in FY92 and includes representatives of the installation, regulatory agencies, and the community. The TRC met quarterly to resolve technical issues regarding the cleanup of the installation. A Land Reuse Plan was developed in late FY93.

FY94 CLEANUP PROGRESS

The BRAC Cleanup Team (BCT) was formed early in FY94. From November 16 to 18, the BCT and the installation project team participated in a 3-day "strategy camp" to develop options for implementing the cleanup program at the installation. The BCT has also accelerated the cleanup process through combining the Phase I and II RI/FS activities; shortening document review time by holding discussion workshops; improving communications by participating in telephone conferences; and developing a partnering agreement. The BCT has also been available during field operations to make real time decisions. The installation also converted its TRC to a Restoration Advisory Board (RAB).

Major accomplishments included conducting a "bottom up" review, producing a draft BRAC Cleanup Plan (BCP), and executing one Finding of Suitability to Transfer (FOST). Portions of the Land Reuse Plan were also implemented. In July, the Navy transferred the Savannah Cabrillo Housing Complex to three federal agencies.

In April, an Environmental Baseline Survey (EBS) designated approximately 135 acres as CERFA clean. Regulatory agencies have not concurred on the clean acres because groundwater concerns have not been fully investigated. These concerns are being addressed as part of an RI/FS.

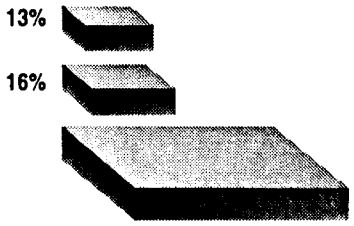
To date, all parties, the BCT, the RAB, and the reuse representative have participated in various steps of the cleanup process. The BCP has been revised to incorporate reuse considerations and the establishment of the RAB.

The RI field work was completed. The installation is also treating contaminated soil and dissolved hydrocarbons in the groundwater from an installation gas station. The installation's partnering agreement has laid a framework to accelerate the cleanup process by conducting "hot spot" removals and implementing generic remedies.

PLAN OF ACTION

- Continue partnering with regulatory agencies to expedite cleanup, closure, and ultimate reuse of the installation
- Complete the RI/FS in FY95, and prepare the Proposed Plan and Record of Decision by FY97
- Complete all closure-related compliance projects and prepare three Findings of Suitability to Lease

CERFA CLEAN ACREAGE



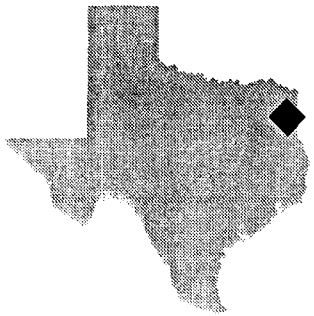
Concurred CERFA Clean Acreage –	TBD
Proposed CERFA Clean Acreage –	199
Acreage Available for Transfer –	245 *
Total Acreage –	1,533

** Environmental Condition of Property Categories 1-4*

LONGHORN ARMY AMMUNITION PLANT

NPL

Size:	8,493 acres
Mission:	Load, assemble, and pack pyrotechnical and illuminating signal munitions and solid propellant rocket motors
HRS Score:	39.83; Placed on NPL in 1990
IAG Status:	IAG signed in October 1991
Contaminants:	Explosives, heavy metals, and VOCs
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	*$35.5 million*



Karnack, Texas

CLEANUP BACKGROUND

Longhorn Army Ammunition Plant manufactures pyrotechnical, illuminating signal munitions and solid propellant rocket motors. The Army began environmental studies in FY80 and identified 27 sites. Primary site types include storage areas, landfills, open burning grounds, industrial areas, burial pits, Underground Storage Tanks (UST), sumps, and wastewater treatment plants.

Follow-up studies conducted at the installation have identified VOCs, heavy metals, and explosive contamination in on-site surface water, groundwater, and soil. The studies also confirmed two sources of VOC contaminants beneath the active burning ground site.

A Remedial Action conducted in FY84 included the design and construction of a landfill cap for an unlined evaporation pond formerly known as the Rocket Motor Washout Pond. The state of Texas certified the pond as "clean-closed" in FY86.

In FY88, a RCRA Facility Assessment identified 26 Solid Waste Management Units, three of which required no further action.

In FY91, the installation began a Remedial Investigation and Feasibility Study (RI/FS) at 13 sites. Phase I of the RI was completed in FY93.

FY94 CLEANUP PROGRESS

Based on the results of the Phase I RI, the Army, EPA, and the Texas Natural Resource Conservation Commission (TNRCC) have agreed that two sites should be recommended for no further action. Additional Phase II field work is needed at 11 sites and 125 waste process sumps.

Phase II investigations began in August at 11 sites and will be completed by July FY95. The results of this phase will help determine the sources, migration pathways, and risks associated with contamination at the 11 sites.

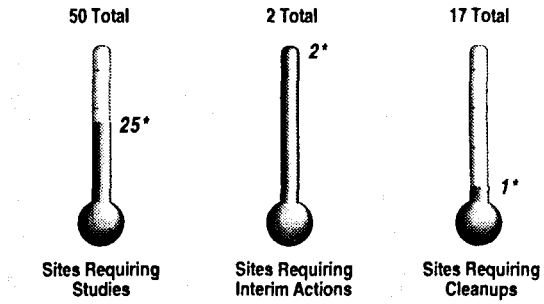
The Army also completed a pilot study for an Interim Remedial Action (IRA) at the Burning Ground No. 3, which incorporates the capped Unlined Evaporation Pond. The Army conducted an IRA pilot study, which consisted of groundwater extraction and treatment of tricholorothylene (TCE) and methylene chloride and low temperature thermal destruction of soils and source material. The study results provided enough data to begin the full-scale implementation of the technology. The pilot study also evaluated the effectiveness of vertical extraction of groundwater instead of using a trenching method for collecting groundwater.

PLAN OF ACTION

- Complete the final RI report and no further action Record of Decision (ROD) for two sites in FY95
- Submit for regulatory agency review the Site Characterization and Risk Assessment report for the Phase II RI sites and sumps in FY95 and FY96, respectively
- Complete the design and initiate the IRA at the Burning Ground site in FY95
- Prepare Proposed Plan and ROD for the construction of two landfill caps and initiate a public meeting in FY95

PROJECT ACCOMPLISHMENTS

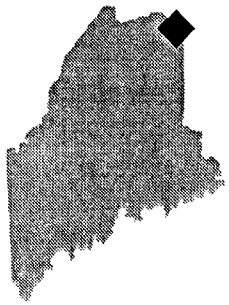
- **Total Number of Sites = 50**
- **Estimated Date of Completion = 2021**



** Complete*

LORING AIR FORCE BASE

Size:	9,482 acres (9,482 acres excess)
Mission:	Support B-52 strategic bombers and KC-135 strato tankers
HRS Score:	34.49; Placed on NPL in 1990
IAG Status:	Federal Facility Agreement signed in April 1991; revision signed in 1994
Contaminants:	VOCs, waste fuels, oils, spent solvents, PCBs, pesticides, and heavy metals
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$52.2 million



Limestone, Maine

CLEANUP BACKGROUND

Loring Air Force Base was established in 1952 to support B-52 strategic bombers and KC-135 strato tankers. In July 1991, the BRAC Commission recommended closure of Loring Air Force Base, transfer of the assigned B-52 aircraft to K.I. Sawyer Air Force Base, and redistribution of KC-135 aircraft to active and air reserve component units. Wastes generated at the installation included waste oils, fuels cleaned from aircraft and vehicles, spent solvents containing VOCs, pesticides, PCBs, and heavy metals. The Flightline and Nose Dock Areas, where industrial shops and maintenance hangars were located, are primary areas where wastes were released to the soil and groundwater, most likely through occasional disposal in storm and sewer drains or directly on the ground.

Environmental studies have been ongoing since FY84. Sites at the installation include spill areas, landfills, fire training areas, Underground Storage Tanks (UST), aboveground storage tanks, and low-level radioactive waste areas. The most prominent site types are fuel spill areas that contaminated soils, groundwater, and drainage channel sediments with petroleum hydrocarbons. Historically, most wastes were burned or buried in landfills.

Interim Remedial Actions (IRA) initiated in FY93 included: free product removal at three sites; source removal at two sites; treatability studies at one site involving bioventing; and solvent extraction at another site.

An Environmental Baseline Survey was initiated in FY93. A revised Federal Facility Agreement was approved in FY93 grouping the sites into 13 Operable Units (OU).

FY94 CLEANUP PROGRESS

The BRAC Cleanup Team (BCT) was formed and is responsible for accelerating cleanups that have resulted in a savings of over $10 million in cleanup costs. The BCT conducted a "bottom up" review, and developed new document review schedules that would allow sufficient time in the early stages for thorough reviews to identify and resolve potential issues. Greater regulatory involvement has resulted in expedited implementation of early actions and approval of Proposed Plans and Records of Decision (ROD).

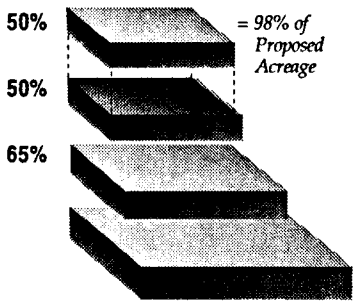
The Restoration Advisory Board (RAB) was formed in February. Members include representatives from Native American organizations, a local water supplier, a local solid waste disposal facility, and representatives from agricultural interests. RAB meetings are held periodically and are advertised with notices and press releases.

Remedial Investigation and Feasibility Study (RI/FS) activities continued. Remedial Actions (RA) for two OUs were completed that remediated four sites totalling approximately seven acres of soils contaminated with solvents, fuels, and PCBs. RAs for a third OU and for removal of low-level radioactive waste were also initiated.

PLAN OF ACTION

- Continue RI/FS activity in FY95
- Initiate cleanups and Interim Actions at numerous sites in FY95
- Continue research of innovative technologies in FY95
- Complete bioventing treatability study
- Initiate study to evaluate light non-aqueous phase liquid removal from fractured bedrock

CERFA CLEAN ACREAGE



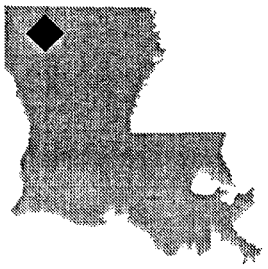
Concurred CERFA Clean Acreage –	4,700
Proposed CERFA Clean Acreage –	4,783
Acreage Available for Transfer –	6,181 *
Total Acreage –	9,482

** Environmental Condition of Property Categories 1-4*

LOUISIANA ARMY AMMUNITION PLANT

NPL

Size:	14,974 acres
Mission:	Load, pack, and assemble operations; manufacture shell metal parts
HRS Score:	30.26; Placed on NPL in 1989
IAG Status:	IAG signed in 1989
Contaminants:	Oils, grease, degreasers, phosphates, solvents, metal plating sludges, acids, fly ash, TNT, and RDX
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$45.8 million



Doyline, Louisiana

CLEANUP BACKGROUND

Sites that supported Louisiana Army Ammunition Plant's mission included lagoons, burning grounds, and a landfill contaminated with explosives and plating wastes. Seven sites were identified during a Preliminary Assessment and Site Inspection in FY78.

A preliminary Remedial Investigation and Feasibility Study (RI/FS) was completed in FY82 at the installation. The installation implemented full-scale RI/FS activities at four of the seven sites beginning in FY85. No off-site contamination was identified during these studies; however, on-post groundwater monitoring wells were contaminated with explosive compounds such as TNT, RDX, and HMX. The potential for off-post migration of contaminants required groundwater monitoring beyond the northern and southern boundaries of the installation. On- and off-post groundwater monitoring will continue until the Record of Decision (ROD) for the seven sites is signed.

Between FY89 and FY90, nearly 102,000 tons of explosives-contaminated soil was incinerated and over 53,000,000 gallons of contaminated water were treated. Between FY88 and FY90 the lagoons underwent RCRA closure and were revegetated. The vegetated protective cap is monitored and maintained regularly to ensure its integrity.

Two additional sites were identified in FY93 and FY94. The first of these sites, the Y-Line Etching Facility, may have chromium and solvent contamination. The second site, the load/pack/assemble lines, may have explosives contamination in the soil and groundwater.

The installation has a Technical Review Committee that meets quarterly to exchange information regarding the cleanup program and assist in the document review and approval process.

FY94 CLEANUP PROGRESS

The State of Louisiana completed the 5-year review of the Interim Remedial Action at the Area P lagoons. The 5-year review evaluates the effectiveness of measures taken over the past five years, and the findings of the review confirmed that the source of the contamination has been removed.

The installation submitted the Proposed Plan for the first seven sites to the regulatory agencies for review. The plan included a Technical Impractibility waiver for groundwater contamination in Area P because the installation believes that the recovery of any groundwater at Area P will not be feasible. The regulatory agencies are currently reviewing the plan.

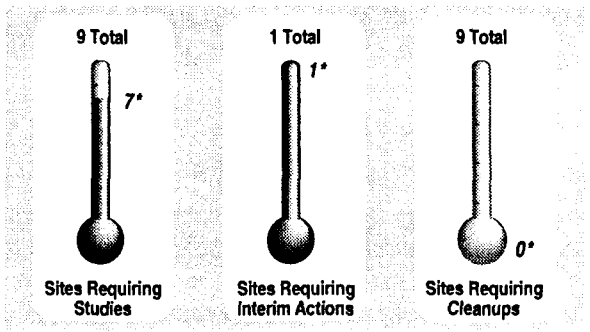
The RI is nearing completion for the Y-Line Etching Facility. However, additional sampling is required to fully characterize the area. The installation is currently awarding a contract to begin work on the FS for the Y-Line Etching Facility.

PLAN OF ACTION

- Receive EPA approval on the Proposed Plan for the first seven sites and waiver for Area P in FY95
- Begin RI/FS at the ammunition load/pack/assemble lines
- Begin FS and Proposed Plan at the Y-Line Etching Facility
- Solicit interest in establishing a Restoration Advisory Board to address any existing or future community concerns

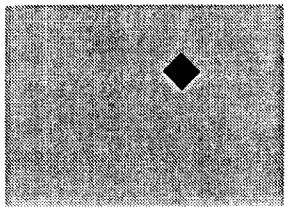
PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 9
- Estimated Date of Completion = 2022



* Complete

Size:	1,866 acres (1,751 acres excess)
Mission:	House the 3400th Technical Training Wing; serve as Technical Training Center
HRS Score:	N/A
IAG Status:	Under negotiation
Contaminants:	Waste oil, general refuse, fly ash, coal, metals, fuels, VOCs, solvents, petroleum hydrocarbons
Media Affected:	Groundwater and soil
Funding to Date:	$11.1 million



Denver, Colorado

CLEANUP BACKGROUND

In July 1991, the BRAC Commission recommended that Lowry Air Force Base (AFB) be closed and that all technical training operations be redistributed or relocated to the remaining technical training centers.

Sites identified in previous investigations include fire training areas, landfills, a fly ash disposal area, coal storage yards, and Underground Storage Tanks (UST). Petroleum hydrocarbons, metals, VOCs, and solvents are contaminating groundwater and soils.

Interim Remedial Actions conducted at the installation include the removal of 20 USTs at eight sites, one state-approved RCRA closure of a 50,000-gallon UST, closure of off-base wells, removal of free product from the water table, operation of an in-situ bioventing system, and construction of an above-ground bioremediation landfarm.

FY94 CLEANUP PROGRESS

The Technical Review Committee was converted to a Restoration Advisory Board (RAB). The RAB Selection Panel was established in October to nominate additional RAB members. Additional community members have been solicited to ensure diversity and balance, and typical agendas include updates of ongoing environmental projects.

The BRAC Cleanup Team (BCT) was formed in early FY94. The BCT reviewed analytical data from field screening methods as it became available to make "real time" decisions regarding investigations and sampling locations. The BCT submitted a generic statement of work to the Air Force Center for Environmental Excellence (AFCEE) to incorporate into the base-wide groundwater investigation. The BCT meets bi-weekly with the Lowry Redevelopment Authority to discuss reuse of the installation and attends delivery order kick-off meetings to provide early input.

The Environmental Baseline Survey was completed and identified a total of 1,649 acres as environmentally suitable for transfer (CERFA categories 1 through 4), of which 1,509 acres are considered CERFA clean. An installation-wide groundwater investigation is being conducted to characterize category 7 parcels and to determine the extent of trichloroethene (TCE) contamination beyond the base's property boundary. The installation has not received regulatory agency concurrence on the CERFA clean acreage identified.

The installation completed the removal of all PCB-containing electrical transformers in February. The installation also continued to conduct investigations at many sites.

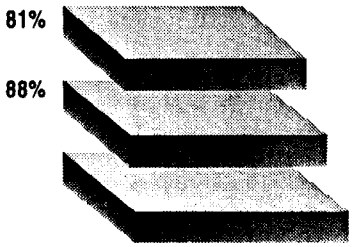
A Facility Investigation effort was scoped and field work was initiated. Field work consisted of collecting soil, soil gas, and groundwater samples and installing monitoring wells. To accelerate the investigation, the installation analyzed samples collected in an on-site mobile laboratory and a cone penetrometer was used as a screening tool for sampling.

On September 30, the installation closed as scheduled.

PLAN OF ACTION

- Conduct Phase II site assessments for eight UST sites, including groundwater monitoring, defining the extent of contamination, and conducting a pilot study for bioventing of soil
- Continue investigations at six sites and implement an Interim Remedial Action to develop a reactive or containment wall for the dehalogenation of a TCE plume at the northern installation boundary
- Complete Facility Investigation field work and submit draft report in FY95

CERFA CLEAN ACREAGE



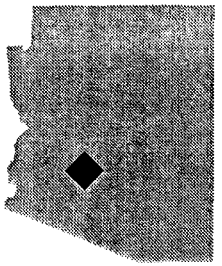
Concurred CERFA Clean Acreage –	0
Proposed CERFA Clean Acreage –	1,509
Acreage Available for Transfer –	1,649 *
Total Acreage –	1,866

** Environmental Condition of Property Categories 1-4*

LUKE AIR FORCE BASE

NPL

Size:	4,198 acres
Mission:	Provide advanced F-15 and F-16 fighter training
HRS Score:	37.93; Placed on NPL in August 1990
IAG Status:	Federal Facility Agreement signed in September 1990
Contaminants:	Petroleum/oil/lubricants, waste solvents, waste oils, general refuse, lead, and chromium
Media Affected:	Groundwater and soil
Funding to Date:	$17.6 million



Glendale, Arizona

CLEANUP BACKGROUND

Historically, Luke Air Force Base provided advanced training to fighter pilots. The current mission of the 56th Fighter Wing, the host unit at Luke Air Force Base, is to provide combat crew training for aircrew personnel. Aircrew training is now performed for the F-15 and F-16 aircraft. Other services at the installation include aircraft maintenance, training, and engineering support.

A Preliminary Assessment (PA) was completed in FY82, and a base-wide Site Inspection (SI) was completed in FY85. The PA/SI identified 31 sites that were later consolidated into two Operable Units (OU). In late FY86, an Interim Action involved removing three leaking Underground Storage Tanks (UST) containing methyl ethyl ketone, toluene, and jet fuel at a flight line facility. Other site types include fire training areas, disposal trenches, landfills, spill sites, and surface drainage canals. Soil is the primary media affected, and petroleum/oil/lubricants (POL), waste solvents, and waste oils have been identified in disposal trenches and the fire training areas. Groundwater at the installation is contaminated with trichloroethene (TCE), but the detected concentrations are below maximum concentration levels (MCL) for safe drinking water standards.

In late FY91 and early FY92, final Remedial Investigation and Feasibility Study (RI/FS) work plans, field sampling plans, and a Community Relations Plan were completed. In FY92, an interim RI report for OU1 and a final RI report for OU2 were submitted and approved. In FY93, a new site at the fuel handling area was discovered and added to OU1. From March FY92 to May FY93, FS activities were conducted at OU2. In late FY93, a final FS report was submitted and approved by EPA and the state agency.

Interim Actions implemented include using an innovative technology, soil vapor extraction (SVE), to clean up contaminated soils at the North Fire Training Area and stabilizing the bank of a landfill adjacent to the Agua Fria River.

In FY92, the Technical Review Committee (TRC) was formed. The TRC consists of 12 community members, and representatives of the installation, EPA, and the state regulatory agency.

Partnering has been fostered with other government agencies through events hosted by the installation remedial project manager. The decision-making process and document review process have also been improved by using consensus statements that document the resolution of issues before the submittal of reports. This process has shortened the review time for some reports from the normal 60 to 90 days to as few as 40 days.

FY94 CLEANUP PROGRESS

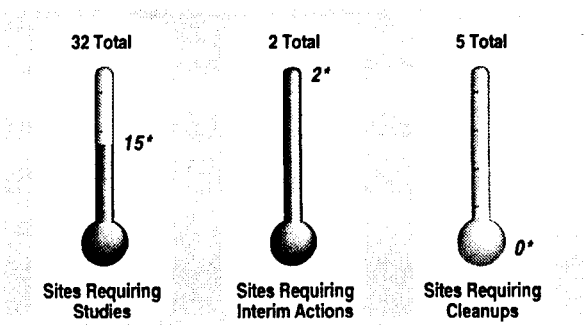
RI field investigations were completed, and a draft RI report was submitted for OU1. A Record of Decision (ROD) for OU2 was also signed. The ROD recommended cleanup of two sites. The ROD selected the innovative technology, soil bioremediation with composting, at one site, and maintenance and inspection for 30 years at another site. In January, the Remedial Design (RD) for bioremediation was initiated, and in August it was completed.

PLAN OF ACTION

- Form a Restoration Advisory Board (RAB) during FY95; the RAB is expected to hold quarterly meetings and publish a community newsletter twice a year
- Complete the FS report of OU1 and have ROD signed in FY95; only five sites in OU1 are expected to require cleanup with the other sites in OU1 requiring no further action
- Conduct a pilot-scale study of an innovative technology, bioventing, at one site in OU1
- Initiate and complete all cleanup activities at OU1 by FY97
- Begin RA construction activities at OU2 for the bioremediation site in FY95 and complete RA construction in FY96

PROJECT ACCOMPLISHMENTS

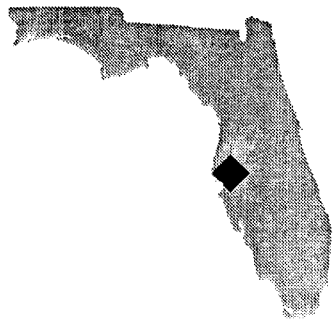
- **Total Number of Sites = 32**
- **Estimated Date of Completion = 2020**



* Complete

MacDill Air Force Base

Size:	5,638 acres (3,448 acres excess)
Mission:	Support the Air Force Central Command; formerly served as mission training base for F-16 fighter squadrons
HRS Score:	N/A
IAG Status:	IAG under negotiation
Contaminants:	Petroleum, pesticides, munitions, PCBs, heavy metals, and solvents
Media Affected:	Groundwater and soil
Funding to Date:	$18 million



Tampa, Florida

CLEANUP BACKGROUND

In 1991, the BRAC Commission recommended that MacDill Air Force Base be realigned. Approximately 3,200 acres will be transferred to the Department of Commerce by October 1995. Sites located on the parcel scheduled for transfer are being given priority for cleanup and for the start of Long-Term Monitoring.

Environmental investigations began at the installation in FY81 with 38 sites originally identified. In FY91, when the installation received its RCRA permit, the 38 sites were grouped into three Operable Units (OU), and investigations continued under RCRA.

Site types at the installation include sludge disposal areas, a fuel tank farm, a drum storage area, a fire training area, and landfills. As a result of activities at and releases from these sites, petroleum hydrocarbons, metals, VOCs, pesticides, and solvents have contaminated groundwater and soil at the installation. Since identifying the sites, the installation has performed Interim Actions including removal of Underground Storage Tanks and excavation and incineration of soil at various sites.

Petroleum sites have also been identified at the installation. Groundwater treatment plants were constructed between FY90 and FY92 to treat groundwater contamination resulting from these petroleum sites.

FY94 CLEANUP PROGRESS

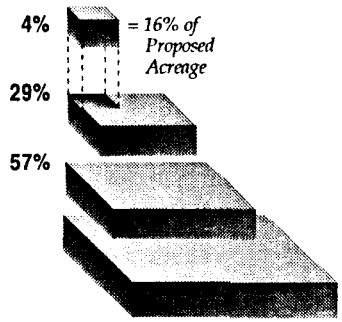
The installation formed the BRAC Cleanup Team (BCT) in February to streamline the realignment process. The BCT adopted a review process that requires preparing only one draft and one final report.

The installation completed a RCRA Facility Investigation (RFI) addressing sites contaminated with petroleum hydrocarbons. Two groundwater extraction and treatment systems also began operating, and Long-Term Monitoring began at another site with groundwater contamination.

PLAN OF ACTION

- Complete investigations at all petroleum sites in FY95
- Initiate RCRA investigation for a vinyl chloride contaminated site in FY95
- Begin source removals in FY95 that will include free product removal and removal of contaminated soil
- Complete removal of PCB transformers in FY95
- Form Restoration Advisory Board in FY95
- Complete Corrective Measures Studies by FY97
- Complete realignment of the installation by FY04

CERFA Clean Acreage



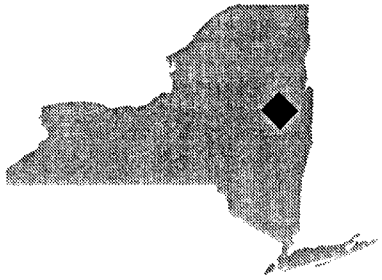
Concurred CERFA Clean Acreage –	255
Proposed CERFA Clean Acreage –	1,629
Acreage Available for Transfer –	3,193 *
Total Acreage –	5,638

** Environmental Condition of Property Categories 1-4*

MALTA TEST STATION

NPL

Size:	165 acres
Mission:	Test rocket engines and exotic rocket fuels
HRS Score:	33.62; Placed on NPL in 1987
IAG Status:	IAG signed in 1990
Contaminants:	VOCs
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$1.9 million



Malta, New York

CLEANUP BACKGROUND

Malta Test Station, located in Malta, New York, operated as an exotic rocket fuels and rocket engine testing facility. Primary site types include aboveground storage tanks, Underground Storage Tanks, dry well areas, and surface disposal areas. Environmental studies discovered VOC-contaminated groundwater and sediment.

In FY89, EPA issued a Unilateral Consent Order to eight Potentially Responsible Parties. In FY90, a participation agreement was entered into by New York State, DoD, and a corporation to conduct the Remedial Investigation and Feasibility Study (RI/FS). The RI, completed in FY93, identified trichloroethene and carbon tetrachloride as primary contaminants of concern in the groundwater. EPA recommended additional investigation activities under the RI, including test pit excavations that were conducted in late FY93.

FY94 CLEANUP PROGRESS

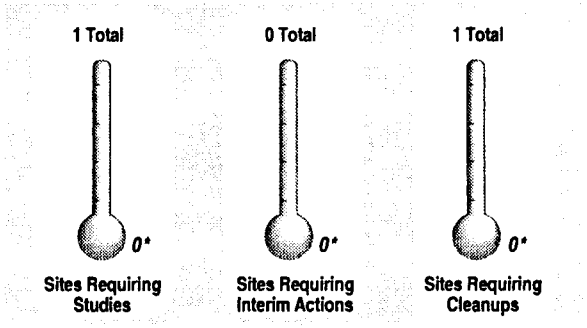
Following completion of the additional RI activities, the installation submitted a revised RI report for EPA review in September. The installation also began removing two gas cylinders believed to contain hazardous materials that were discovered during the test pit excavations.

PLAN OF ACTION

- Address EPA comments on the draft RI report and finalize RI report; begin FS activities in FY95
- Develop allocation of costs to fund the follow-on Remedial Design and Remedial Action (RD/RA) efforts

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 1
- Estimated Date of Completion = 1999



* Complete

MARATHON BATTERY CORPORATION

NPL

Size:	820 acres
Mission:	Produce nickel-cadmium batteries
HRS Score:	30.27; Placed on NPL in 1983
IAG Status:	None
Contaminants:	Organic nickel, cobalt, pesticides, VOCs, and semi-VOCs
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$6.4 million

Cold Springs, New York

CLEANUP BACKGROUND

In the early 1970s, high concentrations of metals were found in soils and sediments of marshes and coves that receive discharges from the Marathon Battery Corporation. As a result of dredging in East Foundry Cove, dredge spoils were dewatered and buried in a clay-lined underground vault on the site property. However, studies conducted between FY76 and FY80 by the New York State Department of Environmental Conservation (NYSDEC), EPA, and New York University indicated that East Foundry Cove was still contaminated.

The NPL site consists of three distinct areas, Areas I through III. NYSDEC and EPA, with input from the site's Potentially Responsible Parties (PRP), have conducted a Remedial Investigation and Feasibility Study (RI/FS) for all areas. Records of Decision (ROD) have been issued to implement numerous cleanup alternatives at various areas. EPA also issued an Administrative Order to the PRPs on March 26, 1989, to govern activities associated with remediating building contamination, including power washing and vacuuming for cadmium dust removal, cleaning and disposal.

The cleanup alternative selected for Area I of the site includes hydraulic dredging, sediment thickening, fixation, and off-site disposal. The ROD documenting this remedy selection was signed in FY86. The same cleanup alternative was chosen for Area III, and a ROD for that Remedial Action was issued in FY89. For Area II, the alternative selected to remediate building dust includes building decontamination, soil extraction, fixation, enhanced volatilization, and off-site disposal. Cleanup of the underground vault involves sediment excavation, chemical fixation, and off-site disposal. No action is to be taken to address groundwater contamination, other than monitoring and Operation and Maintenance.

FY94 CLEANUP PROGRESS

Building demolition was completed, and all cleanup was conducted by the lead PRP. Under the terms of a final Consent Decree stipulating designation of liability, cleanup is continuing for Areas I, II, and III.

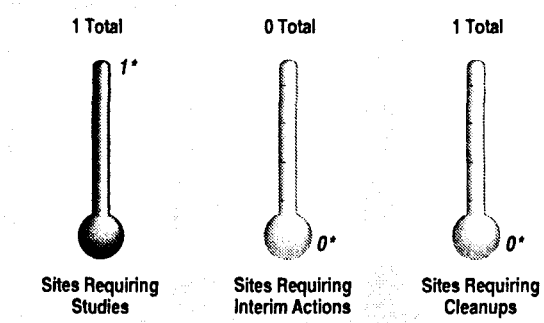
In addition to the $6.4 million expended by DoD through FY94, DOJ has expended $25.9 on cleanup activities at the installation.

PLAN OF ACTION

- Implement 30-year monitoring of the marsh area as stipulated in the Consent Decree
- Complete the majority of cleanup activities by the end of FY95

PROJECT ACCOMPLISHMENTS

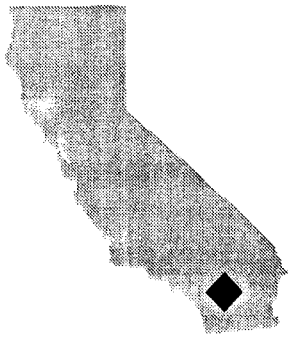
- Total Number of Sites = 1
- Estimated Date of Completion = 1996



* Complete

MARCH AIR FORCE BASE

Size:	6,483 acres (3,983 acres excess)
Mission:	Maintain, repair, and refuel aircraft
HRS Score:	31.94; Placed on NPL in 1989
IAG Status:	IAG signed in September 1990
Contaminants:	VOCs, petroleum/oil/lubricants, and PCBs
Media Affected:	Groundwater and soil
Funding to Date:	$83.3 million



Riverside, California

CLEANUP BACKGROUND

In FY93, the BRAC Commission recommended that March Air Force Base undergo realignment by deactivating the 22nd Air Refueling Wing and relocating the KC-10 aircraft. The BRAC Commission also recommended that the installation serve as an Air Reserve Base once realignment is complete.

Environmental studies have been conducted at March Air Force Base since FY84, when 28 sites were identified during a Preliminary Assessment and Site Inspection (PA/SI). Site types identified in subsequent studies include three fire training areas, seven inactive landfills, several Underground Storage Tanks (UST), an engine test cell, sewage treatment plant sludge drying beds, and various spill sites. A total of 58 sites have been identified to date.

Cleanup activities began in FY89 with the design of an Interim Remedial Action (IRA) to clean up floating petroleum product from the groundwater table.

An Engineering Evaluation and Cost Analysis was performed in preparation for subsequent Removal Action activities. A Removal Action was completed in FY90 to prevent off-base migration of contaminated groundwater. Also in FY90, the installation initiated a Remedial Design and Remedial Action (RD/RA) that included the removal of the Panero hydrant refueling system and treatment of more than 11,000 cubic yards of contaminated soil.

In FY91, 48 sites were grouped into three Operable Units (OU) to assist in the investigation and cleanup at the installation. In FY93, a RCRA Facility Assessment was completed and submitted to the regulatory agencies for review.

FY94 CLEANUP PROGRESS

The Technical Review Committee (TRC) was converted to a Restoration Advisory Board (RAB). The RAB consists of approximately 30 members from adjacent communities, local utilities, the local school district, real estate and building industry representatives, and representatives from the installation, EPA, and DoD. RAB membership is solicited annually to ensure complete participation by stakeholders. The RAB is briefed on the status of all three OUs and is presented all primary and most secondary documents for review.

The Environmental Baseline Survey was finalized and identified a portion of the installation as CERFA clean.

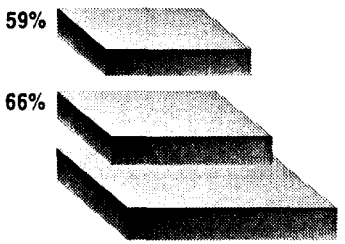
Generic remedies were initiated at some landfill sites, and included modified RCRA caps and stream modifications in conjunction with debris removal and waste centralization. In addition, two innovative treatment technologies were demonstrated at the base through the EPA Superfund Innovative Technology Evaluation (SITE) program. These technologies involved the cleanup of contaminants in soil and groundwater using modified vapor extraction and recovery systems.

Pilot studies were conducted at four sites with solvent and fuel contamination in groundwater and the vadose zone. These studies were conducted to determine the most effective and appropriate cleanup technology given the nature and extent of contamination at the sites.

PLAN OF ACTION

- Finalize Record of Decision (ROD) for two of three OUs in FY95
- Review draft ROD for third OU in late FY95
- Continue Long-Term Monitoring at OU1
- Begin Long-Term Monitoring at OU3
- Continue investigation of sites potentially identified during the RFA

CERFA CLEAN ACREAGE

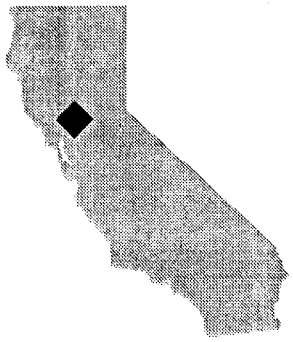


Concurred CERFA Clean Acreage –	TBD
Proposed CERFA Clean Acreage –	3,812
Acreage Available for Transfer –	4,306 *
Total Acreage –	6,483

** Environmental Condition of Property Categories 1-4*

MATHER AIR FORCE BASE

Size:	5,715 acres (5,715 acres excess)
Mission:	Inactive; formerly conducted Navigation and Electronic Warfare Officer training
HRS Score:	28.90; Placed on NPL in 1989
IAG Status:	IAG signed in 1989
Contaminants:	Solvents, jet fuel, petroleum, plating waste, and heavy metals
Media Affected:	Groundwater and soil
Funding to Date:	$19.8 million



Sacramento, California

CLEANUP BACKGROUND

Mather Air Force Base was established in 1918 for the purpose of training. In December 1988, the BRAC Commission recommended that the installation be closed. Before becoming inactive in FY93, the installation housed a reserve air refueling group and an Army National Guard aviation unit.

Since FY82, environmental studies identified over 120 sites. The sites were consolidated into the following four Operable Units (OU): aircraft control and warning system OU1, groundwater OU2, soil OU3, and landfill OU4. The prominent site types include landfills, Underground Storage Tanks (UST), fire training areas, a trichloroethene (TCE) disposal site, a weapons storage area, washout areas, spill areas, and waste pits. Petroleum hydrocarbons and chlorinated solvents are the primary contaminants affecting groundwater and soil.

Interim Actions included removing USTs and contaminated soil, supplying an alternative water supply to nearby residents, removing sludge in USTs, and removing free product from groundwater. Between FY84 and FY93, the installation removed more than half of the USTs identified in environmental studies since FY82.

In FY90, a RCRA Facility Assessment identified 48 Solid Waste Management Units (SWMU) and two Areas of Concern (AOC). Thirteen SWMUs and both AOCs required further investigation. By FY93, Remedial Investigation and Feasibility Study (RI/FS) activities were completed at all OUs.

FY94 CLEANUP PROGRESS

In January, the Restoration Advisory Board (RAB) was formed. The installation conducts RAB meetings every six weeks with representatives from EPA, California EPA, and the public. The Air Force prepared an Environmental Impact Statement (EIS) for the disposal and reuse of property at the installation.

The BRAC Cleanup Team (BCT) was formed which uses the Management Action Plan to accelerate the document review process.

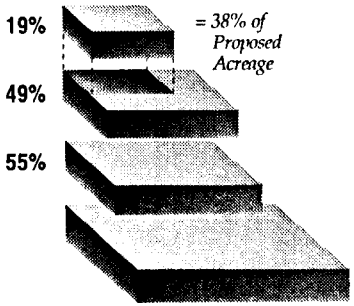
The final draft Record of Decision (ROD) for OU1 was approved by the regulatory agencies. The final draft ROD for OU4 was submitted for approval; however, a dispute regarding applicable or relevant and appropriate requirements (ARAR) is outstanding. The FS report for OU2 and OU3 was finalized and approved by the regulatory agencies.

Interim Actions consisted of removing almost all of the remaining USTs.

PLAN OF ACTION

- Finalize and obtain approval of the draft ROD for OU2 and OU3 in FY95
- Resolve issue regarding ARARs for the OU4 ROD in FY95
- Complete removal of USTs in FY95
- Complete Remedial Design and Remedial Action activities for all OUs between FY95 and FY97

CERFA CLEAN ACREAGE



Concurred CERFA Clean Acreage –	1,071
Proposed CERFA Clean Acreage –	2,820
Acreage Available for Transfer –	3,151 *
Total Acreage –	5,715

** Environmental Condition of Property Categories 1-4*

MARE ISLAND NAVAL SHIPYARD

Size:	5,646 acres (5,646 acres excess)
Mission:	Maintain and repair ships and provide logistical support for assigned ships and service craft
HRS Score:	N/A
IAG Status:	Federal Facility Agreement signed in September 1992
Contaminants:	Heavy metals, VOCs, PCBs, pesticides, petroleum hydrocarbons, and lead oxide
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$26.6 million

Vallejo, California

CLEANUP BACKGROUND

In July 1993, the BRAC Commission recommended closure of Mare Island Naval Shipyard and relocation of the Combat Systems Technical Schools Command Activity to Dam Neck, Virginia. The BRAC Commission also recommended retainment of family housing as necessary to support Naval Weapons Station Concord.

Environmental studies beginning in FY80 identified 24 sites and 43 Underground Storage Tanks (UST). By FY92, 27 USTs were removed or closed. Contaminants include heavy metals, petroleum/oil/lubricants (POL), and PCBs affecting groundwater, sediments, and soil. Remedial Investigation and Feasibility Study (RI/FS) activities began in FY88 for the 24 sites.

Interim Remedial Actions (IRA) completed at the installation include the removal of soil and debris from a battery storage area, removal of sewage digester tanks, and the removal of a sump at an electroplating shop. In FY93, the remaining 16 USTs were removed and site characterizations were initiated at 17 USTs.

In FY93, an Environmental Baseline Survey (EBS) was initiated.

A Community Relations Plan was completed and an Information Repository was established during FY90. A Technical Review Committee was formed in FY90 to facilitate cleanup at the installation.

FY94 CLEANUP PROGRESS

The BRAC Cleanup Team (BCT) was formed to improve coordination among the installation, EPA, and the state. The BCT accelerated the cleanup process by designating investigation areas based on distinct geographic areas defined by geologic and hydrogeologic conditions, physiographic features, and environmental characteristics. This effort has helped reduce the number of Remedial Action Plans and Remedial Designs needed to accomplish cleanup goals. The BCT also initiated Removal Actions to address lead contamination.

The BCT negotiated a Memorandum of Understanding with the city of Vallejo and the U.S. Fish and Wildlife Service and the installation, outlining the requirements for the cleanup program and drafting a Habitat Conservation Plan.

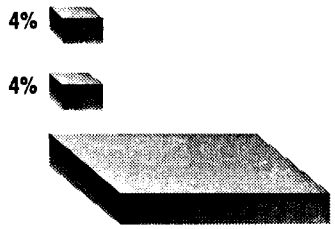
In July, a Land Reuse Plan was completed; however, the plan has not been implemented.

Field work for Phase II of the RI for Sites 1 through 23 was completed, and a Removal Action was conducted at Site 24. Analytical data from Site 22 indicate that concentrations of chemicals of concern are below action levels, and no further action will be proposed.

PLAN OF ACTION

- Complete Environmental Baseline Survey in FY95
- Complete RI by FY96
- Begin Removal Actions at seven sites in FY95
- Complete closure of installation by FY96

CERFA CLEAN ACREAGE



Concurred CERFA Clean Acreage –	TBD
Proposed CERFA Clean Acreage –	226
Acreage Available for Transfer –	226 *
Total Acreage –	5,646

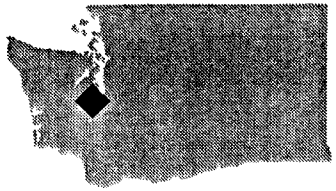
** Environmental Condition of Property Categories 1-4*

McChord Air Force Base

NPL

(Wash Rack/Treatment Area and American Lake Garden Tract)

Size:	4,616 acres
Mission:	Provide airlift services for troops, cargo, equipment, passengers, land mail
HRS Score:	31.94 (American Lake Garden Tract); Placed on NPL in 1984 42.24 (Wash Rack/Treatment Area); Placed on NPL in 1987
IAG Status:	Federal Facility Agreement signed in August 1989
Contaminants:	VOCs and semi-VOCs, metals, petroleum/oil/lubricants, pesticides, herbicides, and radioactive waste
Media Affected:	Groundwater and soil
Funding to Date:	$16.4 million



Tacoma, Washington

CLEANUP BACKGROUND

McChord Air Force Base provides air lift services for troops, cargo, equipment, passengers, and mail. Past investigations, including a Preliminary Assessment in FY82 and Site Inspection in FY86, have identified a total of 65 sites at the installation. These site types include fire training areas, spill areas, landfills, and waste pits. To date, 55 sites have undergone investigation and have either undergone cleanup or determined to need no further action. The only two sites listed on the NPL are the American Lake Garden Tract (ALGT) and the Wash Rack/Treatment Area (WTA).

Work began at the ALGT site in FY82, after trichloroethene (TCE) was detected in off-site residential wells. The source of the TCE plume was found to be an on-site landfill historically used to dispose general refuse during the 1960s and 1970s. The Remedial Investigation and Feasibility Study (RI/FS) for the ALGT site was initiated in FY87 and was completed in FY91. A groundwater extraction well network was designed and contracted for construction in FY92. Construction of the groundwater treatment plant, which included carbon adsorption treatment, began in mid-FY93 and was more than 90 percent complete at the end of FY93.

The RI/FS for the WTA site was initiated in FY90 and was completed in FY92. The WTA was used as an outdoor aircraft wash area; wash water from the area drained directly into on-site dry wells. This practice ceased many years ago. The Record of Decision (ROD) for the WTA site, which includes two separate sites, determined that groundwater in the leach pits required monitoring only. A ROD for the second site within the WTA determined that fuel floating on the shallow water table should be removed and that fuel-contaminated soil should be evaluated for cleanup. In FY93 a pilot test was initiated to determine the feasibility of passive fuel recovery from the trenches. Activities completed during the pilot study revealed that floating fuel had been removed or naturally attenuated to the extent practical, and that because fuel-contaminated soils were not acting as a secondary source of groundwater contamination, they did not warrant cleanup.

A joint agreement, called an Explanation of Significant Differences (ESD), was signed by the Air Force and the regulatory agencies. The ESD determined that the installation would institute Long-Term Monitoring (LTM) and natural attenuation to treat contamination at the WTA.

FY94 CLEANUP PROGRESS

Cleanup activities continued at the ALGT and WTA. The groundwater treatment plant at the ALGT began operating in February.

The final ESD document was issued for the WTA and explained the difference between the cleanup alternative initially selected in the ROD and the alternative implemented.

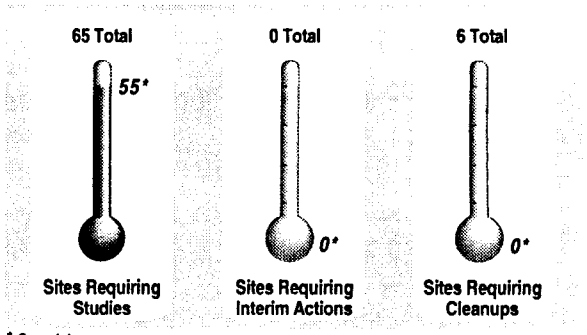
LTM also continued at all no further action sites at the installation. In addition, both the ALGT and WTA sites were incorporated into the LTM program.

PLAN OF ACTION

- Continue investigation at four sites
- Complete an Interim Remedial Action for Site 44 in FY95
- Proceed with LTM in FY95 including all NPL sites, no further action sites, and wells along the McChord installation boundary
- Continue groundwater treatment at the ALGT

Project Accomplishments

- Total Number of Sites = 65
- Estimated Date of Completion = 2030

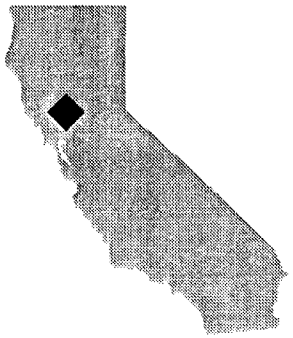


* Complete

McClellan Air Force Base

NPL

Size:	2,950 acres
Mission:	Provide logistics support for aircraft, missile, space, and electronics programs
HRS Score:	57.93; Placed on NPL in 1987
IAG Status:	IAG signed in 1990
Contaminants:	Solvents, metal plating wastes, caustic cleaners and degreasers, paints, waste lubricants, photochemical, phenols, chloroform, spent acids and bases, and PCBs
Media Affected:	Groundwater and soil
Funding to Date:	$151.8 million



Sacramento, California

CLEANUP BACKGROUND

Environmental contamination at McClellan Air Force Base has resulted from Underground Storage Tanks (UST), fire training areas, sumps near industrial operations, landfills, leakage around industrial waste lines, and surface spills. A study in FY79 detected groundwater contamination, which led to the closure of two on-base and three off-base drinking water wells. In addition to 18 acres of soil contamination in the vadose zone, three large plumes of contaminated groundwater have been identified. Localized soil contamination exists around source areas, and there is widespread low-level soil gas contamination.

Sites at the installation were divided into 11 Operable Units (OU) including a base-wide groundwater OU (GW OU). The first Interim Record of Decision (ROD) was signed in FY93. A number of Interim Actions have been implemented, including removal of 130 USTs, installation of a landfill cap, construction of a groundwater treatment plant, demolition of an electroplating facility, installation of a temporary liner, and completion of a soil vapor extraction (SVE) system at three OUs.

In an effort to streamline the decision-making process, the installation and regulatory agencies signed three consensus statements. The consensus statements establish background levels of inorganic contaminants, develop the rationale for making no further action decisions, and document the procedure for risk screening and Baseline Risk Assessment. Upfront agreement on the methodology for such decision-making expedites cleanup.

The installation has established productive partnerships with the public, private industry, and the regulatory agencies. The Environmental Process Improvement Center (EPIC) was established in FY91. EPIC is a formal cooperative alliance among the installation, EPA, and California EPA (CalEPA). The goals of EPIC are to accelerate site cleanup, develop and apply innovative technology, share environmental lessons learned, and establish a regional environmental resource center.

In FY93, the installation was selected as a National Test Site for technologies designed to treat chlorinated solvents and heavy metals. The installation also established a partnership among EPA, CalEPA, and private companies. This public and private partnership jointly evaluates innovative cleanup technologies.

FY94 CLEANUP PROGRESS

The installation formed a Restoration Advisory Board (RAB) to include quarterly meetings, quarterly steering committee meetings, and quarterly luncheons with community representatives. The installation continued working with regulatory agencies and the community in prioritizing the cleanup schedule based on relative risk, and establishing an annual process to review data, adjust schedules, and submit budgets. The installation also established standardized decision documents for frequently occurring decision processes.

Specific achievements include the following: completion of the RI/FS for the GW OU; completion of two RIs; Remedial Design (RD) of two new SVE systems; operation of groundwater treatment systems at three OUs; and completion of an RA for a site with PCB-contaminated soil.

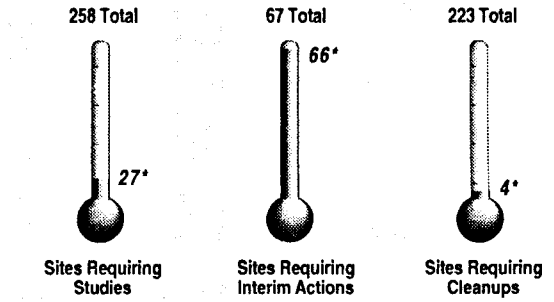
The installation was also selected as an innovative technology demonstration site by the Western Governors' Association. Three innovative technology projects are currently underway: bioventing to degrade petroleum hydrocarbon and aromatic VOCs; SVE with innovative off-gas treatments; and a pilot-scale test of 2-Phase Extraction.

PLAN OF ACTION

- Complete PA/SIs at all 258 sites
- Complete RIs for OUs B and C1; sign RODs for OU D and the GW OU
- Initiate operations for three additional SVE systems and design an additional SVE system in OU A
- Initiate a base-wide groundwater containment system

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 258
- Estimated Date of Completion = 2034

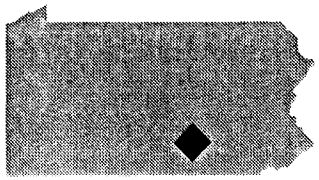


* Complete

MECHANICSBURG SHIPS PARTS CONTROL CENTER

NPL

Size:	824 acres
Mission:	Manage, inventory, and store materials
HRS Score:	50.00; Placed on NPL in May 1994
IAG Status:	Under negotiation
Contaminants:	PCBs, heavy metals, pesticides, VOCs and semi-VOCs
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$14.3 million



Mechanicsburg, Pennsylvania

CLEANUP BACKGROUND

Since FY84, 11 sites at the Mechanicsburg Ships Parts Control Center have been identified during environmental investigations conducted under CERCLA. The prominent site types include disposal sites, landfills, and spill sites. Environmental investigations have determined that groundwater, soil, and surface water/sediments have been contaminated with VOCs and PCBs.

Between FY91 and FY93, the installation has conducted several Interim Remedial Actions (IRA). IRAs included excavating contaminated soil; providing fencing; installing a gabion dam; and excavating "hot spots" of contaminated sediment. An IRA at the Ball Road Landfill and burn pits began in FY93 and consists of removing contaminated soil at the burn pits followed by bioremediation of contaminated soil.

Between FY91 and FY92, Interim Actions consisted of removing two leaking Underground Storage Tanks (UST) and associated contaminated soil and excavating soil at the radioactive waste disposal area. No further action is required for the UST site and no further action was recommended for the radioactive waste disposal area.

The Technical Review Committee (TRC) has helped foster good working relationships between state and federal regulatory agencies, local municipalities, and the installation. Effective partnering and community involvement are just two of the positive results of these good relationships. State and federal regulatory agencies were invited to participate in Remedial Design (RD) negotiations and the review process. As a result of these discussions, the state will allow the installation to return treated soil to the site if treatment levels for the soils are achieved, thereby saving costs on disposal and fill material, and ultimately saving landfill space. To update the public on cleanup progress, the TRC also sponsored a media day highlighting a cleanup project.

FY94 CLEANUP PROGRESS

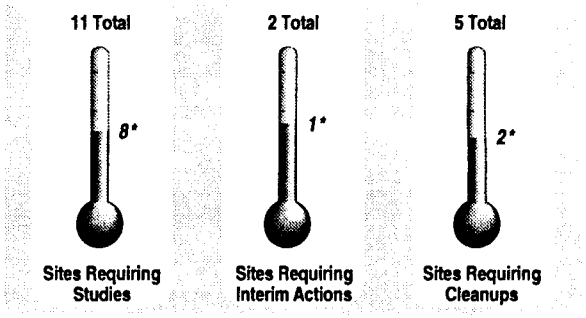
The Remedial Investigation and Feasibility Study (RI/FS) at Site 9 was completed and determined that PCBs in the stormwater drainage ditch had resulted from past disposal practices at the installation. The final Remedial Action (RA) for the stormwater drainage ditch was completed. Contaminated soil was removed from a portion of the storm sewer system, which serves as a continuing source of contamination in the ditch. Cleanup activities continued at the Ball Road Landfill and the burn pits.

PLAN OF ACTION

- Sign a Federal Facility Agreement by the end of FY95
- Complete a base-wide Ecological Risk Assessment by the end of FY95
- Complete the ongoing RI/FS at two sites in FY95
- Complete the IRA for Ball Road Landfill and burn pits in FY95
- Complete the RD/RA at four sites in FY96
- Convert the TRC to a Restoration Advisory Board in early FY95

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 11**
- **Estimated Date of Completion = 2003**



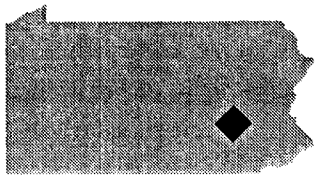
** Complete*

MIDDLETOWN AIR FIELD

NPL

(FORMERLY OLMSTED AIR FORCE BASE)

Size:	1,034 acres
Mission:	Conduct basic training; serve as an airfield and ordnance storage depot; and repair and test aircraft
HRS Score:	45.00; Placed on NPL in 1986
IAG Status:	None
Contaminants:	Organic solvents, inorganic chemicals, PAHs, and heavy metals
Media Affected:	Groundwater and soil
Funding to Date:	$16 million (FUDS = $5.5 million/Air Force = $10.6 million)



Middletown, Pennsylvania

CLEANUP BACKGROUND

In FY87, following the discovery of VOCs in the public water supply, a groundwater extraction and treatment system was installed at the Middletown Air Field site. An Interim Record of Decision (ROD) was issued stipulating specific Interim Remedial Actions to address the groundwater contamination.

An extensive investigation conducted in FY88 identified contaminated areas and Potentially Responsible Parties (PRP) associated with the installation.

In late FY90, a Phase I Remedial Investigation and Feasibility Study (RI/FS) was completed. Contaminated sites identified in the course of the study were divided into five Operable Units (OU).

A second Interim ROD was issued in early FY91 requiring the following: continued operation of the groundwater extraction and treatment system and a hydrogeologic study; installation of groundwater monitoring wells; and implementing restrictions on new well permits.

In FY93, a Phase III RI/FS work plan was developed.

FY94 CLEANUP PROGRESS

A contract was issued to remove five Underground Storage Tanks (UST), approximately 11,200 feet of underground fuel lines, 15 transformers, and four oil-filled switches.

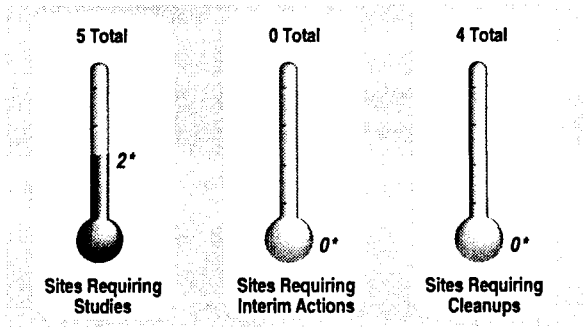
RI field work began. RI activities for the Interim ROD were conducted under the terms of an Administrative Order negotiated between the Air Force and EPA. Additional requirements for the RI were also determined.

PLAN OF ACTION

- Complete environmental studies under direction of the U.S. Army Corps of Engineers in FY95; studies are expected to support final ROD stipulating the selection of the appropriate long-term cleanup alternative in FY96
- Resolve liability of PRPs

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 5
- Estimated Date of Completion = 1999



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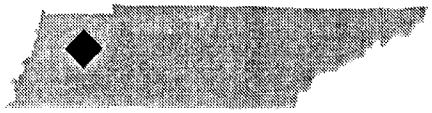
MILAN ARMY AMMUNITION PLANT

NPL

Size:	22,436 acres
Mission:	Load, assemble, pack, ship, and demilitarize explosive ordnance
HRS Score:	58.15; Placed on NPL in 1987
IAG Status:	IAG signed in 1989
Contaminants:	Munitions-related wastes, heavy metals, solvents, paints, thinners, and acids
Media Affected:	Groundwater and soil
Funding to Date:	$42.2 million



Milan, Tennessee

CLEANUP BACKGROUND

Preliminary Assessment and Site Inspection activities conducted at Milan Army Ammunition Plant in FY87 identified 25 sites requiring further investigation. The installation divided the sites into three Operable Units (OU): the O-line ponds OU, the northern area OU, and the southern area OU. Soils and groundwater are contaminated with lead, other heavy metals, and explosive materials. Contamination has been identified throughout the load, assemble, and pack lines and at the open burn and open detonation area.

Interim Action activities completed at the installation before FY94 include: removal of Underground Storage Tanks; capping abandoned O-line ponds to prevent additional contamination from reaching the groundwater; and removal of contaminated on-post drinking water wells.

The Remedial Investigation and Feasibility Study (RI/FS) began in FY88 to investigate sites in the OUs. EPA and state regulatory agency representatives approved the RI report in FY92. The report recommended no further action at three sites; the progression of the O-line ponds and associated groundwater for Remedial Design and Remedial Action (RD/RA); and the collection of additional RI data for the remaining sites.

In FY91, the city of Milan municipal groundwater wells were found to be contaminated with explosive materials. In FY93, representatives from the Army, city of Milan, EPA, and the state of Tennessee completed a contingency plan to protect the municipal water supply.

A Federal Facility Agreement signed in FY89 helps to expedite cleanup at the installation. Representatives from the installation and state and federal regulatory agencies meet quarterly and hold teleconferences monthly to plan actions. This effort reduces the time needed to review documents and facilitates consensus on environmental goals, deadlines, and cleanup methods.

FY94 CLEANUP PROGRESS

The Restoration Advisory Board (RAB) was formed and includes representatives of the community and local minority businesses. During the RAB's first meeting, the Army provided information on the installation's cleanup program to all members.

As a result of the contingency plan completed in FY93, one municipal groundwater well was closed and two more were scheduled to be closed. In addition, the Army provided $9 million to the city of Milan to develop new municipal water sources. This project began in September and will continue for approximately two years.

EPA signed a Record of Decision (ROD) to treat and prevent further off-post migration of groundwater contamination. A ROD was also signed to extend the cap on the O-line ponds.

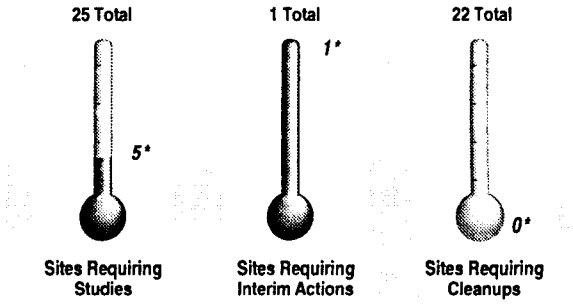
The installation conducted an Interim Action to remove lead-contaminated soil. Over the years, sandblasting and repainting operations left a 10-inch-thick layer of lead-based paint around five water towers. All surficial material and contaminated soil were removed and properly disposed of off post.

PLAN OF ACTION

- Sign four RODs addressing (1) city of Milan groundwater, (2) bioremediation of contaminated soils, (3) O-line pond contamination source areas, and (4) contamination near installation boundary areas
- Initiate cleanup of on-base groundwater contamination using an ultraviolet oxidation innovative technology in FY95
- Design a groundwater treatment plant to treat off-base groundwater contamination and begin construction in FY96

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 25
- Estimated Date of Completion = 2029



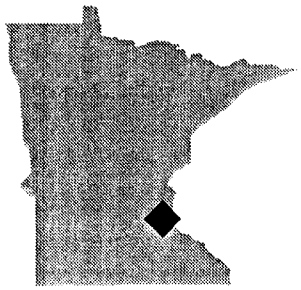
* Complete

MINNEAPOLIS/ST. PAUL AIR RESERVE BASE

NPL

(SMALL ARMS RANGE LANDFILL)

Size:	280 acres
Mission:	Provide tactical airlift support
HRS Score:	33.70; Placed on NPL in 1987
IAG Status:	None
Contaminants:	Petroleum/oils/lubricants, spent solvents and cleaners, battery acid, paint wastes, PCBs, and chlorinated hydrocarbons
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$3.6 million



Minneapolis, Minnesota

CLEANUP BACKGROUND

Minneapolis/St. Paul Air Reserve Base, located in Minneapolis, Minnesota, is a small Air Reserve base that has provided support to the military since 1955. The major area of environmental concern is the Small Arms Range Landfill, which is located on a noncontiguous property two miles from the main installation and was used as a solid waste disposal area from 1963 to 1972. The landfill primarily contains general refuse; however, it may have historically been used to bury or burn industrial wastes. Groundwater investigations performed at monitoring wells located around the landfill have detected low concentrations of VOCs.

The landfill has gone through a Preliminary Assessment and Site Inspection (PA/SI) followed by a Remedial Investigation and Feasibility Study. A Proposed Plan was completed in FY91, and the Record of Decision (ROD) was signed in early FY92.

The Remedial Design and Remedial Action (RD/RA) was completed in FY92 and included the design and construction of a groundwater and surface water monitoring program coupled with natural attenuation. Access was controlled by constructing a fence at the site.

Besides the landfill, the installation has identified four additional sites. The installation discovered groundwater contamination associated with a former dry well and spill area. The primary contaminants are VOCs. An RA implemented in FY91 currently includes a groundwater extraction and treatment system to contain, extract, and treat free product at the sites.

FY94 CLEANUP PROGRESS

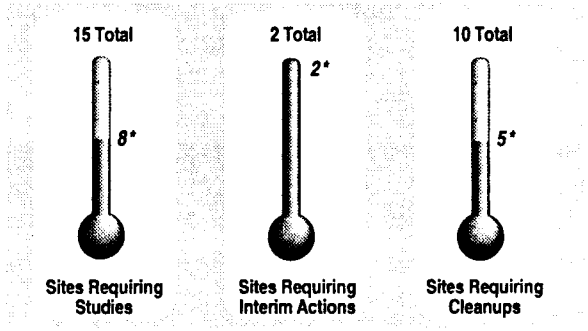
Groundwater and surface water samples from the landfill continued to be collected and analyzed in accordance with the ROD. Groundwater samples revealed no VOC contamination above ROD-established action levels.

PLAN OF ACTION

- Continue to collect groundwater and surface water samples from the landfill; if the groundwater contamination levels continue to fall within the ROD-established action levels, the installation will petition EPA to formally remove the site from the NPL
- Complete a site-specific health assessment at the landfill in FY95

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 15
- Estimated Date of Completion = 2004



* Complete

MOFFETT FIELD NAVAL AIR STATION

(INCLUDING CROWS LANDING NAVAL AUXILIARY LANDING FIELD)

Size:	3,067 acres (3,067 acres excess)
Mission:	Provide support for antisubmarine warfare training and patrol squads; serve as Headquarters for Commander Patrol Wings of Pacific Fleet
HRS Score:	32.90: Placed on NPL in 1987
IAG Status:	Federal Facility Agreement signed in September 1990
Contaminants:	Trichloroethene, tetrachloroethane, heavy metals, petroleum/oil/lubricants, jet fuel, semi-VOCs, PCBs, battery acid, PAHs, and BEX
Media Affected:	Groundwater and soil
Funding to Date:	$44.6 million

Sunnyvale, California

CLEANUP BACKGROUND

In July 1991, the BRAC Commission recommended the closure of Moffett Field Naval Air Station. (Crows Landing Naval Auxiliary Landing Field is considered part of Moffett Field for the purposes of this narrative.) Three squadrons will be decommissioned, and the remaining squadrons will be transferred to Washington State. Between FY84 and FY91, environmental studies identified 21 CERCLA sites and 11 Underground Storage Tank (UST) sites. Sites types include landfills, USTs, a burn pit, ditches, holding ponds, French drains, maintenance areas, and spill sites. Primary contaminants include VOCs, heavy metals, and petroleum/oil/lubricants (POL); these contaminants have been released to groundwater and soil. The installation has been divided into seven Operable Units (OU).

Interim Remedial Actions (IRA) completed at the installation include removing USTs and groundwater cleanup actions at three sites in FY91. Remedial Investigation (RI) activities for OU1, 2, and 5 were completed in FY93, and Feasibility Study (FS) activities were initiated for these OUs.

A Technical Review Committee (TRC) was formed and meets regularly to facilitate the installation's cleanup process. In FY89, the Community Relations Plan was completed and is now an ongoing effort at the installation.

The installation has been proactive in public involvement and outreach by distributing fact sheets that discuss cleanup initiatives at the installation. Biannual public meetings with community members were also held.

FY94 CLEANUP PROGRESS

The TRC was converted to a Restoration Advisory Board (RAB) and solicited members through advertisement in several local newspapers. The BRAC Cleanup Team (BCT) was formed in January. Close communication within the BCT has been maintained through regular meetings. By developing alternative cleanup standards for POLs on a site-by-site basis, the BCT has produced significant cost savings in its cleanup program.

In April, an Environmental Baseline Survey (EBS) was completed, identifying seven acres as CERFA clean. Regulatory agencies have concurred on the CERFA clean acreage. The entire property was transferred to NASA on July 1, and NASA will complete the cleanup of all OUs.

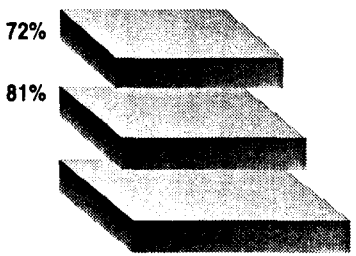
The installation began a pilot study of an innovative permeable chemical reaction cell designed to remove chlorinated organic solvents such as TCE and PCE in groundwater. The installation also initiated the design for the innovative bioventing technology. This technology will allow in-situ removal of petroleum products and JP-5 jet fuel from soil without excavation.

RI activities for the remaining OUs were completed. Remedial Design (RD) activities were completed, and Remedial Action (RA) activities began for OU2. Three groundwater extraction and treatment systems were also constructed. The installation completed an Interim Action that consisted of excavating and treating approximately 4,000 cubic yards of contaminated soil using chemical oxidation. Thirteen USTs were also removed in FY94.

PLAN OF ACTION

- Complete FS activities for all OUs in FY96
- Complete RAs for one OU in FY95 and one in FY96
- Complete RDs for OU1, 2, and 5 by FY95 and OU6 by FY97
- Complete the IRA consisting of the groundwater extraction and treatment system at one OU in FY95 and install drainage controls and cap the landfill at OU1 in FY96
- Complete pilot study for groundwater cleanup in FY96
- Initiate and complete studies for the following innovative technologies in FY96: electron beam treatment; bioventing pilot test; air sparging and soil vapor extraction pilot test; and recirculating in-situ treatment pilot test

CERFA CLEAN ACREAGE



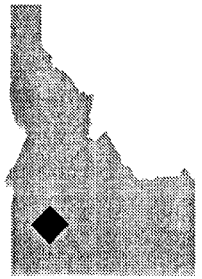
Concurred CERFA Clean Acreage –	TBD
Proposed CERFA Clean Acreage –	2,208
Acreage Available for Transfer –	2,490 *
Total Acreage –	3,067

** Environmental Condition of Property Categories 1-4*

MOUNTAIN HOME AIR FORCE BASE

NPL

Size:	6,000 acres
Mission:	House the Air Combat Command and the 366th Wing
HRS Score:	57.80; Placed on NPL in 1990
IAG Status:	Federal Facility Agreement signed in January 1992
Contaminants:	VOCs, petroleum/oil/lubricants, and heavy metals
Media Affected:	Groundwater and soil
Funding to Date	$7.7 million



Mountain Home, Idaho

CLEANUP BACKGROUND

Since FY83, environmental studies have identified a total of 32 sites at Mountain Home Air Force Base. Sites identified include landfills, fire training areas, fuel hydrant system spill area, disposal pits, surface runoffs, wash racks, ditches, Underground Storage Tanks (UST), petroleum/oil/lubricant (POL) lines, and a low-level radioactive material disposal site. Releases from POL lines and spill sites have contaminated groundwater and soil with petroleum hydrocarbons, heavy metals, and VOCs, including trichloroethene (TCE).

From FY90 to FY92, the U.S. Geological Survey monitored on- and off-base drinking-water wells. Analytical results from sampling activities are included in the Remedial Investigation and Feasibility Study (RI/FS) report for the base-wide groundwater Operable Unit (OU).

From FY91 to FY92, Removal Actions included removing 12 USTs that had undergone clean closures, and a limited field investigation was conducted for site OUs. The Air Force recommended no further action for 15 of 20 sites at OU1 in FY92. The remaining five sites from OU1 became OU6, and cleanup activities at OU1 are complete. In FY92, RI activities were also initiated for OU3 and OU6.

In FY92, a no further action ROD was signed for OU4; as a result, an FS report was not required for OU4. An Interim Remedial Action (IRA) was also conducted at OU5. The IRA consisted of excavating two cubic yards of contaminated soil, a pipe, and six 55-gallon drums that were welded from top to bottom. Because analytical results of soil samples and the items removed did not reveal radioactive contaminants, the excavated soil, pipe, and drums were disposed of as low-level radioactive waste.

In early FY93, a no further action ROD was signed for OU2. However, in mid FY93, the state agency verbally requested that three acres of one landfill at OU2 be capped. In late FY93, the installation capped, placed topsoil, and seeded the landfill.

FY94 CLEANUP PROGRESS

The installation converted the Technical Review Committee to the Restoration Advisory Board (RAB), and procedures were established to reflect the RAB objectives and goals. Community members were solicited for the RAB, which now consists of nine community members, and representatives of EPA and the state. The RAB holds meetings every two months and advertises the meetings in the local newspaper. As a result of the RAB being formed, the document review process is streamlined, thus expediting the cleanup process.

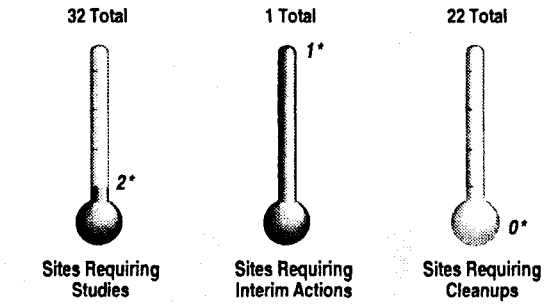
RI activities were completed for OU3 and OU6. RI activities included soil and groundwater sampling and quarterly groundwater monitoring of static water levels. A draft RI report was also submitted for OU3 and OU6. The installation began groundwater modeling from analytical results received from groundwater sampling to determine the migration of plume concentrations.

PLAN OF ACTION

- Submit a final draft RI report for OU3 to EPA and the state regulatory agency for review
- Submit a final draft closure report for OU5 in FY95
- Submit a Proposed Plan for OU3, OU5, and OU6 recommending no further action in FY96
- Submit a no further action ROD for remaining OUs in FY96
- Request delisting of the installation as an NPL site

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 32**
- **Estimated Date of Completion = 2006**



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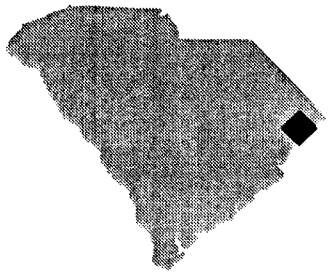
MYRTLE BEACH AIR FORCE BASE

Size:	3,744 acres (3,744 acres excess)
Mission:	Inactive; formerly housed tactical fighter wing
HRS Score:	N/A
IAG Status:	None
Contaminants:	Spent solvents, fuel, waste oil, VOCs, metals, asbestos, and paints and thinners
Media Affected:	Groundwater and soils
Funding to Date:	$17.3 million



Myrtle Beach, South Carolina

CLEANUP BACKGROUND

In July 1991, the BRAC Commission recommended closure of Myrtle Beach Air Force Base and redistribution of all assigned aircraft to other active and reserve component units. The BRAC Commission also recommended that one active A/OA-10 squadron be realigned to Shaw Air Force Base and Pope Air Force Base.

A Joint Management Team was formed in FY91 and assumed the role of the BRAC Cleanup Team (BCT) in FY93. On March 12, 1993, the final Environmental Impact Statement (EIS) for Disposal and Reuse was prepared. Also in FY93, the state concurred that approximately 2,100 acres could be categorized as CERFA category 1. All remaining acreage has either been transferred or is ready for transfer to the community for redevelopment.

On March 31, 1993, the 3,744-acre installation closed as scheduled.

Sites identified in previous investigations include landfills, weathering pits, fire training areas, drainage ditches, hazardous waste storage areas, maintenance areas, Underground Storage Tanks (UST), explosive ordnance areas, fuel storage areas, a small arms firing range, and a lead-contaminated skeet range. Contaminants include petroleum hydrocarbons, heavy metals, and VOCs, which are affecting groundwater and soils. The installation has completed Preliminary Assessment and Site Inspections (PA/SI) and Remedial Investigation and Feasibility Study (RI/FS) field work for these sites.

FY94 CLEANUP PROGRESS

The Restoration Advisory Board (RAB) was formed in April and has conducted installation tours and completed the review of program and cleanup activities proposed for one site.

The installation prepared a BRAC Cleanup Plan outlining current and future cleanup strategies and planning efforts for all environmental programs at the installation.

Interim Remedial Actions (IRA) implemented at the installation focus on groundwater and soil remediation. The installation removed contaminated soil at a weathering pit and the skeet range. Other Interim Actions completed include removal of solvent and fuel USTs, removal of an oil-water separator, and an integrity evaluation for another oil-water separator. The installation also continued additional PA/SI and RI/FS investigations. The installation also began a Remedial Design to extract and treat a 50-acre groundwater TCE plume.

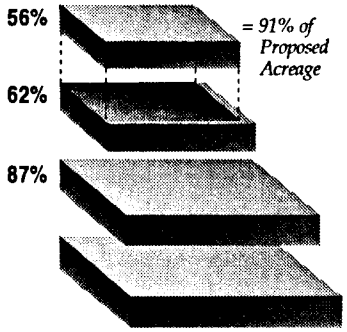
In November, cleanup was completed at the skeet range and transferred for reuse as part of a theme park/resort that is being constructed in the area; construction will commence in FY95.

Measures to improve site management and site characterization include developing generic field sampling plans and implementing a total environmental cleanup contract.

PLAN OF ACTION

- Lease 15 acres to the city to construct a fire station and training area, expand the lease on the airfield to include buildings and additional acreage, and transfer housing to the redevelopment authority
- Transfer remaining acres to the community under the Economic Development Authority
- Commence Remedial Action to extract-and-treat the TCE-contaminated groundwater plume
- Determine the extent of lead-contaminated soil at a small arms firing range
- Complete a pilot program to determine the applicability of bioremediation at a military service station with soil contaminated with petroleum/oil/lubricants

CERFA CLEAN ACREAGE



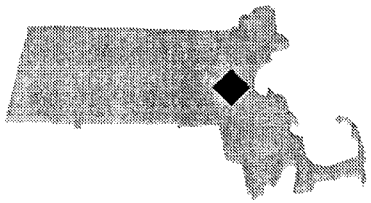
Concurred CERFA Clean Acreage –	2,100
Proposed CERFA Clean Acreage –	2,314
Acreage Available for Transfer –	3,265 *
Total Acreage –	3,744

** Environmental Condition of Property Categories 1-4*

NATICK LABORATORY ARMY RESEARCH, DEVELOPMENT AND ENGINEERING CENTER

NPL

Size:	78 acres
Mission:	Research and develop food, clothing, equipment, and materials to support military operations
HRS Score:	50.00; Placed on NPL in May 1994
IAG Status:	None
Contaminants:	Pesticides and herbicides, pentachlorophenol, solvents, and VOCs
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$2.4 million



Natick, Massachusetts

CLEANUP BACKGROUND

Since 1954, the Natick Laboratory has supported several industrial, laboratory, and storage activities for research and development in food science, aero-mechanical, clothing, material, and equipment engineering. Operations at the installation used various VOCs including tetrachloroethene (PCE), trichloroethene (TCE), carbon disulfide, benzene, and chloroform. Site types at the installation included contaminated buildings, spill sites, storage areas, disposal pits, dry wells, and Underground Storage Tanks (UST).

In FY89, soil gas surveys conducted in the Building T-25 and Gymnasium areas detected VOCs. Groundwater, soil, and surface water samples collected in subsequent studies also contained VOCs.

The installation completed an Expanded Site Inspection in FY92 that confirmed TCE contamination in groundwater. A Remedial Investigation and Feasibility Study (RI/FS) began in FY92.

The installation has performed several Interim Actions. In FY89, waste from the drum storage area was removed. During the removal, the installation discovered some leaks and spills. As a result, contaminated soil and pavement were excavated. In FY90, the installation removed a 1,000-gallon waste storage tank. Contaminated soil excavated with the tank was disposed of off-site. Another Interim Action at the installation included removal of PCB-contaminated soil.

FY94 CLEANUP PROGRESS

As a result of its placement on the NPL, the installation has increased its partnering efforts with state regulatory agencies and has worked to keep communication lines open with the community. The installation also is drafting a Community Relations Plan to formalize the communication process.

A groundwater pump test was conducted in the Building T-25 area. The information collected will be used to characterize conditions in the area and provide hydrogeologic data for future Interim Remedial Actions (IRA) or design activities.

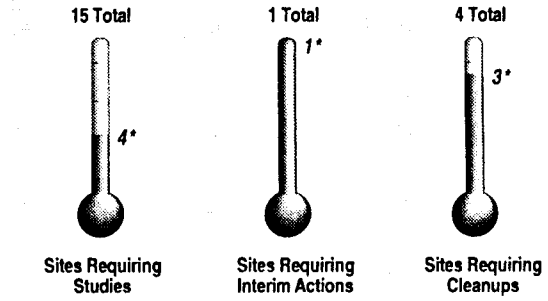
The installation completed a draft Phase I RI/FS report. A Phase II RI is currently being planned. The installation plans to use the data generated during the Phase I RI to design treatability studies for IRAs that will address groundwater contamination in the T-25 area.

PLAN OF ACTION

- Continue to sample on-post drinking water wells to ensure drinking water standards are not exceeded
- Complete a groundwater flow model to determine the effects of the pumping of the on-post drinking water wells on contaminant plume migration
- Design IRA for the T-25 area; groundwater treatment will begin once a groundwater flow model is done
- Conduct Phase II RI activities
- Conduct RI/FS in the gymnasium area

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 15
- Estimated Date of Completion = 2025



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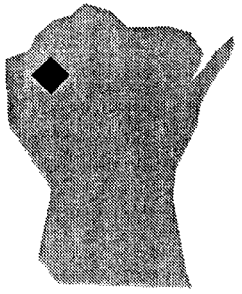
NATIONAL PRESTO INDUSTRIES

NPL

(EAU CLAIRE ORDNANCE PLANT NO. 2)

Size:	320 acres
Mission:	Manufacture ordnance
HRS Score:	43.7; Placed on NPL in 1986
IAG Status:	None
Contaminants:	VOCs, including trichloroethane and tetrachloroethene
Media Affected:	Groundwater and soil
Funding to Date:	$15 million (FUDS = $3 million; Army = $12 million)



Eau Claire, Wisconsin

CLEANUP BACKGROUND

Between 1981 and 1985, EPA and the Wisconsin Department of Natural Resources conducted groundwater studies in the general area west of the National Presto Industries site. VOCs were detected in groundwater samples. EPA issued an Administrative Order requiring the Potentially Responsible Party (PRP) associated with the site design to install an on-site groundwater treatment facility.

In FY91, EPA issued a unilateral order to National Presto Industries to construct a drinking water system in an area of the Town of Hallie. The drinking water system was completed in FY92 and is currently being used by the town.

In FY92, the Army Corps of Engineers, Omaha District, awarded a contract to conduct PRP investigation activities, including research into historical site activities and an evaluation of technical data assessing potential DoD liability. Results of this investigation show minimal, if any, DoD liability.

FY94 CLEANUP PROGRESS

National Presto Industries and EPA signed a Consent Order to remove contaminants from Lagoon No. 1. Removal activities were completed, and final closure of the lagoon is pending.

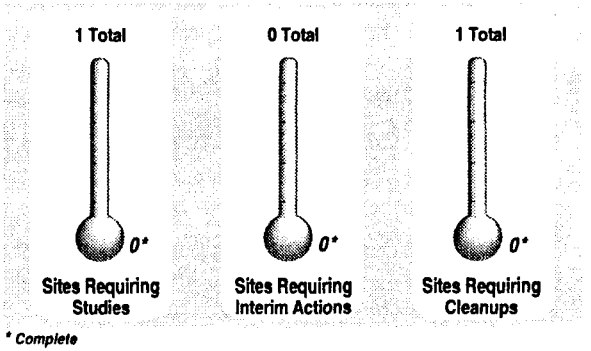
The Remedial Investigation report identified five source areas and four plumes of groundwater contamination. The on-site groundwater extraction and treatment facility also became operational.

PLAN OF ACTION

- Begin Remedial Action work in FY95 after a Record of Decision is approved and issued

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 1
- Estimated Date of Completion = 1999



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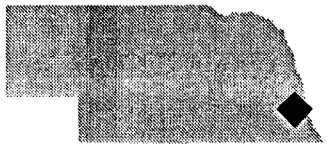
NEBRASKA ORDNANCE PLANT

NPL

Size:	17,214 acres
Mission:	House an agricultural research station; site of former ordnance storage and manufacturing activities
HRS Score:	31.94; Placed on NPL in 1990
IAG Status:	IAG signed in September 1991
Contaminants:	Explosives, VOCs, and PCBs
Media Affected:	Groundwater and soil
Funding to Date:	$20 million



Mead, Nebraska

CLEANUP BACKGROUND

The former Nebraska Ordnance Plant is located in a rural area 35 miles northeast of Lincoln, Nebraska. From 1942 to 1956, the installation produced munitions at four bomb loading lines. The installation also stored munitions and produced ammonium nitrite. Currently, most of the property is owned by the University of Nebraska and is used as an agricultural research station. Other portions of the property are owned by the Nebraska National Guard and private entities.

Sites in the Nebraska Ordnance Plant include munitions production areas, bomb loading lines, a bomb booster assembly area, burn areas, a sewage treatment area, and an ammonium nitrite plant. Releases from these areas have contaminated groundwater and soil with explosives and solvents.

An environmental study completed in FY89 by the U.S. Army Corps of Engineers (COE) identified areas of soil contaminated with PCBs and munitions wastes, including TNT and RDX. In addition, contaminants including explosives and VOCs were detected in on-site monitoring wells, and in off-site drinking water wells. Groundwater is also used for irrigation and livestock.

FY94 CLEANUP PROGRESS

The installation has fostered partnerships with EPA Region 7 and the Nebraska Department of Environmental Quality by meeting quarterly to discuss the cleanup process. The installation also has conducted public meetings with stakeholders in order to address the community's concerns and questions. The Technical Review Committee has also involved the community in its quarterly meetings.

The COE finalized a Remedial Investigation and Feasibility Study (RI/FS) and Proposed Plan to address soil contamination. A draft final RI/FS for groundwater contamination was also prepared.

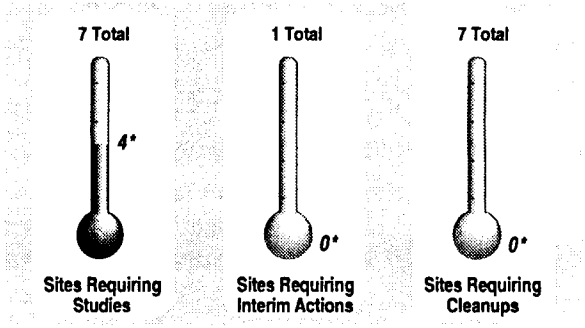
A time-critical PCB Removal Action was completed, and investigations were planned for sites with ordnance, explosive waste, and other types of contamination.

PLAN OF ACTION

- Sign Record of Decision (ROD) for soil contamination
- Complete the Proposed Plan and ROD for groundwater contamination
- Conduct an RI of other potential disposal sites and former bomb production buildings
- Obtain approval of the RI/FS for groundwater
- Receive approval of the Remedial Design; proposed remedies include a groundwater extraction and treatment system
- Obtain approval of an Engineering Evaluation and Cost Analysis

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 7**
- **Estimated Date of Completion = 2004**

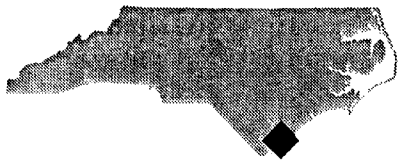


* Complete

NEW HANOVER COUNTY AIRPORT

NPL

Size:	4 acres
Mission:	Served as World War II Bomber Command and Vietnam Era Aerospace Defense Command
HRS Score:	39.39; Placed on NPL in 1989
IAG Status:	None
Contaminants:	Heavy metals, VOCs, and semi-VOCs
Media Affected:	Groundwater
Funding to Date:	$1.2 million



Wilmington, North Carolina

CLEANUP BACKGROUND

A Preliminary Assessment and Site Inspection conducted at the New Hanover County Airport in FY87 identified groundwater contamination caused by fire training activities conducted at the installation from FY68 through FY79. Fire training activities involved burning jet fuel, gasoline, fuel oil, and kerosene. The site included a burn pit, an aircraft mock-up, a 10,000-gallon Aboveground Storage Tank (AST) that supplied fuel to the burn areas, and a pipeline system that connected the AST to the burn areas. The site also had several other fire training stations including a fire smoke house, a railroad tanker car, and several automobiles. As a result of the fire training activities, groundwater has been contaminated with benzene.

EPA has identified DoD, New Hanover County, Cape Fear Community College, and the city of Wilmington as Potentially Responsible Parties (PRP) for the site.

A Removal Action completed in FY91 involved removing waste materials, contaminated water, contaminated surface and subsurface soils, and structures associated with the fire training activities. Soil samples were also collected to confirm that no contaminated soil remained. As a result of the confirmation sampling, no further action was recommended.

In FY92, the Remedial Investigation and Feasibility Study report for groundwater contamination was finalized by EPA, and the Record of Decision was signed for groundwater cleanup.

FY94 CLEANUP PROGRESS

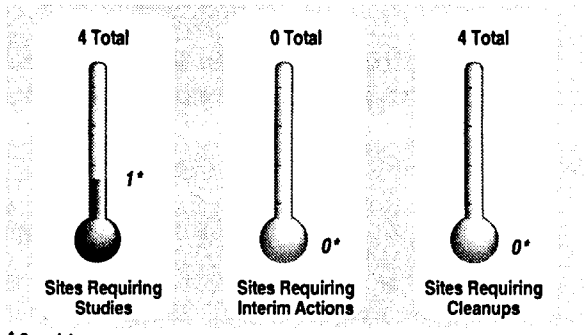
PRPs began Remedial Design (RD) work at the airport to collect additional data on groundwater quality. The data is needed to determine whether natural degradation is occurring in the shallow aquifer. Water quality data will continue to be collected from the lower aquifer over the next year. A treatability study will be conducted to determine the efficiency of groundwater extraction and air stripping before discharge to the publicly owned treatment works.

PLAN OF ACTION

- Install three lower aquifer monitoring wells in FY95 to confirm that contamination has not migrated to the lower aquifer
- Complete RD work in FY95; construct subsequent groundwater extraction and treatment system in FY96
- Sign Interim Agreement among the PRPs

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 4
- Estimated Date of Completion = 1999



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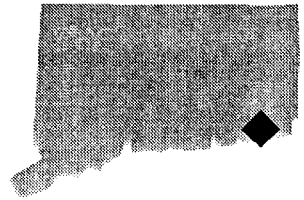
NEW LONDON NAVAL SUBMARINE BASE

NPL

Size:	547 acres
Mission:	Maintain and repair submarines; conduct submarine training and submarine medical research; provide a home port for submarines
HRS Score:	36.53; Placed on NPL in August 1990
IAG Status:	Under negotiation
Contaminants:	Dredge spoils, incinerator ash, petroleum/oil/lubricants, PCBs, spent acids, pesticides, solvents, construction debris, metals, and VOCs
Media Affected:	Surface water/sediments and soil
Funding to Date:	$15.4 milion



Groton, Connecticut

CLEANUP BACKGROUND

Environmental studies began at New London Naval Submarine Base in FY82. Prominent site types include the 13-acre Area A Landfill and a number of smaller disposal sites and fuel and chemical storage areas. The Area A Landfill was used to dispose of wastes generated at the installation, including dredge spoils, incinerator ash, petroleum/oil/lubricants, PCBs, spent acids, pesticides, and construction debris. Elevated levels of metals, VOCs, and pesticides were detected in soil in FY84. The Area A Landfill site is adjacent to a large wetland and also poses a threat to ponds and streams downstream from the wetlands.

In FY93, the Navy completed an Interim Remedial Action that consisted of constructing a fence around the landfill to prevent off-site migration of contaminated surface water and sediments. In FY91, the Navy conducted another Removal Action that consisted of removing 19 gas cylinders at another landfill site.

Site inspections (SI) have been completed at two sites, and thirteen sites are in the Remedial Investigation and Feasibility Study (RI/FS) phase. Many other sites have been grouped into study areas for future investigation. Three RCRA Underground Storage Tank (UST) sites have also been identified at the installation.

A Technical Review Committee (TRC) was formed in FY89 as a mechanism for the installation and regulatory agencies to reach consensus on cleanup decisions. The TRC has discussed implementing a formal partnering arrangement to accelerate the decision-making process.

FY94 CLEANUP PROGRESS

The installation converted the TRC to a Restoration Advisory Board (RAB). The Federal Facility Agreement (FFA) between the Navy, EPA, and the state of Connecticut is under negotiation.

The installation completed one and began two Removal Actions. The completed Removal Action consisted of removing lead-contaminated soil at Study Area E. The installation used an innovative technology to solidify and stabilize the lead-contaminated soils. At the Defense Reutilization and Marketing Office site, a Removal Action will consist of removing lead- and PCB-contaminated soil, followed by capping. At the Spent Acid Storage and Disposal Area site, the Removal Action will consist of removing lead-contaminated soil.

The installation also began work to develop an Interim Remedial Action for the Area A landfill by implementing a generic remedy of capping the landfill.

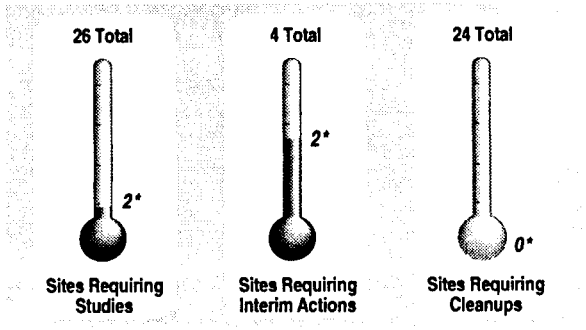
The installation also completed the Corrective Action Plan and design for one UST site, the Nautilus Park Service Station, and began implementation of the Corrective Action.

PLAN OF ACTION

- Sign FFA in FY95
- Complete Removal Actions at the Defense Reutilization and Marketing Office and Spent Acid Storage and Disposal Area sites in FY95
- Complete a Removal Action consisting of removing sludge and cleaning a waste oil tank and abandoning the tank in place at the Waste Oil Tank site in FY95
- Complete designs for Interim Actions at two landfill sites in FY96; complete Remedial Action for the sites in FY97
- Complete Remedial Designs and Remedial Actions for 23 sites before FY08
- Complete Corrective Actions at two UST sites in FY97 and at the third UST site in FY00

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 26**
- **Estimated Date of Completion = 2003**



* *Complete*

NEWPORT NAVAL EDUCATION AND TRAINING CENTER

NPL

Size:	1,400 acres
Mission:	Provide logistical support and serve as a training center
HRS Score:	32.25; Placed on NPL in November 1989
IAG Status:	Federal Facility Agreement signed in March 1992
Contaminants:	PCBs, petroleum/oil/lubricants, VOCs, and semi-VOCs
Affected Media:	Groundwater, surface water/sediments, and soil
Funding to Date:	$23.5 million

Newport, Rhode Island

CLEANUP BACKGROUND

The Newport Naval Education and Training Center was used as a refueling depot beginning in the early 1900s, and refueling facilities were expanded during World War II. After World War II, the installation was restructured to support research and development, specialized training, and preparedness for modern warfare. Major contaminants at the installation include petroleum/oil/lubricant sludge associated with a number of tank farm sites, as well as waste acids, solvents, and PCBs from landfills used to dispose of general refuse and shop wastes. Phase I Remedial Investigation and Feasibility Study (RI/FS) activities were completed in FY91.

In FY92, the installation signed an Interim Record of Decision (ROD) to extract and treat groundwater at a tank farm site to prevent migration of contaminants. A Removal Action that involved removing petroleum-contaminated soil from the Melville North Landfill site was performed in FY93. The Navy also obtained a ROD for a generic remedy at the 11-acre McAllister Point Landfill site in FY93. The remedy will consist of placing a RCRA Subtitle C cap on the landfill.

A Technical Review Committee (TRC) was formed in FY88. In addition to the TRC meetings, the installation holds monthly project manager meetings to improve communications with the regulatory agencies and identify and resolve issues proactively. The installation also established an Ecological Advisory Group that includes federal and state regulatory agencies, natural resource trustees, and community members. The Ecological Advisory Group provides input to the Navy to develop work plans and evaluate analytical results and proposed remedies in light of habitat quality and economic benefit.

The Community Relations Plan for the installation was completed in FY90. The installation set up Information Repositories at three local public libraries in FY90 and established an Administrative Record in FY92.

FY94 CLEANUP PROGRESS

The installation made arrangements to obtain the assistance of the University of Rhode Island School of Oceanography to conduct estuarine Ecological Risk Assessments in Narragansett Bay.

The installation also began converting the TRC to a Restoration Advisory Board.

The installation completed the Phase II RI and fate transport model for the McAllister Point Landfill site. The installation also completed the Phase II RI for the Old Fire Training Area.

The installation began implementing the tank farm site groundwater extraction and treatment system in July. Operation of the system and Long-Term Monitoring are expected to continue for five years.

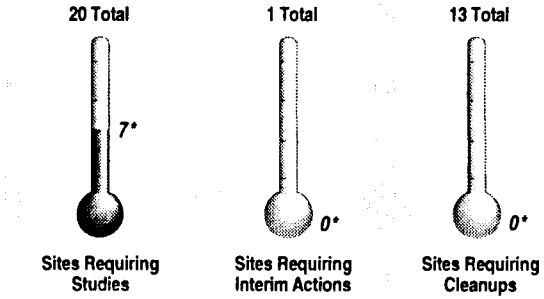
The installation completed the Remedial Design (RD) for the RCRA Subtitle C cap for the McAllister Landfill site, and the RD for a second Remedial Action at the Melville North Landfill site.

PLAN OF ACTION

- Complete Study Area Screening Evaluation fieldwork for four sites and Phase II RI field work for two sites in FY95
- Complete the second Removal Action and the Phase II RI/FS for the Melville North Landfill site in FY95
- Begin construction of the McAllister Landfill cap in FY95;. the installation will also conduct a Phase II Ecological Risk Assessment for the site in FY95; the final remedy for the site will be developed through the RI/FS process
- Complete the Corrective Action plan for two RCRA Underground Storage Tank sites in FY95, with Corrective Actions to be completed in FY98
- Begin formal partnering with EPA Region 1 and the Rhode Island Department of Environmental Management in FY95

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 20
- Estimated Date of Completion = 2003



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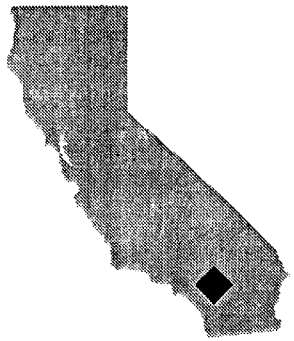
NORTON AIR FORCE BASE

Size:	2,288 acres (2,182 acres excess)
Mission:	Support C-191 in FY93 Report Airlift Operations
HRS Score:	39.65; Placed on NPL in 1987
IAG Status:	IAG signed in 1989
Contaminants:	Waste oils and fuel, spent solvents, paints, refrigerants, heavy metals, and VOCs
Media Affected:	Groundwater and soil
Funding to Date:	$64.7 million



San Bernardino, California

CLEANUP BACKGROUND

In December 1988, the BRAC Commission recommended closure of Norton Air Force Base (AFB). The BRAC Commission also recommended relocations of major units and related support activities. The prominent source of contamination at the installation is a trichloroethene (TCE) groundwater plume and contaminated soil areas. Sites identified through previous environmental studies include Underground Storage Tanks (UST), landfills, fire training areas, spill areas, and waste disposal pits. Since FY93, a groundwater extraction and treatment system has been treating groundwater from the TCE plume area.

Environmental studies since FY82, have identified 22 sites at the installation. Remedial Investigation and Feasibility Study (RI/FS) activities were conducted for the 22 sites. Since FY82, the installation has also conducted two treatability studies in conjunction with the removal of soils contaminated with PCBs from a site. Two groundwater extraction and treatment treatability studies also were conducted for the TCE groundwater plume.

FY94 CLEANUP PROGRESS

The Restoration Advisory Board (RAB) was formed in January and includes 30 community members. During RAB meetings, community members voice their concerns on various projects, and subcommittees are formed to review all project documents. Additional community members were also added to the Technical Review Committee.

The BRAC Cleanup Team (BCT) was formed in December to expedite the cleanup and transfer of property. The BCT meets monthly and has improved communications and working relationships among team members. The result is more efficient document review and quicker implementation of work plans. The BCT redefined Operable Units (OU) into zones and initiated Interim Actions to shorten the cleanup by approximately one year, resulting in cost savings.

Cleanup activities focused on UST removals, additional site characterizations, and groundwater cleanup. The installation removed 45 USTs. Of the 45 UST sites, three sites require further characterization and possible cleanup. Confirmation Studies were conducted at 43 Areas of Concern (AOC) and at three of the original 22 sites. The studies indicated that 19 AOCs require further investigations.

The installation began constructing a new groundwater extraction and treatment system to treat groundwater at the installation boundaries. The installation also began expansion of the Central Base groundwater system.

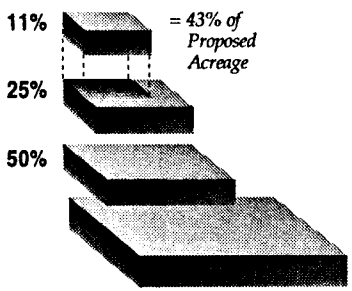
In addition to installing a new groundwater extraction and treatment system, Norton AFB signed a water supply contingency policy protecting downgradient groundwater users if the TCE plume renders downgradient groundwater unusable.

One parcel was transferred to the Department of Interior and the other was transferred under the McKinney Act. The Air Force has also entered into one long-term lease with the Airport Authority and one interim lease for the golf course.

PLAN OF ACTION

- Begin operating expanded Central Base, and the new groundwater extraction and treatment systems in FY95
- Conduct Confirmation Studies at 22 AOCs and expanded source studies at 19 AOCs
- Conduct Interim Actions at two of the original 22 identified sites
- Begin cleanup of TCE-contaminated source areas and complete no further action Decision Documents for 14 of the original 22 identified sites
- Close UST sites
- Initiate RCRA closure activities at four sites

CERFA CLEAN ACREAGE



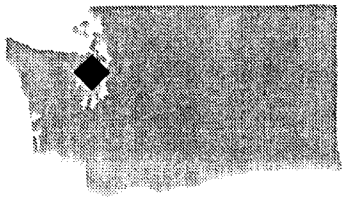
Concurred CERFA Clean Acreage –	250
Proposed CERFA Clean Acreage –	580
Acreage Available for Transfer –	1,143 *
Total Acreage –	2,288

** Environmental Condition of Property Categories 1-4*

OLD NAVY DUMP

NPL

Size:	350 acres
Mission:	Originally provided harbor defense for Puget Sound; during WWI tested torpedoes and stored fuel; later acted as a fire training school for the Navy and housed an anti-aircraft artillery battery
HRS Score:	50.00; Placed on NPL in May 1994
IAG Status:	Under negotiation
Contaminants:	PCBs, heavy metals, mercury, asbestos, petroleum hydrocarbons, and dioxins and furans
Media Affected:	Surface water/sediments and soil
Funding to Date:	$1.8 million



Kitsap County, Washington

CLEANUP BACKGROUND

The Navy owned the Old Navy Dump/Manchester Annex from 1919 to 1960. During that time, a net depot, a fire training area, and a landfill were established at the installation. Activities at the installation included steel cable net maintenance, painting, sandblasting, and storage. The beach and lagoon at the installation were used as a landfill to dispose of domestic waste, wood, and metal waste from the installation and the Puget Sound Naval Shipyard. Activities at the fire training area included the use of concrete ship simulators to train personnel in extinguishing fires.

Preliminary Assessments and Site Inspections (PA/SI) conducted at the installation since FY87 identified past releases of hazardous substances from the three sites. Contaminants include heavy metals, asbestos, PCBs, petroleum hydrocarbons, and dioxins and furans. These contaminants have been detected in soil at the landfill and fire training area and in surface water and sediment at the installation. The potential for groundwater contamination will be investigated during the Remedial Investigation and Feasibility Study (RI/FS).

Since identifying the sites, the installation removed several Underground Storage Tanks (UST) in the fire training area in FY93. The installation expects to remove the remaining USTs at the fire training area once trace levels of dioxins in soil surrounding the tanks are cleaned up.

FY94 CLEANUP PROGRESS

The Manchester Work Group, which is equivalent to a Restoration Advisory Board, held its first meeting on August 24. The work group is the main channel for partnering and gives organizations an opportunity to provide input regarding the installation's cleanup program. Representatives from the Department of Natural Resources, EPA, Washington State Department of Ecology, and the local community attend meetings and work to resolve issues.

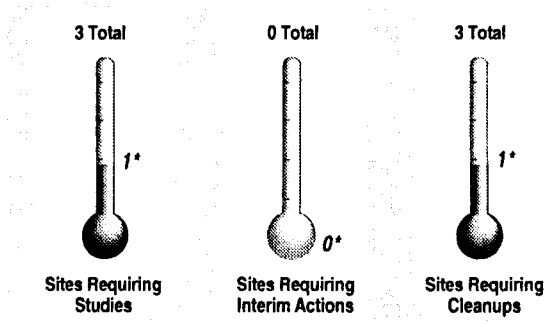
The Corps of Engineers (COE) also completed the PA/SI process and began to focus its efforts on the RI/FS phase. The COE awarded the contract to conduct the RI/FS, which includes preparation of the Proposed Plan, the Record of Decision (ROD), and Remedial Design and Remedial Action (RD/RA) scope of work.

PLAN OF ACTION

- Sign IAG in FY95
- Accelerate the RI/FS process by evaluating whether Interim Actions would be appropriate at a site after initial data collection activities, preparing the draft RD/RA scope of work and the draft final ROD concurrently
- Begin RI/FS field activities in early FY95
- Prepare Proposed Plan for RA, issue ROD, and implement RA by the end of FY97

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 3
- Estimated Date of Completion = 2001

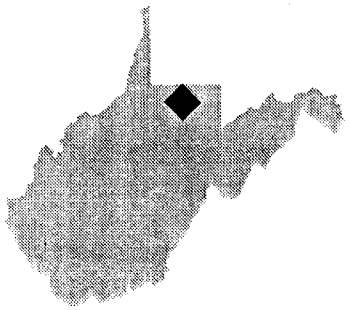


* Complete

Ordnance Works Disposal Areas

NPL

Size:	825 acres
Mission:	Manufacture ordnance
HRS Score:	35.62; Placed on NPL in 1986
IAG Status:	None
Contaminants:	PCBs, inorganic compounds, carcinogenic PAHs, arsenic, and mercury
Media Affected:	Groundwater and soil
Funding to Date:	$.7 million



Morgantown, West Virginia

CLEANUP BACKGROUND

Based on the results of environmental investigations, sites at Ordnance Works Disposal Areas in Morgantown are divided into two Operable Units (OU). OU1 consists of an old landfill, a shallow disposal area from which contaminated topsoil was removed, two lagoons from which sludge and contaminated soil were excavated, and a former drum staging area. OU2 consists of all other contaminated locations, particularly those located in processing areas.

The Remedial Investigation and Feasibility Study (RI/FS) for OU1 was completed in early FY88. The Record of Decision (ROD) for OU1, signed in FY89, stipulates that soils contaminated with inorganic compounds will be excavated and treated in a bioremediation bed. Soil washing has been selected as an alternate cleanup remedy if bioremediation proves not to be feasible.

EPA issued Consent Orders for both OUs in 1990. A Potentially Responsible Party Participation Agreement was signed in FY90.

FY94 CLEANUP PROGRESS

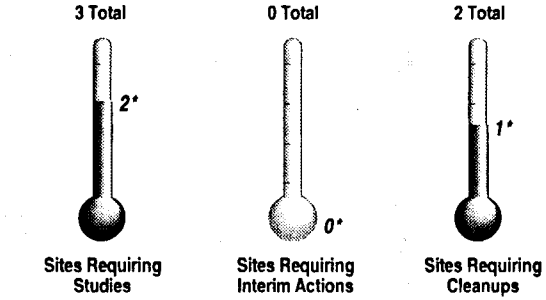
The revised RI work plan for OU2 was submitted to EPA for review in late FY94. The pilot test work plan for the cleanup of soil contamination in OU1 was approved, and work is currently underway.

PLAN OF ACTION

- Begin RI activities in FY95, following anticipated approval of the RI/FS work plan for OU2
- Continue soil cleanup activities at OU1

Project Accomplishments

- Total Number of Sites = 3
- Estimated Date of Completion = 2004



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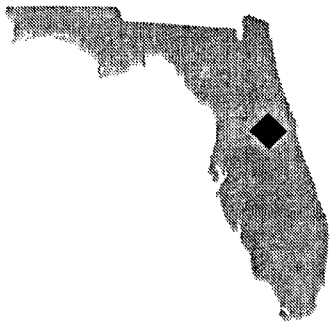
ORLANDO NAVAL TRAINING CENTER

Size:	2,110 acres (2,110 acres excess)
Mission:	Serve as Naval Training Center; formerly used as Army Air and Air Force facilities
HRS Score:	N/A
IAG Status:	None
Contaminants:	Asbestos, low-level radioactive wastes, paint, petroleum/oils/lubricants, pesticides, photographic chemicals, and solvents
Media Affected:	Soil
Funding to Date:	$1.8 million



Orlando, Florida

CLEANUP BACKGROUND

In July 1993, the BRAC Commission recommended closure of the Orlando Naval Training Center. Environmental investigations at the installation have identified 11 CERCLA sites and four RCRA-regulated Underground Storage Tank (UST) sites.

The installation has used generic remedies such as landfill caps and slurry walls. The installation has also cleaned up UST sites, beginning in FY92 with the replacement of three tanks at one UST site. Corrective Action Plans for the three remaining UST sites were completed in FY93. When the plans were complete, an agreement was signed with the state of Florida to outline actions required to bring each UST site into full compliance and the accepted schedule for implementation of such actions.

To expedite the closure process, a reuse commission was formed in FY93. The commission includes personnel from the installation and the local community. The installation has also worked closely with the state of Florida on UST cleanups and has initiated a partnership with EPA. These partnerships facilitated the signing of an Alternative Procedure Agreement with the state in FY93.

In FY93, the Orlando Naval Training Center formed its Restoration Advisory Board (RAB) by advertising public meetings, holding the public meetings in different areas to attract a wider variety of participants, and mailing surveys and fact sheets to various special interest groups in the community. The installation and community representatives from the reuse commission screened the applications and prepared a slate of candidates for the Base Commander to approve. Fifteen members have been selected for participation on the RAB.

FY94 CLEANUP PROGRESS

The installation formed its BRAC Cleanup Team (BCT) and adopted a review process that reduces the number of draft reports written, thereby reducing the time needed for the review process by at least three months. The BCT also reviews preliminary screening data as soon as it is available and makes field sampling decisions immediately.

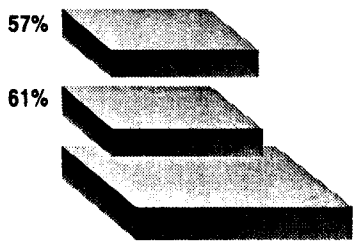
The installation has identified approximately 1,200 acres as CERFA clean and completed a CERFA report.

The installation also completed the site screening process for 10 sites and began to prepare draft Remedial Investigation and Feasibility Study (RI/FS) work plans for all the landfills. A lead paint and asbestos study was also initiated at installation housing.

PLAN OF ACTION

- Regulatory agency concurrence is expected for 900 acres determined to be CERFA clean by early FY95
- Complete Environmental Baseline Survey by early FY95
- Finalize Land Reuse Plan by FY96
- Clean up three active UST sites in FY96
- Complete RI/FS for six CERCLA sites by early FY97
- Remedial Design activities for five sites are expected to be completed by FY98; Remedial Action activities are expected to commence by FY00
- Complete closure of installation in FY98

CERFA CLEAN ACREAGE



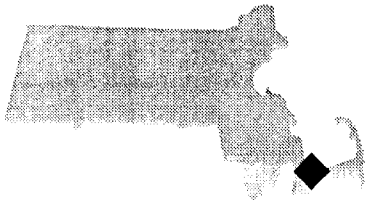
Concurred CERFA Clean Acreage –	TBD
Proposed CERFA Clean Acreage –	1,204
Acreage Available for Transfer –	1,289 *
Total Acreage –	2,110

** Environmental Condition of Property Categories 1-4*

OTIS AIR NATIONAL GUARD BASE/ CAMP EDWARDS

NPL

Size:	22,000 acres
Mission:	Provide Army and Air National Guard training, East Coast Air Defense, and Coast Guard Air/Sea rescue
HRS Score:	45.93; Placed on NPL in 1989
IAG Status:	None
Contaminants:	Waste solvents, emulsifiers, penetrants, photographic chemicals, and VOCs
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$68.1 million



Falmouth, Massachusetts

CLEANUP BACKGROUND

Environmental studies have identified a total of 78 sites at Otis Air National Guard Base /Camp Edwards. These site types include chemical and fuel spill sites, storm drains, landfills, former fire training areas, coal yards, and an underground drainage structure removal program, which includes over 180 structures.

Primary environmental concerns at the installation include several groundwater contamination plumes associated with fuel and chemical spill sites and landfills. Groundwater contamination has affected an estimated 65 billion gallons of groundwater. Several plumes discharge to two recreational ponds, which are currently being sampled to determine the impacts of the discharges. Off-base private and municipal wells have been replaced after off-base migration of groundwater contamination was detected. To date, a total of 19 sites require no further action and have had Decision Documents prepared.

Several cleanup activities have occurred at the installation since FY90. Removal Actions for four of the sump structures associated with the underground drainage structure removal program were conducted in FY90. Contaminated liquids and sediments were removed and properly disposed.

A groundwater extraction and treatment system was installed in early FY93 to contain the contaminant plume from a former motorpool and storage yard. This containment system halted the forward movement of the leading edge of the plume. Remedial Investigation and Feasibility Study (RI/FS) work also began in FY93.

FY94 CLEANUP PROGRESS

An Interim Remedial Action began at one of the four landfills which involved a landfill capping project to reduce infiltration of surface water into the landfill. A soil treatment project also began that involves using a thermal desorption unit to treat over 22,000 cubic yards of contaminated soils from several sites throughout the installation.

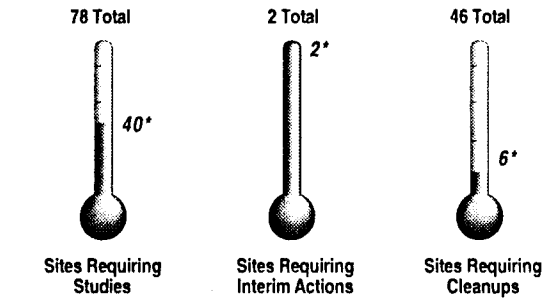
In June, the installation completed a Plume Response Plan. The plan outlines the containment of seven distinct groundwater plumes emanating from the installation. RI/FS activities also continued.

PLAN OF ACTION

- Convert the installation's Technical Review Committee to a Restoration Advisory Board in early FY95
- Continue RI field work at many of the fuel and chemical spill sites; continue progress on FS activities, Decision Documents, Proposed Plans, and Records of Decision (ROD) for over 20 sites
- Demonstrate a permeable reactive wall, an innovative treatment technology designed to remediate the groundwater plume
- Initiate an outreach program that involves seven working committees; these committees consist of regulatory agency representatives, installation representatives, and private citizens

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 78
- Estimated Date of Completion = 2017



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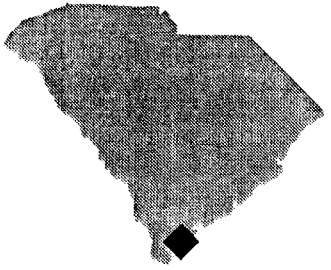
PARRIS ISLAND MARINE CORPS RECRUIT DEPOT

PROPOSED NPL

Size:	8,043 acres
Mission:	Receive, recruit, and combat train enlisted personnel upon entry into the Marine Corps
HRS Score:	50.00; Proposed for NPL in August 1994
IAG Status:	None
Contaminants:	Industrial wastes, pesticides, paint, petroleum/oil/lubricants solvents, ordnance compounds, metals, acids, and electrolytes
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$.5 million



Parris Island, South Carolina

CLEANUP BACKGROUND

Environmental investigations conducted at the Parris Island Marine Corps Recruit Depot have identified 17 CERCLA sites, three RCRA Corrective Action sites, and six Underground Storage Tank (UST) sites. Most of the sites at the installation are landfills or spill areas where groundwater and sediment are contaminated with solvents and petroleum/oil/lubricants (POL). The installation has several past disposal sites adjacent to 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.

In FY91, the installation completed an Expanded Site Inspection (ESI) at the Causeway Landfill (Site 3). The ESI, which consisted of an ecological study of aquatic biota surrounding the site, is currently being reviewed by regulatory agencies. In FY93, USTs were removed at four sites.

EPA prepared a RCRA Facility Assessment (RFA) in FY90 as part of a RCRA permit application. The RFA identified 44 Solid Waste Management Units (SWMU) and four Areas of Concern (AOC). Twenty SWMUs and one AOC were recommended for no further action. 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. The installation is currently involved in negotiations with the regulatory agencies to determine the status of the remaining sites.

Under the RCRA UST program, two sites have been cleaned up, and one tank has been removed.

FY94 CLEANUP PROGRESS

In June, the installation began a Remedial Investigation and Feasibility Study (RI/FS) for the Pesticide Disposal Area (Site 16). The installation also made progress in its RCRA UST program; in July, a Remedial Action involving soil removal, free product recovery, groundwater recovery and treatment, and bioremediation began at one UST site.

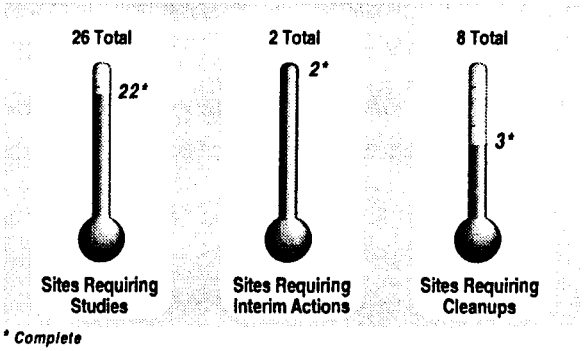
The Parris Island installation was proposed for the NPL in August.

PLAN OF ACTION

- Expect placement on NPL in FY95
- Begin Federal Facility Agreement negotiations and initiate high priority RI/FS efforts
- Form Restoration Advisory Board
- Complete RI/FS activities for Site 16 in FY96; complete Remedial Design for Site 16 in FY96

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 26**
- **Estimated Date of Completion = 2003**

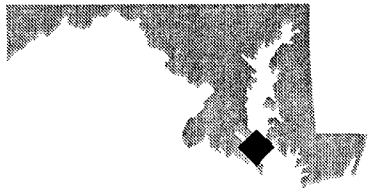


** Complete*

PATUXENT RIVER NAVAL AIR STATION

NPL

Size:	7,120 acres
Mission:	Test and evaluate naval aircraft systems
HRS Score:	50.00; Placed on NPL in June 1994
IAG Status:	None
Contaminants:	Heavy metals, pesticides, organics, petroleum products, and solvents
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$9.2 million



Lexington Park, Maryland

CLEANUP BACKGROUND

Environmental studies have identified 38 sites at Patuxent River Naval Air Station. Fourteen sites were recommended for further investigation. Wastes managed at the installation included: mixed solid wastes, petroleum/oil/lubricants (POL), paints, thinners, solvents, pesticides, and photographic laboratory wastes at the Fishing Point Landfill; mixed solid wastes, POLs, paints, thinners, solvents, and pesticides at the former sanitary landfill; and pesticides at Pest Control Building 841. Metals and pesticides released primarily from landfills and spills have contaminated soil, groundwater, sediment, and surface water.

Between FY86 and FY91, several Interim Remedial Actions (IRA) were completed or initiated at the installation, including removal of drums, PCB-contaminated soil, pesticide-contaminated soil, and ordnance.

Sixteen Underground Storage Tanks (USTs) identified between FY87 and FY93 were placed into six areas. Interim Actions at two of the areas included groundwater treatment and free product recovery.

Remedial Investigation and Feasibility Study (RI/FS) activities were initiated for 10 sites in FY92. RI/FS activities included installing shallow and deep monitoring wells, collecting soil borings, and collecting environmental samples, including water, soil, sediment, and hydrogeologic testing.

In FY93, a drum disposal site was identified during a geophysical survey.

In FY90, the installation formed a Technical Review Committee which meets quarterly. A Community Relations Plan was completed in FY91.

FY94 CLEANUP PROGRESS

Interim Remedial Actions included an ordnance sweep to remove remaining UXO and stabilize the shoreline. Shoreline stabilization has prevented a landfill from eroding into Chesapeake Bay.

A Preliminary Assessment and Site Inspection was completed for the drum disposal site and another site. Both sites were recommended for RI/FS activities.

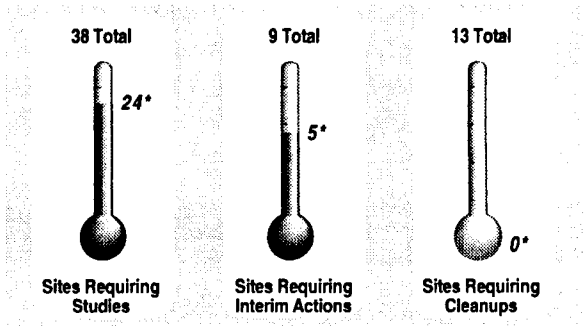
RI/FS activities have continued with additional field investigations of the sites. Groundwater treatment and free product recovery from the groundwater has also continued and should be completed between FY96 and FY98.

PLAN OF ACTION

- Complete RI/FS activities in FY96
- Establish a Restoration Advisory Board (RAB) in early FY95
- Complete additional IRAs at three sites in FY96
- Complete Remedial Design activities at nine sites in FY96, and Remedial Action activities at all sites in FY97

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 38
- Estimated Date of Completion = 2003

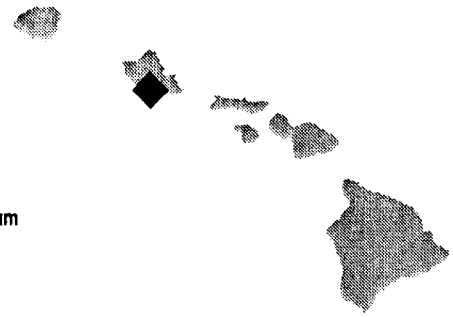


* Complete

PEARL HARBOR NAVAL COMPLEX

NPL

Size:	2,162 acres
Mission:	Provide primary fleet support in the Pearl Harbor area
HRS Score:	70.82; Placed on NPL in October 1992
IAG Status:	Federal Facility Agreement signed in March 1994
Contaminants:	VOCs, semi-VOCs, heavy metals, PCBs, pesticides, petroleum hydrocarbons, and solvents
Media Affected:	Groundwater and soil
Funding to Date:	$36.9 million



Pearl Harbor, Hawaii

CLEANUP BACKGROUND

The Pearl Harbor Naval Complex is divided into the Pacific Fleet and Industrial Supply Center, Naval Station, Submarine Base, Shipyard, Public Works Center, and Inactive Ship Detachment. Fuel supply activities, landfills, and other support operations have contaminated the soil and groundwater with VOCs, semi-VOCs, and metals. Other site types include spill site areas, surface disposal areas, Underground Storage Tanks (UST), disposal pits, and storm drains that were used for disposal.

Between FY91 and FY93, Interim Remedial Actions (IRA) have consisted of excavation and off-site disposal of PCB-contaminated soil; removal of PCB transformers, installation of fences around the areas of contamination, implementation of a monitoring program for retrofitting transformers, and development of an extraction and treatment and recovery trench system to remove free product from groundwater. Removal Actions at two additional sites, involving the removal of sediment, sludge, and transformers that were contaminated with PCBs were completed in FY92.

Since FY83 the installation has been conducting environmental investigations under CERCLA and RCRA. In FY93, the installation began Remedial Investigation and Feasibility Study (RI/FS) activities for 19 sites. Eight sites have been nominated for EPA's Superfund Innovative Technology Evaluation (SITE) program. The SITE program encourages development of new and innovative treatment technologies. The installation completed Remedial Design (RD) for one site in FY93. The Remedial Action (RA) at the site was completed in two phases: the excavation of PCB-contaminated soil in March 1993, and the excavation of dieldrin-contaminated soil in February 1994.

A Technical Review Committee (TRC) was formed in FY90 and is in the process of being converted to a Restoration Advisory Board (RAB). The Navy has prepared several fact sheets on cleanup issues for the community and the TRC. Two Information Repositories were established in FY90, an Administrative Record was established in FY92, and a Community Relations Plan was completed in FY92.

FY94 CLEANUP PROGRESS

Several partnering sessions were held with the installation, the state, and EPA. The partnering relationship has 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 consensus on investigation and cleanup goals. These meetings have helped expedite the review process to reduce impediments to cleanup.

RI/FS activities continued for the 19 sites. Tetrachloroethene (PCE) and Stoddard solvent were detected in soils at the Aiea Laundry site and a Removal Action was completed. This action involved the excavation of contaminated "hot spots" and off-site disposal of PCE and Stoddard solvent-contaminated soil, removal of four USTs, and removal of one drain line. Another Removal Action was initiated to remove contaminated soil.

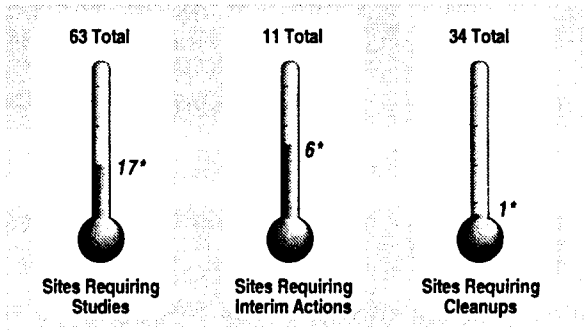
An IRA involving a free-floating fuel recovery system was completed in March. A pilot-scale extraction test extracted groundwater and skimmed free product. No hazardous waste was generated because the free product was recovered and recycled in the Navy's Fuel Reclamation Facility.

PLAN OF ACTION

- Pursue the following generic remedies under EPA guidance: design a cap and a groundwater monitoring system for a landfill, and design a soil vapor extraction (SVE) system for PCE and degradation compounds at the Aiea Laundry site
- Test soil fracturing in conjunction with the SVE system at the Aiea Laundry site in FY95
- Complete RI/FS for one site with ROD being signed in FY95
- Complete three IRAs, including soil removal, incineration and capping

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 63
- Estimated Date of Completion = 2003



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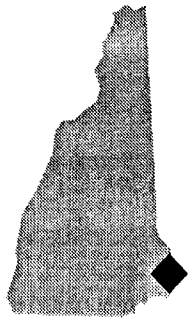
PEASE AIR FORCE BASE

Size:	4,255 acres (4,035 acres excess)
Mission:	Inactive; formerly performed aircraft maintenance
HRS Score:	39.42; Placed on NPL in February 1990
IAG Status:	Federal Facility Agreement signed in 1991
Contaminants:	VOCs, spent fuels, waste oils, petroleum/oils/lubricants, pesticides, and paints
Media Affected:	Groundwater and soil
Funding to Date:	$116.3 million



Portsmouth/Newington, New Hampshire

CLEANUP BACKGROUND

In December 1988, the BRAC Commission recommended that Pease Air Force Base (AFB) be closed. In FY91 the installation was closed as scheduled.

Environmental investigations at the former aircraft maintenance facility identified the major environmental problems. The prominent site types at the installation include fire training areas, burn pits, industrial facilities, landfills, and Underground Storage Tanks (UST). As a result of activities at the sites, groundwater and soil are contaminated with petroleum products, namely JP-4 jet fuel, and industrial solvents, such as trichloroethene (TCE).

The installation formed its BRAC Cleanup Team (BCT) in September 1993. To streamline the cleanup process at the facility, the BCT began Remedial Design (RD) in conjunction with the Record of Decision (ROD) completion process. The BCT also developed a procedure for completing the RD concurrent with the initiation of Remedial Action (RA) activities.

The installation completed several Interim Remedial Actions, including pilot groundwater treatment studies at four sites, soil removals at three sites, test pit operations at two sites, and three soil vapor extraction treatability studies.

Pease Air Force Base has also taken steps to revitalize the community. The Pease Development Authority (PDA) encourages companies to locate to the installation, and transfers parcels of installation property. In FY92, the installation transferred 1,054 acres to the U.S. Fish and Wildlife Service at no cost to create a wildlife refuge. Under the sponsorship of the Federal Aviation Administration, PDA requested that the Air Force transfer property for a no-cost airport public benefit conveyance. In FY92, 1,702 acres were transferred for the airport. Also in FY92, 20 acres were leased to the New Hampshire Department of Transportation.

FY94 CLEANUP PROGRESS

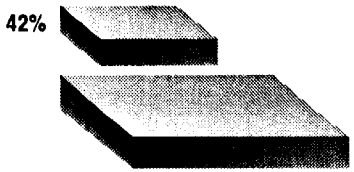
The Restoration Advisory Board (RAB) formed in January. The RAB participates in the cleanup decision process, informs community groups about cleanup activities, and poses questions and concerns to the Air Force.

The installation made substantial progress in its environmental program, including the removal of 130 USTs and excavation of contaminated soil from some USTs. The installation also completed several treatability studies to help evaluate applicable cleanup technologies. Treatability studies included studies of soil vapor extraction systems, a pump test, and bioventing.

PLAN OF ACTION

- Implement RAs at numerous sites
- Begin procurement of cleanup activities for remaining sites

CERFA CLEAN ACREAGE



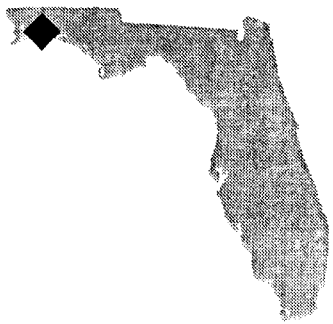
Proposed CERFA Clean Acreage –	TBD
Acreage Available for Transfer –	1,800 *
Total Acreage –	4,255

** Determined the Environmental Condition of Property Prior to CERFA*

PENSACOLA NAVAL AIR STATION

NPL

Size:	5,874 acres
Mission:	Serve as a flight training center and Naval aviation depot; formerly served as a Naval air rework facility
HRS Score:	42.40; Placed on NPL in December 1989
IAG Status:	Federal Facility Agreement signed in October 1990
Contaminants:	Ammonia, asbestos, cyanide, heavy metals, paints, PCBs, pesticides, phenols, plating wastes, and chlorinated and nonchlorinated solvents
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$41.3 million



Pensacola, Florida

CLEANUP BACKGROUND

There are 40 CERCLA sites and 16 Underground Storage Tank (UST) sites currently identified at Pensacola Naval Air Station. Sites identified through previous studies include: an 80-acre landfill; disposal sites; PCB transformer and spill areas; industrial waste treatment plant areas; and evaporation ponds. Prominent contaminants are various halogenated organic solvents that have impacted soils, sediments, and groundwater. During FY87, an Interim Remedial Action (IRA) began at three sites to recover and treat groundwater contaminated by operations at the industrial wastewater treatment plant.

In FY91, the sites were grouped into 17 Operable Units (OU) based on geographic location. The sites have since been regrouped to eliminate three OUs. In FY93, Remedial Investigation and Feasibility Study (RI/FS) Phase I activities were initiated for all sites. Thirty-nine RI/FS Phase II work plans were also approved. IRAs continued at three sites in FY93. Cleanup for one UST site was also completed, and Corrective Action Plans were developed for the remaining UST sites.

In FY91, a Community Relations Plan was completed. The plan is currently under revision and is expected to be completed in FY95. In FY91, an Administrative Record and three Information Repositories were also established. A Technical Review Committee (TRC) was also formed in FY91. The TRC subsequently met in FY92 to discuss draft Phase I Remedial Investigation and Feasibility Study (RI/FS) work plans.

During FY93, an RI/FS was initiated at each of the 40 CERCLA sites. The installation submitted work plans for the remaining sites in early FY93. Field work began at 12 sites during FY93 and was completed at five sites.

FY94 CLEANUP PROGRESS

The installation began forming a Restoration Advisory Board (RAB). The RAB will provide a forum for engaging in dialogue with the local community and will offer an opportunity for the community to be involved early in the decision-making process. The installation formed a partnering team that includes representatives of EPA; the Florida Department of Natural Resources (FDNR); and Southern Division, Naval Facilities Engineering Command. Several RCRA issues were successfully resolved by adding state RCRA regulatory personnel to the partnering team in August. The partnering team has proven to be the impetus for improved communication between regulatory agencies and the installation.

The installation used technical memoranda and data presentations to improve site management. IRAs were completed at two sites. Between July and September, three Removal Actions were completed, with the removal of USTs at one site and contaminated soil at two sites.

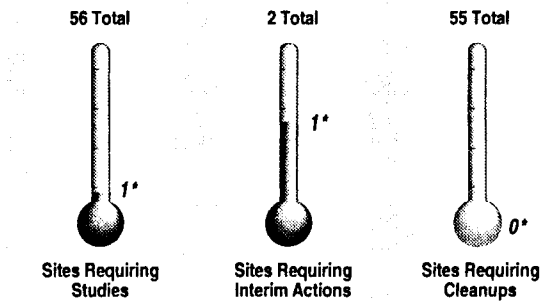
RCRA Corrective Action groundwater monitoring continued at two sites. Several groundwater extraction wells were installed as part of ongoing Operation and Maintenance at the industrial wastewater treatment plant. One of the existing recovery wells was abandoned due to contamination from the former sludge drying beds. A replacement well was constructed about 100 feet from the abandoned recovery well.

PLAN OF ACTION

- Issue a Record of Decision (ROD) for the Oak Grove Campground in FY95
- Continue RCRA Corrective Action groundwater monitoring at Sites 32 and 33
- Continue to develop the RAB
- Finalize RODs for four UST sites in FY98 and one site in FY00
- Complete RI/FS activities at six UST sites in FY96, 14 sites in FY97, 19 sites in FY98, and three sites in FY00 ; Remedial Design and Remedial Action are scheduled to be complete for 42 sites by FY05

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 56**
- **Estimated Date of Completion = 2003**

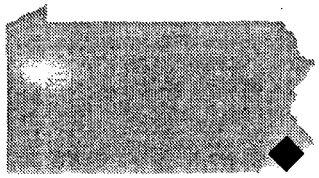


* *Complete*

PHILADELPHIA NAVAL COMPLEX

BASE CLOSURE 1988 (NAVAL HOSPITAL) / BASE CLOSURE 1991 (NAVAL SHIPYARD AND NAVAL STATION)

Size:	819 acres (582 acres excess)
Mission:	Provide logistical support for ships and service craft; overhauls, repairs, and outfit ships and craft; research and development; testing and evaluation of shipboard systems
HRS Score:	N/A
IAG Status:	None
Contaminants:	Petroleum/oil/lubricants, heavy metals, PCBs, solvents, and VOCs
Media Affected:	Groundwater and soil
Funding to Date:	$5 million



Philadelphia, Pennsylvania

CLEANUP BACKGROUND

The Philadelphia Naval Shipyard, the Philadelphia Naval Station, and the Philadelphia Naval Hospital together comprise the Philadelphia Naval Complex. Only the Naval Hospital and the Naval Station properties will be available for transfer. The Naval Shipyard will be closed but retained by the Navy. In December 1988, the BRAC Commission recommended closure of the Philadelphia Naval Hospital. In July 1991, the BRAC Commission recommended closure of the Philadelphia Naval Station and the Philadelphia Naval Shipyard. Prominent site types include landfills and oil spill sites that have released petroleum/oil/lubricants (POL) and heavy metals to groundwater and soil.

A Preliminary Assessment (PA) in FY83 identified 15 sites. Three CERCLA sites were recommended for no further action. A Site Inspection (SI) was then completed for the 12 remaining sites. In FY90, Remedial Investigation and Feasibility Study (RI/FS) activities were completed at four sites.

Four Underground Storage Tank (UST) sites were identified, and Removal Actions were conducted at three of the four sites. The Removal Actions included removing five USTs and repairing one leaking UST. At the time of removal, groundwater contamination necessitated an investigation at one UST site, which was completed in FY91. Investigation of groundwater at the other two UST sites has been initiated and is ongoing.

In FY92, a RCRA Facility Assessment (RFA) identified 42 Solid Waste Management Units (SWMU).

In FY93, Interim Remedial Actions (IRA) were completed at three sites. The IRAs removed soil contaminated with PCBs. Several Removal Actions were also completed that included removing contaminated soil at four sites and removing drums at one site.

RI/FS activities were initiated for the remaining eight sites, and Remedial Design and Remedial Action (RD/RA) activities began for four sites.

In FY89, the installation formed a Technical Review Committee (TRC) to expedite the cleanup program and inform the community of cleanup progress.

FY94 CLEANUP PROGRESS

In February, a Restoration Advisory Board (RAB) was established. The RAB meets regularly and works closely with EPA and the state to ensure greater public involvement. Meeting minutes are distributed to all RAB members and to other interested parties.

The installation's BRAC Cleanup Team (BCT) was formed. The BCT expedites the review process and facilitates communication between its members through weekly meetings and the use of electronic communication media.

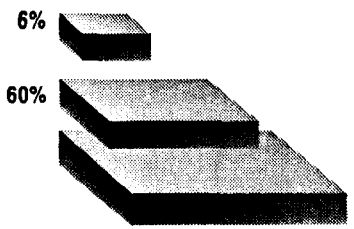
In April, an Environmental Baseline Survey (EBS) was completed; the state has concurred on the CERFA clean acreage identified in the EBS. A Land Reuse Plan was developed for the Philadelphia Naval Hospital in August.

An IRA was completed that involved stabilizing a river bank to contain an on-post landfill. Four sites are currently undergoing PCB contamination cleanup. The installation also has implemented asbestos abatement programs at several buildings.

PLAN OF ACTION

- Finalize RI/FS activities and initiate RD/RA activities for sites that require further cleanup
- Lease certain parcels of the Philadelphia Naval Station during FY95; a master lease has been signed between the Navy and the City of Philadelphia; the master lease will cover 400 acres of Philadelphia Naval Station property that includes five dry docks, four piers, and 2.1 million square feet of building space
- Complete a Land Reuse Plan for Philadelphia Naval Station in FY95

CERFA CLEAN ACREAGE



Concurred CERFA Clean Acreage –	TBD
Proposed CERFA Clean Acreage –	48
Acreage Available for Transfer –	490 *
Total Acreage –	819

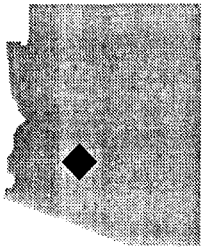
** Environmental Condition of Property Categories 1-4*

PHOENIX-GOODYEAR AIRPORT

NPL

(FORMERLY LITCHFIELD PARK NAVAL AIR FIELD)

Size:	750 acres
Mission:	Preserve and store Naval aircraft; currently a municipal airport and private industrial site
HRS Score:	45.81; Placed on NPL in 1983
IAG Status:	None
Contaminants:	VOCs and petroleum products
Media Affected:	Groundwater and soil
Funding to Date:	$9 million



Goodyear, Arizona

CLEANUP BACKGROUND

DoD fulfilled its financial obligation to clean up Phoenix-Goodyear Airport in FY92; therefore DoD no longer monitors cleanup of the site. EPA is responsible for monitoring cleanup activities and enforcing the provisions of the Record of Decision (ROD).

Remedial Investigation and Feasibility Study (RI/FS) activities conducted by EPA were completed in FY89. The investigation found that soil and groundwater were contaminated with VOCs, particularly trichloroethene (TCE).

In FY87, a ROD was issued that stipulated extraction, air stripping, and reinjection as the selected cleanup alternatives for the groundwater contamination in the upper aquifier. Activities conducted under the ROD are currently ongoing.

A ROD issued in FY89 designated soil vapor extraction as the cleanup alternative for TCE contamination in the vadose zone and extraction and treatment by means of an air stripper for groundwater in the lower aquifiers. In FY90, the Phoenix Goodyear Airport removed two Underground Storage Tanks (UST) and petroleum-contaminated soil under the state program for USTs.

FY94 CLEANUP PROGRESS

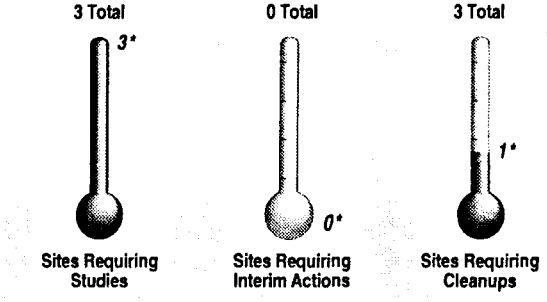
Soil vapor extraction and groundwater cleanup are being implemented by the City of Goodyear, under the terms of a Consent Decree entered into with EPA. DoD is currently in litigation with the City of Phoenix regarding the removal of two USTs in FY90.

PLAN OF ACTION

- Resolve pending litigation related to USTs

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 3
- Estimated Date of Completion = 2004



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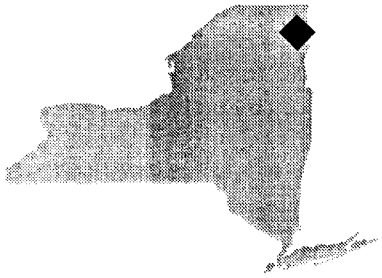
PLATTSBURGH AIR FORCE BASE

Size:	3,451 acres (3,451 acres excess)
Mission:	Refuel and deploy aircraft
HRS Score:	30.34; Placed on NPL in November 1989
IAG Status:	Federal Facility Agreement signed in September 1991
Contaminants:	Organic solvents, pesticides, fuels, PCBs, and lead
Media Affected:	Groundwater and soil
Funding to Date:	$25.1 million



Plattsburgh, New York

CLEANUP BACKGROUND

Plattsburgh Air Force Base has conducted environmental studies since FY87. Sites that have been investigated include Underground Storage Tanks (UST) and landfills. The installation was placed on the NPL after the fire training area was determined to be a source of chlorinated solvent and BTEX contamination in groundwater. During fire training activities, which were conducted between 1970 and 1989, areas were saturated with water and waste fuel and ignited. Waste fuel that soaked into the soil has migrated to the groundwater.

The installation began Remedial Investigation and Feasibility Study (RI/FS) activities in FY89. The RI has divided the installation into three Operable Units (OU). RI/FS activities are ongoing. In FY92, the installation prepared a Decision Document for no further action at eight sites and signed Records of Decision (ROD). Remedial Design for two landfill site closures was completed in FY92. The installation has selected Remedial Actions (RA) for both OUs. The RAs include in-situ biodegradation and landscaping. Results of ongoing treatability studies indicate that bioventing is effective in treating contaminated soils.

Since identifying sites, the installation has made significant progress in its environmental cleanup. In FY91, the installation completed a Removal Action for one site with contaminated soil. In FY92, a free-product removal system was constructed at the fire training area. The installation completed three Removal Actions in FY93, including one at a DDT pesticide spill site and one at a site contaminated with lead.

FY94 CLEANUP PROGRESS

The installation formed the Restoration Advisory Board (RAB) in the spring. The RAB is addressing environmental justice concerns by contacting local environmental and community groups and informing them of ongoing progress. The Community Relations Plan (CRP) was also written.

Partnering between the installation's BRAC Cleanup Team (BCT) and regulatory agencies has fostered open communication and cooperation among all parties to work towards solving problems, not just enforcing regulations. A membership committee was formed and was headed by the community co-chair. Agenda items have included operating rules, membership, and cleanup status. Formal dispute resolution has not been necessary at the installation because the BCT is effectively resolving disputes.

The Environmental Baseline Survey was finalized during this fiscal year.

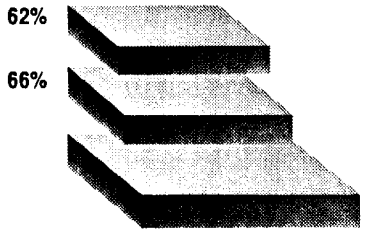
The installation completed construction of two landfill caps. The installation has also recovered over 12,000 gallons of fuel from the free product recovery system at the fire training area.

Preliminary Assessments and Site Inspections were initiated for new sites that were identified from ongoing environmental investigations. RIs were initiated for two additional sites and were continued for the other sites.

PLAN OF ACTION

- Explore Native American group interest in leasing the entire installation
- Complete final Environmental Impact Statement in FY95
- Finalize Land Reuse Plan in FY95
- Update CRP in FY95

CERFA CLEAN ACREAGE



Concurred CERFA Clean Acreage –	TBD
Proposed CERFA Clean Acreage –	2,138
Acreage Available for Transfer –	2,282 *
Total Acreage –	3,451

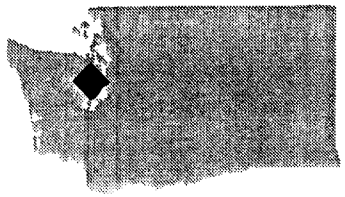
** Environmental Condition of Property Categories 1-4*

PORT HADLOCK NAVAL ORDNANCE CENTER

NPL

(PACIFIC DIVISION DETACHMENT)

Size:	2,716 acres
Mission:	Receive, store, maintain, and issue ordnance
HRS Score:	50.00; Placed on NPL in June 1994
IAG Status:	None
Contaminants:	TNT, heavy metals, and VOCs
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$2.3 million



Port Hadlock, Washington

CLEANUP BACKGROUND

Environmental investigations began at the Port Hadlock Naval Ordnance Center in FY84, identifying 15 sites at the installation. The main site types include landfills and ordnance disposal sites. Environmental investigations have focused on cleaning up and preventing future contamination of shellfish beds which are located near the installation. Contaminants can migrate into bays by overland flow toward bluffs surrounding the island or 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.

The installation has completed several Interim Actions and cleanups. In FY87, a tank was removed and field monitoring of explosive gas concentrations was completed at the buried Imhoff tanks. The Remedial Action (RA) for the site was completed in FY87 and involved the installation of piping and fans to vent methane gas in the Imhoff tank.

The installation also completed two RAs in FY91 at Sites 13 and 16. At a gas station, one of two 3,000-gallon tanks leaked in FY79. Reportedly, less than 500 gallons were lost, and the tank was repaired. In FY80, the same tank failed a precision tightness test. The RA included a tank removal and the removal of petroleum-contaminated soils. The soils were landfarmed on site to reduce levels to below regulatory limits. The RA at Site 16 included removing abandoned Underground Storage Tanks.

Community relations for the installation is an ongoing effort. The Community Relations Plan was finalized in FY92. 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 first fact sheet, completed in FY92, concentrated on state involvement and oversight. The second fact sheet, distributed in FY93, discussed the Site Hazard Assessment Program.

FY94 CLEANUP PROGRESS

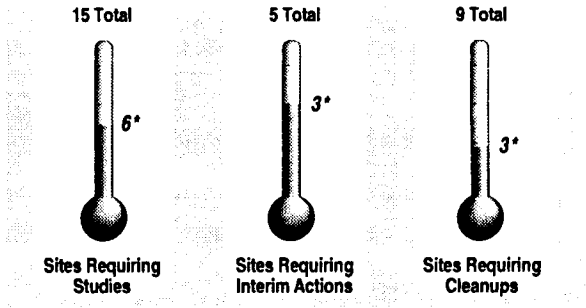
Port Hadlock completed a number of studies and Interim Actions. A Removal Action at the gas station was completed in March, and no further action at the site is anticipated. The Removal Action included removing petroleum-contaminated soil and landfilling it off site. A Removal Action including solvent-contaminated sediment removal was completed at the net depot site in June.

PLAN OF ACTION

- Continue two additional Removal Actions at Sites 11 and 12
- Proceed with Removal Action at Site 33 in FY98
- Complete Remedial Design at two sites in FY95 and four sites in FY96

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 15
- Estimated Date of Completion = Not Available



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PORTSMOUTH NAVAL SHIPYARD

NPL

Size:	278 acres
Mission:	Maintain, repair, and overhaul nuclear submarines
HRS Score:	67.70; Placed on NPL in May 1994
IAG Status:	None
Contaminants:	Heavy metals, PCBs, pesticides, and VOCs
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$10.4 million

Kittery, Maine

CLEANUP BACKGROUND

Portsmouth Naval Shipyard was placed on the NPL in May, 1994 after environmental investigations showed that surface runoff and erosion has contributed contaminants to the Piscataqua River. Groundwater on the island has been contaminated in the vicinity of five sites at the installation.

An Initial Assessment Study (IAS) of Portsmouth Naval Shipyard completed in FY83 identified four potentially contaminated sites. These sites were subsequently transferred to the RCRA Corrective Action Program. A RCRA Facility Assessment conducted in FY86 identified 28 Solid Waste Management Units (SWMU). Sites include a landfill, a salvage and storage area, and waste oil tanks.

A RCRA Facility Investigation (RFI) work plan was finalized in FY91. RFI field work was conducted in four stages, and all RFI field work was completed by FY92. The RFI report was conditionally approved in FY93.

The installation formed its Technical Review Committee in FY87.

FY94 CLEANUP PROGRESS

The installation began to form its Restoration Advisory Board (RAB). The RAB selection committee was formed from five existing community leaders and Natural Resource Trustees, and five more community members were selected for the RAB.

Portsmouth Naval Shipyard has also fostered partnering by including EPA, the Marine Department of Environmental Protection, and Natural Resource Trustees early in the decision-making process. EPA has been closely consulted to ensure smooth transition from studying sites under RCRA to studying sites under CERCLA.

A groundwater and soil gas survey at SWMU 11 was completed using direct push technology, which expedited the assessment.

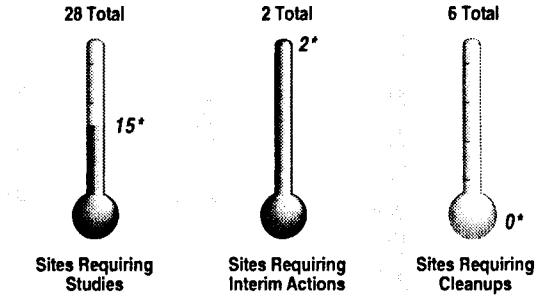
Several significant cleanup milestones were reached. Actions completed included RFI data gap field work, Onshore Media Protection Standards, draft Offshore Ecological and Human Health Media Protection Standards, and an Onshore Corrective Measures Study work plan. An Interim Measure was completed at the Defense Reauthorization and Marketing Office scrapyard (SWMU 6) in FY94. Seven Underground Storage Tanks (SWMUs 10 to 13, 16, 21, and 23) were removed during the RFI. Two of these sites remain under investigation for possible further cleanup. The installation also completed a Removal Action at the Jamaica Island Landfill (SWMU 8) which involved installing a cap.

PLAN OF ACTION

- Complete the Feasibility Study for all 13 sites in FY95
- Sign Records of Decision for each site in FY95
- Complete Remedial Designs for each affected site in FY96
- Implement Remedial Actions for SWMUs 9, 10, 21, and 27 in FY96

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 28
- Estimated Date of Completion = 2003



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PRESIDIO OF SAN FRANCISCO

Size:	1,487 acres (1,487 acres excess)
Mission:	Formerly served as the Headquarters for the 6th Army; former site of Letterman Army Institute of Research and Letterman Army Medical Center
HRS Score:	N/A
IAG Status:	Under negotiation
Contaminants:	Petroleum hydrocarbons, heavy metals, solvents, and pesticides
Media Affected:	Groundwater and soil
Funding to Date:	$50 million

San Francisco, California

CLEANUP BACKGROUND

On December 29, 1988, the BRAC Commission recommended closure of the Presidio of San Francisco, including the Letterman Army Medical Center. The BRAC Commission made this recommendation primarily because the installation has no capability to expand, and the Presidio and Letterman Army Medical Center functions can be relocated. Following closure, the Presidio will be turned over to the National Park Service. Approximately 64 percent of the 1,487 acres available was transferred on October 1,1994.

Sites identified in previous investigations include Underground Storage Tanks (UST), a fuel distribution system, landfills, hazardous waste storage areas, and PCB-contaminated electrical transformers. Prominent sources include leaking or abandoned UST sites, which are sources of petroleum contamination to groundwater and soils. Other contaminants include heavy metals, solvents, and pesticides. Interim Actions conducted at the installation include UST removals and groundwater cleanup.

Remedial Investigation and Feasibility Study (RI/FS) activities began in FY90. The second phase of RI field work was completed in FY93.

FY94 CLEANUP PROGRESS

In April, the installation converted the Technical Review Committee (TRC) into the Restoration Advisory Board (RAB). The RAB was formed by a selection panel to ensure community diversity. Agenda items initially focused on organizational procedures and processes, but the focus has changed to compliance and cleanup issues.

The Presidio of San Francisco prepared a BRAC Cleanup Plan outlining current and future strategies and planning efforts for all environmental programs at the installation. The Environmental Baseline Survey (EBS) report was finalized in April. The California Environmental Protection Agency and the Department of Toxic Substances partially concurred with the EBS report in May.

The BRAC Cleanup Team (BCT) was officially formed in May and convened in June. The BCT conducted frequent meetings to expedite review of scientific documents and accelerate the cleanup process. As a result of the document review process and discussions, the BCT helped save approximately $1 million by changing the cleanup strategy at Landfill 8. The BCT also expedited the document review process by conducting technical presentations of the reports.

The Army and the state of California have drafted an IAG of which the National Park Service asked to be a member. Currently, the Army and the National Park Service are negotiating the extent of their role in the IAG.

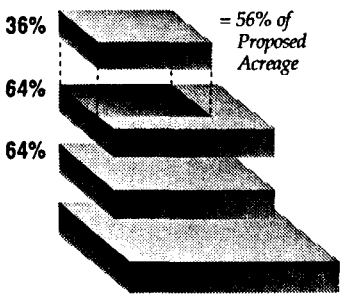
In September, the National Park Service finalized a General Management Plan for the property's reuse.

Remedial Actions (RA) implemented include groundwater monitoring and source reduction measures using an innovative technology from Germany called Unterdruch-Verdampfer-Brunnen which treats contaminated groundwater without removing it from the ground.

PLAN OF ACTION

- Transfer remaining property
- Continue groundwater monitoring
- Sign the ROD and execute RAs during FY95
- Complete RI/FS

CERFA CLEAN ACREAGE

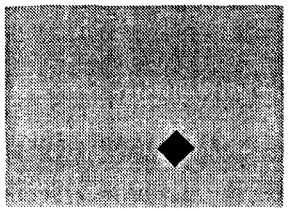


Concurred CERFA Clean Acreage –	530
Proposed CERFA Clean Acreage –	948
Acreage Available for Transfer –	948 *
Total Acreage –	1,487

** Environmental Condition of Property Categories 1-4*

PUEBLO DEPOT ACTIVITY

Size:	23,134 acres (acres excess TBD)
Mission:	Store ammunition and supply material
HRS Score:	N/A
IAG Status:	None
Contaminants:	Heavy metals, petroleum/oil/lubricants, VOCs, pesticides, mustard gas, explosives, and UXO
Media Affected:	Groundwater and soil
Funding to Date:	$32.8 million



Pueblo, Colorado

CLEANUP BACKGROUND

In December 1988, the BRAC Commission recommended realignment of the Pueblo Depot Activity, primarily because of chemical demilitarization activities scheduled for FY95. The BRAC Commission recommended relocating the supply mission to Tooele Army Depot in Utah and relocating the ammunition mission to Red River Army Depot in Texas.

Previous investigations identified various site types, including: a landfill area; open burning and detonation grounds; an ordnance and explosive waste (OEW) area; lagoons; former building sites; oil-water separators; a TNT washout facility and discharge system; and current and former hazardous waste storage sites. Heavy metal and VOC contaminants from the OEW area and industrial waste streams are affecting groundwater and soil.

In FY89, three RCRA Facility Investigations (RFI) and Corrective Measures Studies were initiated for all sites. The RFIs guide Interim Remedial Actions and address 45 Solid Waste Management Units (SWMU) identified in the RCRA Part B permit.

FY94 CLEANUP PROGRESS

The installation formed the Restoration Advisory Board (RAB) in September, involving representatives from communities in Pueblo County. The BRAC Cleanup Team (BCT) was also formed in November. The BCT meets monthly and discusses the document review priorities and requirements. Some BCT meetings are open, involving community representatives. The BCT attempts to identify cleanup priorities and focus review efforts on the reuse of the installation property. Representatives of the installation and regulatory agencies currently participate in intensive management efforts, including frequent on-site meetings and presentations.

The installation completed a final CERFA report. The state regulatory agency has not concurred with the CERFA clean acreage. Some parcels are currently leased to other DoD components, including the Air Force and National Guard, and other parcels are leased on an interim basis to private entities.

A reuse commission was formed as a local redevelopment authority (LRA). On November 8, the LRA completed and approved a reuse plan; however, implementation of the plan remains limited due to the chemical demilitarization program requirements and a complex health risk assessment.

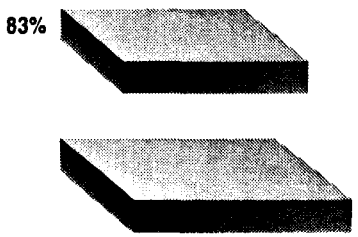
The installation continued RFI activities, and completed a draft RFI report. A Phase III RFI completed for 14 SWMUs is currently under review, and RFI work plans for these SWMUs were submitted for regulatory agency review.

A comprehensive groundwater treatment facility is being constructed to prevent the migration of contaminated groundwater from the Landfill and former plating shop ditch located off-post. The treatment facility is also designed to remediate off-post groundwater contamination.

PLAN OF ACTION

- Conduct a partnering meeting with regulatory agencies in FY95
- Conduct an Environmental Baseline Survey during FY95, including Finding of Suitability to Lease
- Update the CERFA report with new information as it becomes available
- Complete RFI efforts

CERFA CLEAN ACREAGE



Concurred CERFA Clean Acreage –	0
Proposed CERFA Clean Acreage –	19,131
Acreage Available for Transfer –	TBD *
Total Acreage –	23,134

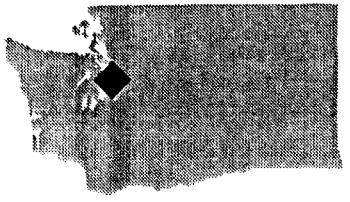
** Environmental Condition of Property Categories 1-4*

PUGET SOUND NAVAL SHIPYARD

NPL

(INCLUDING JACKSON PARK HOUSING COMPLEX)

Size:	1,392 acres
Mission:	Provide logistical support for assigned ships and service craft; perform authorized work in connection with construction, overhaul, and other tasks
HRS Score:	50.00 (Puget Sound); Placed on NPL in May 1993 50.00 (Jackson Park); Placed on NPL in May 1994
IAG Status:	None
Contaminants:	Heavy metals, VOCs, petroleum/oil lubricants, grit, paint, solvents, construction debris, acids, and silver nitrate
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$32.8 million



Bremerton and Kitsap Counties, Washington

CLEANUP BACKGROUND

The majority of the Puget Sound Naval Shipyard is built on contaminated fill material. Metals and petroleum/oil/lubricants (POL) are the primary contaminants at Puget Sound and have contaminated groundwater, soil, and surface water/sediments. The main sources of contamination at Jackson Park are related to past operations at the installation that included ordnance cleaning and demilitarization. Environmental studies have determined that the soil, groundwater, and surface water/sediments at Jackson Park are contaminated with heavy metals and VOCs.

The installations have taken steps to accelerate cleanups and facilitate discussions with the regulatory agencies and other organizations. Both installations have a Memorandum of Understanding with the U.S. Geological Survey (USGS). USGS provides technical support to the installations and has conducted a detailed study of the Puget Sound drydock system to determine the effect the docks may have on groundwater flow. The installation will also not conduct an Remedial Investigation and Feasibility Study (RI/FS) at one of the Puget Sound OUs. Instead, the site will be characterized as part of the Steam Sparging Demonstration program at Site 11. The Record of Decision (ROD) will be written based on the information gathered during the demonstration.

Sites at Puget Sound are divided into three Operable Units (OU), and an RI/FS will be conducted for two OUs. As a result of continuing investigations, the sites at Jackson Park have been reorganized into four sites.

The Puget Sound installation formed its Technical Review Committee (TRC) in FY92; the group meets quarterly. The Jackson Park installation formed its TRC in FY91. Both committees enable the Navy to involve the regulatory agencies in scoping phases of studies and decision-making.

FY94 CLEANUP PROGRESS

A Restoration Advisory Board was established for both installations.

A large-scale Removal Action was conducted at the Acid Drain Slab at Puget Sound. A Removal Action completed at Site 101A at Jackson Park involved removing tanks. In addition, a 100,000-gallon tank, a smaller tank and the surrounding soil were removed to mitigate visible oil seepage along South Jackson Park Beach. Two soil Removal Actions have been initiated at Site 110 at Jackson Park under RCRA Corrective Actions. The first soil removal was completed, and during the removal, additional contamination was found and a second soil removal was initiated. Soil excavated from Site 110 is being thermally treated.

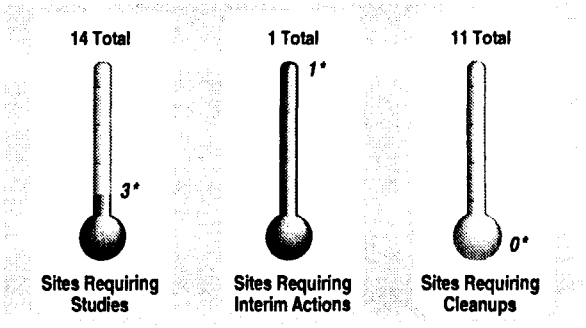
Five Underground Storage Tanks (UST) were removed at the installations.

PLAN OF ACTION

- Complete a Removal Action for one Puget Sound Site 8; sign RODs for two Puget Sound sites in FY95; and in FY95, conduct steam sparging demonstration for another site
- Complete RI/FS activities for two OUs in FY95
- Complete Remedial Design and Remedial Action (RD/RA) activities in FY98 for the two OUs
- Complete ongoing RI/FS activities for Jackson Park sites in FY96; complete RD/RA activities for Jackson Park in FY98
- Complete eleven Removal Actions and three Interim Removal Actions (IRA) by FY98 for Puget Sound sites
- Complete ongoing Corrective Measures Studies at all three Jackson Park RCRA sites by FY96; complete Corrective Measures design by FY97 and implement by FY98
- Remove remaining USTs by FY95 and complete Corrective Actions

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 14**
- **Estimated Date of Completion = 2003**

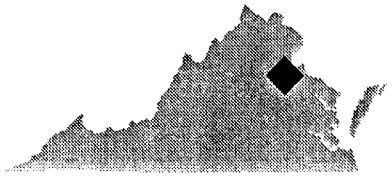


** Complete*

QUANTICO MARINE CORPS COMBAT DEVELOPMENT COMMAND

PROPOSED NPL

Size:	60,647 acres
Mission:	Supports research, development, testing, and evaluation of military hardware and provides military training
HRS Score:	50.00; Proposed for NPL in May 1993
IAG Status:	Signed November 8, 1991; Federal Facility Agreement (FFA) under negotiation
Contaminants:	PCBs, pesticides, VOCs, phenols, heavy metals, petroleum hydrocarbons, and arsenic
Media Affected:	Surface water/sediments and soil
Funding to Date:	$5.6 million



Quantico, Virginia

CLEANUP BACKGROUND

Quantico Marine Corps Combat Development Command operated a municipal landfill through the 1970s. After the 24-acre landfill closed, the area was used as a Defense Reutilization and Marketing Office (DRMO) scrapyard, and PCB transformers were drained onto the ground to recover copper and transformer casings. Prominent sites include surface disposal areas, landfills, Underground Storage Tanks (UST), and disposal pits that have contaminated soils, surface water, and sediments.

Between FY84 and FY93, Preliminary Assessments and Site Inspections (PA/SI) were completed at all CERCLA sites. In FY84, the installation completed an Interim Remedial Action (IRA) to neutralize acidic soil at one site. In FY90 and FY91, PCB-contaminated soil and scrap metal was removed from two other sites to minimize the spread of contamination. An Engineering Evaluation and Cost Analysis (EE/CA) was completed in FY93 for the removal and incineration of pesticide- and arsenic-contaminated soil; the EE/CA was released to the public for comment.

In FY88, EPA Region 3 completed a RCRA Facility Assessment and identified 243 Solid Waste Management Units (SWMU). An additional site, Russell Road Landfill, was identified and added to the RCRA program. A RCRA Facility Investigation of the site was completed in FY91, and a Corrective Measures Study (CMS) has been initiated. As part of the CMS, long-term groundwater monitoring has been initiated.

The Technical Review Committee, since its formation in FY89, has involved regulatory agencies, and has become an active forum to address regulatory agency comments and solicit suggestions on investigations. Scoping meetings have been held with EPA and state regulatory agencies to define cleanup efforts. These meetings have significantly improved relations and the document review process. Two Information Repositories were established in FY92.

FY94 CLEANUP PROGRESS

A Community Relations Plan (CRP) was established and a draft Federal Facility Agreement (FFA) was sent out for review.

The installation completed two Removal Actions; one removed PCB-contaminated soil from a site, and another removed and incinerated pesticide- and arsenic-contaminated soil. Except for an RI at one site, RI activities were completed in FY94, and FS activities were initiated. RI/FS activities and a Decision Document for closing the Old Landfill Site were completed, and no further action was recommended. Final closure of the Old Landfill Site will be completed under RCRA Corrective Action.

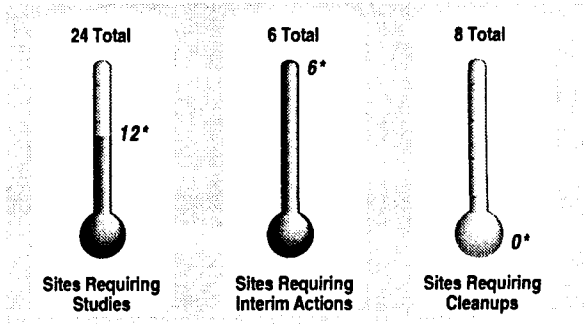
Between June and August, the Initial Site Characterization was completed for over 92 USTs at three UST locations. No further action was recommended for one UST location.

PLAN OF ACTION

- Sign FFA in FY95
- Conduct Removal Actions for contaminated soil at two sites in FY95 and FY96
- Complete RI/FS activities for one site in FY96 and finalize FS reports for six sites by FY98
- Complete RD/RA activities for five sites from FY95 to FY00
- Group potential SWMUs together under one Operable Unit and complete CMS by FY98; Corrective Measures Implementation is planned and is expected to be complete by FY98
- Cap the Russell Road Landfill in FY96 and complete the CMS by FY99

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 24**
- **Estimated Date of Completion = 2003**

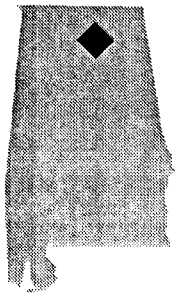


* Complete

REDSTONE ARSENAL

NPL

Size:	38,300 acres
Mission:	Serve as Army Missile Command
HRS Score:	50.00; Placed on NPL in 1994
IAG Status:	Draft Federal Facility Agreement under negotiation
Contaminants:	VOCs and semi-VOCs, chemical munitions, and PAHs
Media Affected:	Groundwater and soil
Funding to Date:	$23.2 million



Huntsville, Alabama

CLEANUP BACKGROUND

Redstone Arsenal stored chemical agents and surplus chemical munitions and agents. The munitions were demilitarized and buried in various locations throughout the installation. Past operations at the installation included the production of mustard gas; Lewisite, a chemical agent containing arsenic; commercial chemicals; and pesticides, including DDT. Currently, the installation develops solid rocket propellants and produces iron carbonyl.

Environmental investigations at the installation began in FY77, and by FY91, 162 sites had been identified. Site types at the installation include past disposal sites, landfills, open burn and open detonation (OB/OD) areas, chemical munitions disposal sites, and solvent spill sites. Landfills and OB/OD areas are the most prominent site types. Landfills at the installation have contaminated soils with solvents and semi-VOCs, and groundwater at the OB/OD area is contaminated with solvents.

RCRA Corrective Action activities began in FY86, after the installation had received a RCRA Part B hazardous waste permit. Remedial Investigation and Feasibility Study (RI/FS) activities began in FY87, and a RCRA Facility Investigation began in FY90.

Redstone Arsenal formed a Technical Review Committee (TRC) in FY93. Since then, TRC meetings have been held with the public, and Information Repositories have been set up in the community. The University of Alabama has also used Redstone Arsenal as a topic and focus of its advanced class work. In order to accelerate progress on the environmental investigations, all cleanup program documents are given a priority review.

FY94 CLEANUP PROGRESS

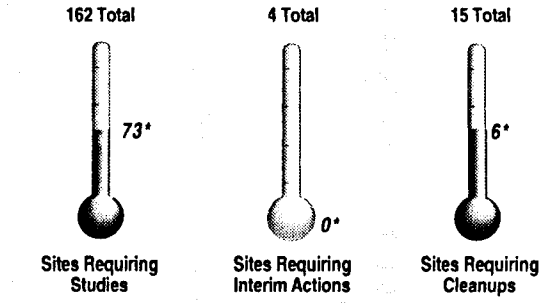
Redstone Arsenal was placed on the NPL on June 30, 1994. The installation began new investigations at 20 sites, while continuing investigations at 25 other sites. In addition, 104 sites were recommended for no further action. The installation also began Remedial Design and Remedial Action (RD/RA) activities at the arsenic pond and a disposal site used during Lewisite manufacturing. The former surface impoundment was also capped.

PLAN OF ACTION

- Continue RI/FS activities and begin investigation at four more sites during FY95
- Begin RD/RA activities at three sites, including the OB/OD area; completion expected in FY96
- Begin Interim Actions at one site in FY95
- Begin negotiations for a Federal Facility Agreement and have in place by the end of FY95

PROJECT ACCOMPLISHMENTS

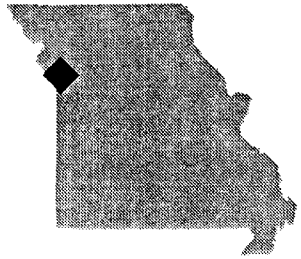
- Total Number of Sites = 162
- Estimated Date of Completion = 2020



* Complete

RICHARDS-GEBAUR AIR FORCE BASE

Size:	428 acres (428 acres excess)
Mission:	House the 442nd Fighter Wing; support A-10 aircraft
HRS Score:	N/A
IAG Status:	None
Contaminants:	Petroleum/oil/lubricants, PAHs, PCBs, VOCs, and heavy metals
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$3.6 million



Kansas City, Missouri

CLEANUP BACKGROUND

In July 1991, the BRAC Commission recommended closure of Richards-Gebaur Air Force Base (AFB), the transfer of the 442nd Tactical Fighter Wing to Whiteman AFB, and the transfer of the 36th Aeromedical Evacuation Squadron and the 77th and 78th Aerial Port Squadrons to Peterson AFB.

Environmental studies have been ongoing since FY82. Prominent site types include fire training areas, vehicle maintenance areas, hazardous waste drum storage areas, fuel storage areas, and Underground Storage Tanks (UST).

The installation conducted several Interim Actions including, soil bioventing, removal of contaminated soil, and removal of PCB-contaminated equipment.

FY94 CLEANUP PROGRESS

The installation formed the BRAC Cleanup Team, improving site management by actively addressing environmental issues. In March, the Restoration Advisory Board (RAB) was formed to promote public involvement by advertising meetings and presenting other information in public notices.

The Environmental Baseline Survey (EBS), completed in FY94, designated 113 acres as CERFA clean. The installation used interim leases to lease over 50 acres of the property to the Kansas City Aviation Department (KCAD) Conversion Authority and the Marine Corps.

The installation demonstrated its efforts to revitalize the community by encouraging KCAD's expanded use of the property and facilities to support civilian aviation operations. Runway and aviation support facilities were transferred to KCAD before the installation's closure date. Facilities leased to the Marine Corps were also available for immediate reuse.

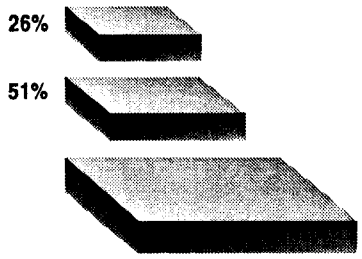
The installation completed an Interim Action involving the removal of PAH-contaminated soil. Other cleanup activities included passive soil bioventing in conjunction with a treatability study.

The installation closed on schedule on September 30, 1994.

PLAN OF ACTION

- Continue implementing Land Reuse Plan for the installation; proposed property reuse includes a commercial airport, light industrial development, Army training facilities, and consolidating Marine Corps administrative groups
- Revise BRAC Cleanup Plan in FY95
- Revise EBS in FY95
- Obtain regulatory concurrence during the disposal and Finding of Suitability to Transfer processes
- Lease 18 to 25 additional acres to KCAD in FY95

CERFA CLEAN ACREAGE

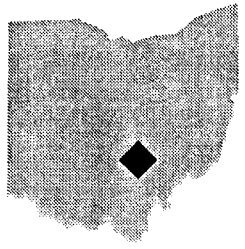


Concurred CERFA Clean Acreage –	0
Proposed CERFA Clean Acreage –	113
Acreage Available for Transfer –	219 *
Total Acreage –	428

** Environmental Condition of Property Categories 1-4*

RICKENBACKER AIR NATIONAL GUARD BASE

Size:	2,115 acres (1,855 acres excess)
Mission:	Provide airlift support for an Air National Guard Unit
HRS Score:	50,00; Proposed for NPL in January 1994
IAG Status	None
Contaminants:	Pesticides, paint, spent fuel, waste oil, solvents, and heavy metals
Media Affected:	Groundwater and soil
Funding to Date:	$7.6 million



Columbus, Ohio

CLEANUP BACKGROUND

In July 1991, the BRAC Commission recommended closing Rickenbacker Air National Guard Base, transferring the 160th Air Refueling Group and the 907th Tactical Airlift Group to Wright-Patterson Air Force Base (AFB) in nearby Dayton, and consolidating the 4950th Test Wing from Wright-Patterson AFB with the Air Force Flight Test Center at Edwards AFB.

The current mission of the installation is to provide airfield support for Ohio Air National Guard and the Air Force Reserve. Installation activities include operation, maintenance, and repair of aircraft, vehicles, equipment, and utility systems. The Aerial Spray Branch located at the installation is responsible for pesticide spraying at other bases in the United States.

Environmental studies identified the following prominent site types at the installation: fuel spill areas; Underground Storage Tanks (UST); fire training areas, storm drainage areas, drum storage areas, pesticide storage areas, and coal storage sites. UST and fuel spill sites are potential sources of petroleum and solvent contamination in soil and groundwater. Seven miles of a storm drainage system is also the source of contamination. Studies conducted between FY88 and FY90 recommended Remedial Investigation and Feasibility Study (RI/FS) activities at 15 sites; the activities were initiated in FY91. Interim Actions include the removal of more than 50 USTs at over 13 sites.

Groundwater underlying the installation supplies water to approximately 150,000 people residing in the city of Columbus and nearby communities. In FY88, the city of Columbus proposed a Wellhead Protection Area to prevent the contamination of this major water source. Sampling at the site in FY88 and FY89 identified heavy metals and trichloroethene (TCE) in on-site monitoring wells. The installation identified soils containing significant levels of organics and pesticides that may migrate to the drinking water supply.

FY94 CLEANUP PROGRESS

The Restoration Advisory Board (RAB) was formed and has been instrumental in informing the community about environmental cleanup activities at the installation, as well as receiving input from the community.

The BRAC Cleanup Team (BCT) was formed and is working on a standard format for no further action Decision Documents and expediting the document review process. Regulatory agency review and coordination improved through the BCT and a Defense State Memorandum of Agreement.

A base-wide Environmental Baseline Survey (EBS) was prepared to categorize the environmental condition of the property and identify CERFA clean acreage; however, regulatory agencies have not concurred with the report.

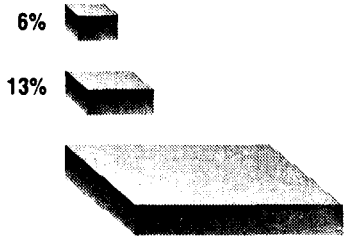
A draft community reuse plan was prepared on October 31. A draft Environmental Impact Statement was prepared to focus on reuse of the property based on a Land Use Concept Study developed by the installation and the reuse agency.

On September 30, the installation closed as scheduled.

PLAN OF ACTION

- Continue cleanup activities associated with UST sites
- Obtain no further action status for many sites
- Implement groundwater extraction and treatment at a site associated with a fuel storage area and hazardous waste drum storage area
- Process three leases, one involving the reuse of a one-acre property containing a 7,000-square-foot building; the building will be reused as a restaurant and flight training school

CERFA CLEAN ACREAGE



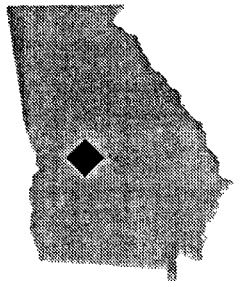
Concurred CERFA Clean Acreage –	0
Proposed CERFA Clean Acreage –	130
Acreage Available for Transfer –	272 *
Total Acreage –	2,115

** Environmental Condition of Property Categories 1-4*

Robins Air Force Base

NPL

Size:	8,855 acres
Mission:	Provide logistics support for aircraft
HRS Score:	51.66; Placed on NPL in 1987
IAG Status:	IAG signed in July 1989
Contaminants:	VOCs, paint strippers and thinners, paints, solvents, phosphoric and chromic acids, oils, cyanide, and carbon remover
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$49.4 million



Houston County, Georgia

CLEANUP BACKGROUND

In FY82, Robins Air Force Base completed Preliminary Assessments and Site Inspections for 33 sites. Decision Documents prepared for 22 of the 33 sites have been submitted to the state regulatory agency recommending no further action. The prominent site at the installation consists of Landfill No. 4 and an adjacent sludge lagoon, which is divided into the following three Operable Units (OU): Source Control, OU1; Wetlands, OU2; and Groundwater, OU3. Primary contaminants are trichloroethene and tetrachloroethene that have been released to soil and groundwater. Contaminants have also been released to a wetlands area in the northwest corner of the installation.

Remedial Investigation and Feasibility Study (RI/FS) activities were initiated in FY86 and FY88.

A Management Action Plan was initiated in FY92 and revisions are expected annually. The installation constructed run-on controls for OU1 in FY93 at the NPL site. Also, the pilot system for lagoon solidification was completed for OU1, and the Remedial Design of the landfill cover for Landfill No. 4 was completed in FY93.

The Technical Review Committee (TRC), formed in FY89, meets quarterly, and includes representatives of the community, state and federal regulatory agencies, and the local county health department.

FY94 CLEANUP PROGRESS

The TRC converted to a Restoration Advisory Board (RAB), and its membership has increased to include representatives of the community. Partnerships have been fostered between the community and regulatory agencies by establishing cooperative efforts towards cleanup at the installation. Members of the RAB drafted new guidelines and prioritized the sites for immediate cleanup. RAB meetings are advertised in a local newspaper.

Interim Actions implemented at the installation included encapsulation of Landfill No. 3 and removal of hazardous and radioactive waste at two other sites. A RCRA Facility Investigation (RFI) was initiated at five sites.

Cleanup activities continued on schedule at the installation with the construction of a leachate collection system at Landfill No. 4.

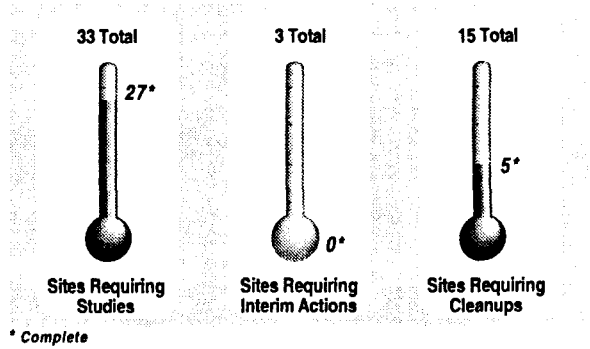
An Interim Record of Decision (ROD) for OU2 was completed. The Interim ROD consists of sampling surface water and sediments, installing a fence surrounding the wetlands, and implementing a contingency plan if analytical results indicate migration of contaminants off-site. However, RI activities for OU3 had to be repeated, and a revised document was approved. An initial screening of cleanup alternatives for OU3 was also completed.

PLAN OF ACTION

- Continue OU1 activities by solidifying the sludge lagoon, conducting the pilot leachate trenching, fencing the NPL site, and covering the landfill
- Continue surface water and sediment sampling activities at OU2
- Prepare and submit Feasibility Study, Proposed Plan, and ROD for OU3
- Complete Interim Measures for the RCRA low-level radioactive disposal and hazardous waste disposal sites
- Finalize Corrective Action Plans for eight RCRA sites

Project Accomplishments

- Total Number of Sites = 33
- Estimated Date of Completion = 2011

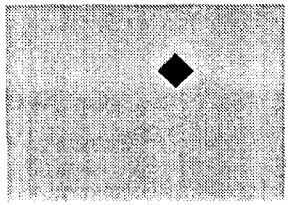


* Complete

ROCKY MOUNTAIN ARSENAL

NPL

Size:	17,228 acres
Mission:	Formerly manufactured and stored chemical munitions
HRS Score:	58.15; Placed on NPL in 1987
IAG Status:	IAG and Federal Facility Agreement signed in 1989
Contaminants:	Pesticides, chemical agents, heavy metals, organochlorides, acids, UXO, and VOCs
Media Affected:	Groundwater and soil
Funding to Date:	$710.8 million



Adams County, Colorado

CLEANUP BACKGROUND

The Rocky Mountain Arsenal, a chemical munitions production facility from 1942 to 1982, has been the focus of an aggressive soil and groundwater contamination cleanup program since the mid 1980's. The need for the installation's cleanup is a result of two broad categories of activities: past disposal of liquid wastes from both Army and leasees' operations in unlined and lined lagoons and basins using onpost open burning and open detonation areas and landfills to dispose of liquid and solid wastes.

The Army completed a Preliminary Assessment and Site Inspection in FY84, which identified 179 contaminated sites. Subsequently, the installation was divided into two Operable Units (OU): the OnPost OU and the OffPost OU. Remedial Investigation and Feasibility Study (RI/FS) activities for both OUs began in FY84. The final OnPost OU RI was completed in FY92. The final Offpost OU RI was completed in FY89, with an RI addendum completed in FY92. With the addition of contaminated groundwater plumes, contaminated structures and other interim actions, the Army now tracks 209 sites which will ultimately be addressed in the cleanup.

The Federal Facilities Agreement (FFA) signed in FY89, defines how appropriate Remedial Actions will be determined and implemented and describes the relationship of the Army, its contractor, and stakeholders regarding the installation's cleanup responsibilities. The FFA established common goals and priorities to facilitate decisions regarding land use restrictions and cost allocation. The FFA also defines how certain Interim Remedial Actions (IRA) are designed to support and be consistent with the final Record of Decision (ROD) for cleanup.

To date, the Army has completed 12 of 14 IRAs at 17 sites agreed upon under the FFA. Under the IRA program, four onpost groundwater extraction and/or treatment systems were installed. In FY90, 10.5 million gallons of chemical wastewater and 580,000 cubic yards of contaminated soil were removed from the Basin F area and placed in temporary storage facilities. Hundreds of drums of waste and tons of asbestos and related material were disposed of offpost; 450 abandoned wells and the South Plants sewer systems were closed; and the former hydrazine blending facility was closed and removed.

Numerous innovative technologies were used at RMA. In FY93, the Army began incinerating Basin F liquids on post in the submerged quench incinerator (SQI) as an IRA. To date, over 9 million gallons of the original 10.5 million gallons have been destroyed. As part of its efforts to promote the SQI, the Army set a new standard for involving and fostering cooperation with the community, holding over 80 public meetings that included outreach programs, citizen education, and community awareness.

FY94 CLEANUP PROGRESS

The Army converted its Technical Review Committee (formed in FY89) to a Restoration Advisory Board (RAB) during FY94. The RAB provides a strong critical link among all stakeholders and encourages community partnership by discussing and exchanging information regarding the environmental cleanup program at RMA.

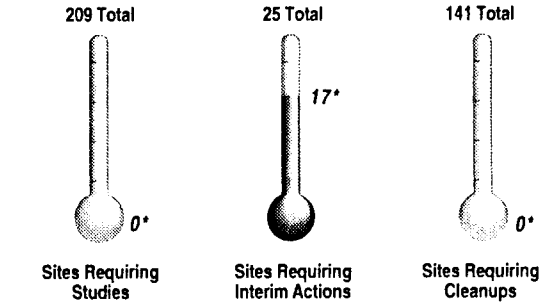
The SQI safely disposed of over 9 million gallons of former Basin F liquids, a true success story for the Department of the Army. Treatment of over 14 million gallons of scrubber brine and recovery of over 220,000 pounds of copper add to the success of the program. Many other projects, including the ongoing pilot building demolition program, removal of checmical process equipment from former production facilities and the construction of a new wastewater treatment system to replace an antiquated sewage treatment plant, were conducted in FY94.

PLAN OF ACTION

- Continue several treatability tests involving innovative technologies for treatment of some contaminated soil sites
- Continue to study the potential applicability of use of horizontal wells in dewatering soils
- Continue the Feasibility Study efforts and settlement discussions with parties leading toward a ROD in FY96
- Continue Interim Response Actions, including: removal of chemical process equipment; asbestos removal; SQI operations; Basin F closure; and PCBs cleanup program

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 209
- Estimated Date of Completion = 2036



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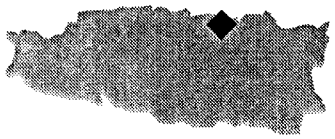
SABANA SECA NAVAL SECURITY GROUP ACTIVITY

NPL

Size:	2,252 acres
Mission:	Provide communication support
HRS Score:	34.28; Placed on NPL in October 1989
IAG Status:	Federal Facility Agreement signed in March 1992
Contaminants:	Heavy metals, PCBs, pesticides, herbicides, and phenols
Media Affected:	Groundwater and soil
Funding To Date:	$2.8 million



Sabana Seca, Puerto Rico

CLEANUP BACKGROUND

The Sabana Seca Naval Security Group Activity operates as a high frequency direction-finding facility and provides communication and related support, including communication relay, security, and manpower assistance, to Navy and DoD missions within the area.

An Initial Assessment Study completed in FY84 identified eight sites at the installation. Only two of the sites (Sites 6 and 7) were recommended for further study. A Removal Action at Site 6 was completed in FY87 and a six-inch cover of clean soil was placed over the sites to prevent exposure to spilled pesticides. The Remedial Investigation (RI) was completed for Site 6 in FY93.

In FY93, a focused Feasibility Study (FS) was conducted at Site 7 to determine the Interim Remedial Action needed to protect installation personnel from exposure to leachate from a municipal landfill.

By request of EPA, as a precautionary measure, a Site Inspection (SI) began in FY91 for Sites 1, 2, and 3. The SI was completed in FY93.

The 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, prepared in FY91, was provided in both English and Spanish versions to accommodate a bilingual community.

FY94 CLEANUP PROGRESS

The Navy produced a photographic brochure to explain the cleanup program underway; the brochure was distributed at the TRC meeting. In addition, the Navy initiated efforts to convert the TRC into a Restoration Advisory Board (RAB), which 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.

The Corrective Action Plan was completed early for one Underground Storage Tank (UST) investigation underway at the installation.

Soil sampling was initiated at Site 6, focusing on pesticide and herbicide contamination. Additional activities performed at Site 6 include the removal of cabinets that housed PCB-containing transformers and the initiation of an FS.

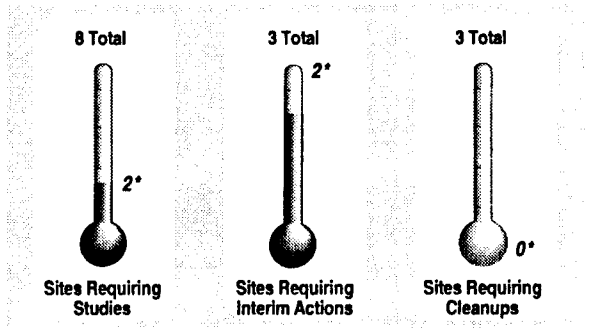
At Site 7, an Interim Preliminary Remedial Action Plan, completed in October, addresses potential exposure to leachate to installation personnel. The plan calls for the construction of a pilot-scale engineered wetland for six months as part of a treatability study. The engineered wetland is intended to biologically treat contaminated leachate that flows from the municipal landfill to Navy property.

PLAN OF ACTION

- Complete the Site 6 FS in FY95, with the Record of Decision (ROD) signed in FY96; complete removal of the cabinets and any PCB-contaminated soils in FY95; begin Remedial Design (RD) for Site 6 in FY95 and complete in FY97
- Complete treatability study at Site 7; if the pilot-scale system proves effective, a full-scale system will be constructed in FY96
- Initiate RD for Site 7 in FY96, to be completed in FY97; complete RA by FY00
- Issue Interim ROD for Site 7 in early FY95
- Complete Corrective Action Design for the UST site, with full implementation to be completed by FY00

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 8
- Estimated Date of Completion = 2003



* Complete

SACRAMENTO ARMY DEPOT

Size:	485 acres (426 acres excess)
Mission:	Store and distribute electronic materials
HRS Score:	44.46; Placed on NPL in 1987
IAG Status:	IAG signed in 1988
Contaminants:	Waste oil and grease, solvents, metal plating wastes, and wastewaters containing caustics, cyanide, and metals
Media Affected:	Groundwater and soil
Funding to Date:	$49.3

Sacramento, California

CLEANUP BACKGROUND

Environmental studies at the Sacramento Army Depot ongoing since FY79 identified 55 sites; 47 sites were recommended for no further action. The remaining sites were divided into four Operable Units (OU).

Remedial Investigation and Feasibility Study (RI/FS) activities for the four OUs were conducted between FY89 and FY92. An installation-wide RI/FS began in FY92. Records of Decision (ROD) for all four OUs have been completed. Remedial Actions (RA) have been completed at six sites, RAs are underway at four sites, and cleanup at the remaining sites are in the planning stage.

An RA at the Tank No. 2 OU was completed in FY93. The cleanup consisted of a soil vapor extraction system to clean up soil contaminated with organic solvents.

FY94 CLEANUP PROGRESS

The installation is working closely with regulatory agencies and the community throughout the cleanup process to improve communications, resolve problems, and expedite the process. In June, the installation began to establish a Restoration Advisory Board (RAB).

A CERFA clean parcel report was completed. Environmental Baseline Surveys (EBS) are underway for all parcels scheduled for transfer, and any required cleanup of buildings is underway. Also, a BRAC Cleanup Plan was completed.

Air sparging was conducted to treat soils and groundwater at Parking Lot 3 and the Freon 113 Areas. Further groundwater hot spot treatment is underway at Parking Lot 3. Phase I cleanup at the south post burn pits, the source of off-depot groundwater contamination, is also underway, and the soil vapor extraction system has obtained cleanup goals. The system will continue to operate until Phase II stabilization is started in FY95. All RA contracts have been awarded for the remaining sites.

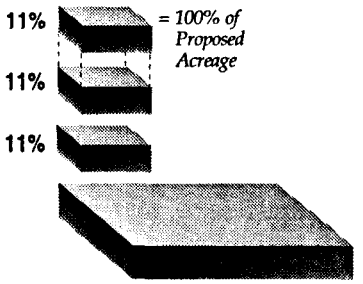
A soil washing pilot test at the oxidation lagoons was completed and stabilization will be conducted for the Phase II remediation of the south post burn pits. Bioremediation has been selected to clean up contamination at the building 205 locomotive repair area.

Currently, the Army has leased a major portion of the installation to a local business and will provide 3,000 jobs in the area.

PLAN OF ACTION

- Conduct soil stabilization activities at south post burn pits, building 300 burn pits, oxidation lagoons, and battery disposal areas in FY95
- Complete cleanup activities at building 205 locomotive repair area
- Begin NPL delisting process in FY95
- Complete all cleanup by FY96, except treatment of groundwater contamination, which is expected to continue until FY01
- Complete and sign ROD for the installation-wide RI/FS in FY95
- Complete transfer of installation to city of Sacramento in FY95

CERFA CLEAN ACREAGE



Concurred CERFA Clean Acreage –	51
Proposed CERFA Clean Acreage –	51
Acreage Available for Transfer –	51 *
Total Acreage –	485

** Environmental Condition of Property Categories 1-4*

San Diego Naval Training Center

Size:	522 acres (522 acres excess)
Mission:	Provide recruit training for enlisted personnel and specialized training for officers and enlisted personnel
HRS Scoring:	N/A
IAG Status:	None
Contaminants:	Paint, pesticides, solvents, UXO, petroleum/oil/lubricants
Media Affected:	Soil
Funding to Date:	$5.5 million

San Diego, California

CLEANUP BACKGROUND

In July 1993, the BRAC Commission recommended closure of the installation, 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 546 total acreage, 164 acres will be available for transfer to the public. The installation is scheduled to close in 1999.

In FY86, the installation conducted an Initial Assessment Study (IAS) and identified seven sites with possible environmental concerns: four sites are being studied under the installation cleanup program and three sites are being studied under the Underground Storage Tank (UST) program.

In early FY92, a Site Inspection (SI) was completed, and in FY93, a Phase I investigation was completed for one of three sites investigated under the UST program. Site assessments were also performed for the other two UST sites in FY92.

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.

FY94 CLEANUP PROGRESS

The Restoration Advisory Board (RAB) and the BRAC Cleanup Team (BCT) were established. The RAB facilitates the flow of information between the community and the BCT. Thirty-four community interviews were conducted to update the CRP and address new community concerns.

A Preliminary Assessment (PA) was conducted at three sites, and a project to remove contaminated soil at one UST site was scheduled for late 1994. Site assessment at the UST sites is being conducted concurrently with soil excavation to save time and money.

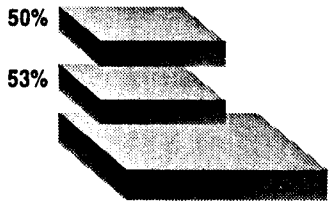
The Environmental Baseline Survey (EBS) identified 40 additional potential Areas of Concern where hazardous substances or petroleum products have been stored.

The BRAC Cleanup Plan (BCP) for the installation was also completed in mid-FY94. The BCP addresses the seven sites and 40 Areas of Concern in detail.

PLAN OF ACTION

- Complete revised EBS
- Update CRP
- Finish cleanup of four sites including excavation of petroleum-contaminated soil
- Complete site assessment and treatability study at one site
- Complete Expanded Site Inspection and Risk Assessment at one site

CERFA Clean Acreage



Concurred CERFA Clean Acreage –	TBD
Proposed CERFA Clean Acreage –	261
Acreage Available for Transfer –	277 *
Total Acreage –	522

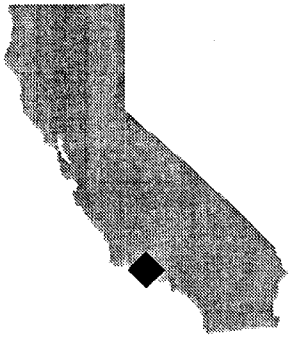
** Environmental Condition of Property Categories 1-4*

San Fernando Valley Areas 1 Through 4

NPL

(Air Force Plant No. 14)

Size:	240 acres (Air Force Plant No. 14 and Annex)
Mission:	Produce aircraft, including fabrication, and subassembly; conduct research and perform maintenance
HRS Score:	42.24; Placed on NPL in June 1986
IAG Status:	None
Contaminants:	VOCs, chlorinated solvents, metals, cyanide, PCBs, plating solutions, and total petroleum hydrocarbons
Media Affected:	Groundwater and soil
Funding to Date:	$.6 million



Burbank, California

CLEANUP BACKGROUND

The former Air Force Plant No. 14 is located in Area 1 of the San Fernando Valley Areas 1 Through 4 NPL Site. Beginning in 1947, the installation manufactured aircraft and performed operational activities that included aircraft research, manufacturing, and maintenance. By 1974, the Air Force had transferred ownership of the entire Air Force Plant No. 14 property to Lockheed Corporation.

Environmental studies ongoing since FY84 identified a site that includes a waste disposal area, Underground Storage Tanks (UST), former chip recovery area, clarifiers, sumps, and pipes. Primary contaminants released to groundwater and soil are trichloroethene (TCE) and perchloroethene (PCE).

Lockheed Corporation conducted a preliminary investigation and four phases of groundwater investigation at the former installation that identified PCE in groundwater and soil. In FY85 and FY87, two Site Inspections (SI) at the waste disposal area were completed that identified VOC-contaminated soil. In FY91, a Preliminary Assessment of the installation was conducted. Remedial Investigation and Feasibility Study (RI/FS) activities were initiated and are currently ongoing for all areas.

In FY90, a Removal Action at the waste disposal site consisted of excavating and removing more than 9,000 cubic yards of VOC-contaminated soil. A Removal Action at the former chip recovery area consisted of removing approximately 370 cubic yards of contaminated soil. The former chip recovery area consists of USTs, clarifiers, sumps, and pipes.

A Memorandum of Understanding was signed between Lockheed and DoD for evaluating all factors that may affect DoD being liable and responsible for the cost of cleanup at the former installation.

FY94 CLEANUP PROGRESS

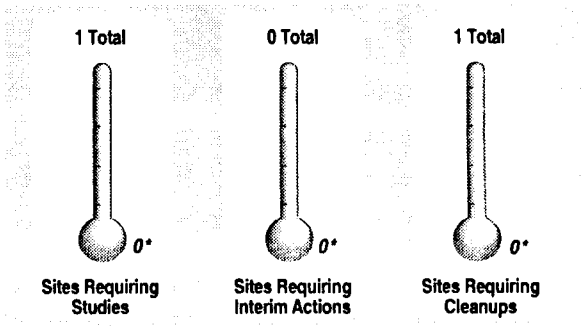
Lockheed continued to operate a groundwater treatment facility to treat contaminated groundwater and to prevent further migration of the contaminants off-base.

PLAN OF ACTION

- Conduct a title search for the property and identify Potentially Responsible Parties in FY95

Project Accomplishments

- Total Number of Sites = 1
- Estimated Date of Completion = 2000



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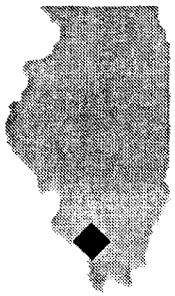
SANGAMO ELECTRIC DUMP

NPL

(CRAB ORCHARD NATIONAL WILDLIFE REFUGE)

Size:	43 acres
Mission:	Manufacture and load ordnance for shipment
HRS Score:	43.70; Placed on NPL in 1987
IAG Status:	IAG signed in September 1991
Contaminants:	Organic solvents, inorganic compounds, PAHs, munitions, heavy metals, and PCBs
Media Affected:	Groundwater and soil
Funding to Date:	$4.1 million



Carterville, Illinois

CLEANUP BACKGROUND

A Preliminary Assessment was completed in FY88 at the Sangamo Electric Dump, and 35 sites were identified and divided into 4 Operable Units (OU). OU1 is known as the PCB OU and is the responsibility of EPA and Sangamo Electric, Inc. The U.S. Fish and Wildlife Service is responsible for OU2 and OU4; DoD, represented by the Corps of Engineers, is responsible for OU3, known as the Explosive Munitions Manufacturing Area (EMMA).

A Remedial Investigation (RI) and Feasibility Study (FS) was completed for OU1 and OU2 in FY93. A Record of Decision (ROD) designating the cleanup alternative selected for OU2 was signed that same year.

FY94 CLEANUP PROGRESS

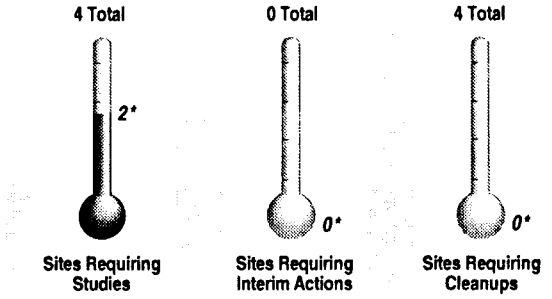
The ROD for OU1 is currently in the review process. OU3 has been divided into subparts, designated EMMA1 and EMMA2. The RI/FS activities for EMMA1 are nearly complete. The preliminary stages of a Site Inspection (SI) and preliminary RI are underway for EMMA2. OU4 is currently undergoing the RI process.

PLAN OF ACTION

- Submit a ROD for subpart EMMA1 of OU3 in FY95, and complete the SI and preliminary RI for subpart EMMA2 of OU3
- Complete the Remedial Action (RA) for OU2
- Initiate the RA for OU1

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 4
- Estimated Date of Completion = 2005



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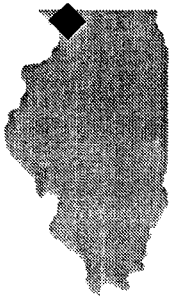
SAVANNA ARMY DEPOT ACTIVITY

NPL

Size:	13,062 acres
Mission:	Receive, store, and demilitarize ammunition; manufacture equipment-specific ammunition
HRS Score:	42.20; Placed on NPL in 1989
IAG Status:	IAG signed in 1989
Contaminants:	Explosives, metals, solvents, POL
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$31.5 million



Savanna, Illinois

CLEANUP BACKGROUND

The Savanna Army Depot Activity began its operations in 1917 as the Savanna Proving Grounds, where artillery pieces manufactured at the Rock Island Arsenal were proof fired. During the 1920s, the mission changed to storage, receipt, issue, demilitarization, and renovation of ammunition; however, such activities caused the release of contamination into the environment. One such activity, the ammunition washout plant, generated explosives-contaminated process water that was discharged to six unlined lagoons. Over the years, the explosives residues from the process water migrated into the lagoon soils, ultimately reaching the groundwater below. Release of contamination to the environment has also occurred at the landfills, open burning/open detonation (OB/OD) ground, fire training area, and ammunition load, assemble, and pack facilities.

A Preliminary Assessment and Site Inspection completed in FY79 identified 59 sites. A supplemental Remedial Investigation (RI) performed in FY89 identified an additional 13 sites. An RI and Feasibility Study (FS), which began in FY80, delineated the extent of explosives-contaminated groundwater, soil, and sediment at all sites, including the TNT washout lagoons.

In FY90, a Remedial Action (RA) began at the TNT washout lagoons to remove contaminated sediments, a major source of contamination. The cleanup called for incinerating the sediment, and in FY92, a Record of Decision (ROD) was signed approving the incineration of TNT-contaminated soil and sediment. In FY93, a trial burn was completed, and full-scale sediment removal, incineration, and ash processing operations got underway, all within three years of the initial RA.

In FY93, cleanup began for VOC-contaminated soil at the fire training area, calling for the use of low-temperature thermal treatment.

The IAG has allowed the installation to build partnerships with state and federal regulatory agencies. All parties have established common goals and worked together to make decisions up front. These efforts have resulted in accelerated cleanup by avoiding a drawn-out review and response process that delays environmental cleanup efforts.

FY94 CLEANUP PROGRESS

The Army completed its incineration cleanup project during this fiscal year. Over 77,000 tons of TNT-contaminated soil were treated at a total cost of approximately $16.2 million. Cleanup of the VOC-contaminated soil at the fire training site also continued. Design activities prior to the third RA project were initiated at the OB/OD grounds, which will include removal and treatment of explosives-contaminated debris, soil, and sediment.

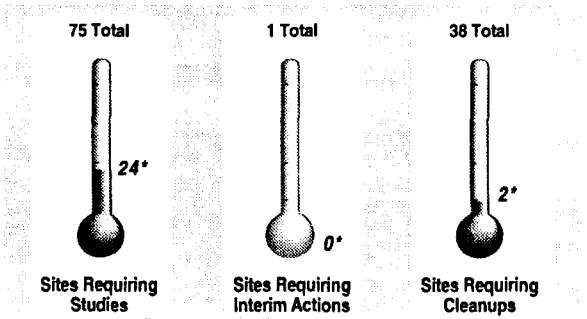
To promote the use of innovative technologies, the Army hosted an ultraviolet and oxidation (UV/Ox) groundwater treatment technology demonstration. Four UV/Ox commercial vendors operated their treatment systems. The systems will be evaluated in FY95 to determine their effectiveness and cost efficiency. The final analysis will be made available to all DoD installations in an effort to foster technology transfer and communication among the installations. The UV/Ox technology will ultimately be used to clean up explosives-contaminated groundwater.

PLAN OF ACTION

- Begin cleanup of explosives-contaminated groundwater, after selecting a UV/Ox treatment system in FY95; this effort, in conjunction with the completed sediment remediation, will have effectively addressed the primary source of contamination at the installation, the TNT washout lagoons
- Begin separation of ammunition demilitarization debris from contaminated soil and sediment at the OB/OD grounds in FY95
- Complete RI/FS activities in FY95 at sites where cleanups are anticipated
- Complete RCRA closure and cleanup at the deactivation furnace and an innovative bio-treatment soil cleanup at the CF- and CL-designated sites in FY96

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 75**
- **Estimated Date of Completion = 2035**

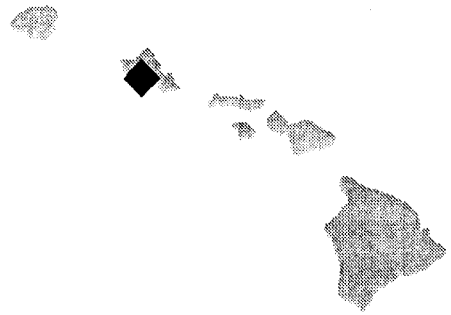


* Complete

SCHOFIELD BARRACKS

NPL

Size:	17,725 acres
Mission:	Conduct troop training and operations
HRS Score:	28.90; Placed on NPL in September 1990
IAG Status:	IAG signed in September 1991
Contaminants:	Organic solvents, petroleum/oil/lubricants; and heavy metals
Media Affected:	Groundwater and soil
Funding to Date:	$26.6 million



Oahu, Hawaii

CLEANUP BACKGROUND

Environmental studies ongoing at Schofield Barracks since FY83 identified 126 sites, with 49 requiring no further action. In FY85, trichloroethylene (TCE) was detected in on-site drinking water wells. As a result, Schofield Barracks installed an air stripper treatment system in FY86 to remove TCE from the drinking water.

In FY91, to expedite cleanup, all sites were separated into four Operable Units (OU): OU1 consists of suspected sources of trichloroethylene (TCE) contamination; OU2 consists of contaminated groundwater; OU3 consists of all other hazardous waste sites identified on the installation; and OU4 consists of the former Schofield Barracks Landfill.

A Preliminary Assessment and Site Inspection (PA/SI) was conducted in FY92 to scope the Remedial Investigation and Feasibility Study (RI/FS) efforts for OU1, 2, and 4. The installation proposed several initiatives designed to expedite and minimize costs associated with investigation. For OU2, they proposed limiting data collection to support a point-of-use treatment Remedial Action strategy. OU4 is being addressed in accordance with EPA generic remedy guidance on investigation of CERCLA municipal landfills. The guidance focuses data collection on determining an appropriate method of containment of landfill wastes and to determine if the landfill is an active source of groundwater contamination or a threat to human health or the environment. The OU3 program has been structured to minimize investigations and move quickly to soil cleanup where required.

OU1 RI investigations conducted in FY93 concluded that none of the sites require further investigation. OU3 PA/SI efforts conducted in FY93 screened a total of 106 sites and recommended no further action on 71 of those sites. Removal Actions also were completed at seven UST sites.

FY94 CLEANUP PROGRESS

OU2 Phase I RI investigations collected groundwater data from municipal and irrigation wells surrounding the installation to determine the extent of impacted wells. The investigations evaluated site hydrogeology to predict plume movement and potential receptors to support point-of-use treatment as the final remedy. The OU2 studies determined that no wells, other than the installation supply wells, have been impacted by TCE. Phase II OU2 RI work plans were developed and approved.

Sampling and Analysis Plans were developed and approved for OU3 for collection of limited data needed to screen sites for further action.

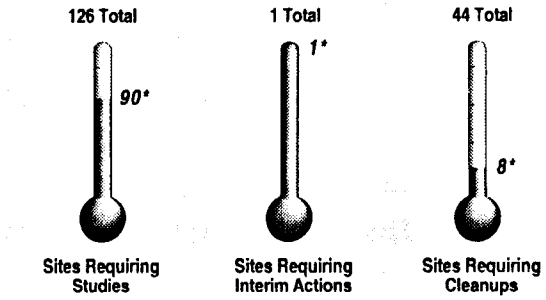
OU4 RI investigations concluded that the landfill is a continuing source of TCE and other contamination in the groundwater; however, groundwater flow direction eliminates the landfill as the TCE source affecting the installation supply wells. OU4 FS work plans were also developed and approved.

PLAN OF ACTION

- Complete no action Record of Decision (ROD) for OU1 in FY95
- Complete Phase II RI field investigations for OU2, including the final RI/FS report and Proposed Plan in FY95 and FY96; in FY97, the ROD will be signed, which will require Long-Term Monitoring of production wells and treatment of impacted wells
- Complete site screening sampling for OU3 sites in FY95; cleanup of OU3 sites will be conducted in FY96 and FY97; full source characterization will be completed concurrent with soil removals using a mobile lab for real-time analytical feedback
- Complete an Engineering Evaluation and Cost Analysis in FY95, for installation of an extraction well at the landfill to provide the source control groundwater treatment component of the generic remedy
- Construct the source control groundwater treatment system in FY96; submit Proposed Plan and ROD in FY96 for final landfill cap

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 126**
- **Estimated Date of Completion = 2020**



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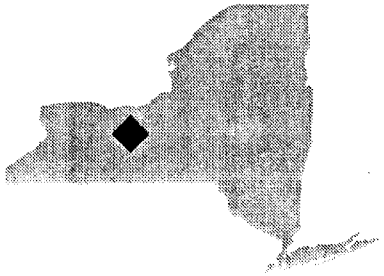
SENECA ARMY DEPOT

NPL

Size:	10,587 acres
Mission:	Receive, store, distribute, maintain, and demilitarize conventional ammunition, explosives, and special weapons
HRS Score:	35.52; Placed on NPL in 1990
IAG Status:	IAG signed in January 1993
Contaminants:	Chlorinated solvents, radioactive isotopes, heavy metals, and petroleum hydrocarbons
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$20.2 million



Romulus, New York

CLEANUP BACKGROUND

Seneca Army Depot serves as a primary east coast installation that distributes and stores munitions and supplies for the Army. Operations such as demilitarization and disposition of munitions and explosives have contributed to contamination at the installation.

The installation began environmental studies in FY78, and identified 72 Solid Waste Management Units (SWMU), including an open burning ground and an ash landfill. Other site types include landfills, radioactive waste burial grounds, Underground Storage Tanks (UST), spill areas, fire training areas, and munitions disposal areas.

The installation initiated several Interim Actions including the removal of USTs and contaminated soil. Remedial Investigation and Feasibility Study (RI/FS) activities ongoing since FY90 for the ash landfill and open burning ground were completed in FY93. As a result of the RI, groundwater was found to be contaminated with tri- and dichloroethylene.

In FY93, Site Inspections (SI) began at 27 SWMUs.

FY94 CLEANUP PROGRESS

Cleanup efforts focused on the ash landfill. Through negotiations with EPA and the state, a Decision Document approving the removal of contaminated soils and groundwater at the installation was signed. The installataion is using low-temperature thermal desorption to treat contaminated soil. The installation plans to use the treatment unit at another landfill, the fire training area, and four boilerhouse sites.

The state, EPA, and the installation reached agreement on the course of action for all 72 SWMUs. Sixteen sites are completed and an additional twenty-four sites will be completed following the development of mini-risk assessments. The remaining sites will continue through the normal RI/FS process.

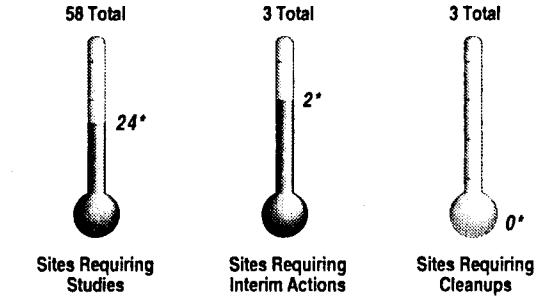
The installation also initiated the RCRA closure of a hazardous waste storage tank.

PLAN OF ACTION

- Submit for public comment the Proposed Plans for the ash landfill and the open burning ground in FY95
- Complete all remaining SIs in FY95 and FY96
- Begin RI/FS activities in FY95 at the radiation sites, deactivation furnaces, munitions washout facility and the old construction debris landfill; RI/FS work is expected to be completed in FY97
- Prepare two Decision Documents for Removal Actions in FY95
- Continue to negotiate cleanup actions with the regulatory agencies in FY95, and use a low temperature thermal desorption unit when appropriate to accelerate the cleanup process and reduce costs
- Establish Restoration Advisory Board to increase public involvement
- Complete no action ROD for 16 sites and no action ROD with risk assessments at 24 sites

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 58**
- **Estimated Date of Completion = 2031**



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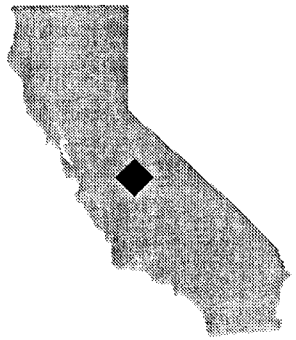
SHARPE SITE, DEFENSE DISTRIBUTION REGION WEST

NPL

(FORMERLY SHARPE ARMY DEPOT)

Size:	724 acres
Mission:	Receive, store, and distribute supplies, materials, and equipment
HRS Score:	42.24; Placed on NPL in July 1987
IAG Status:	IAG signed in March 1989
Contaminants:	VOCs, heavy metals, petroleum/oils/lubricants, and pesticides
Media Affected:	Groundwater and soil
Funding to Date:	$26.5 million



Lathrop, California

CLEANUP BACKGROUND

The former Sharpe Army Depot began operation in 1941 as a supply and maintenance center. Activities conducted at the installation include overhauls, repairs, paint stripping, metal finishing, painting, and degreasing. In FY83, Preliminary Assessment and Site Inspection (PA/SI) activities were completed, and a Remedial Investigation and Feasibility Study (RI/FS) was initiated. The PA/SI and RI/FS identified a total of 135 sites, including eight groundwater plumes and 127 soil or building sites.

The RI/FS for groundwater was completed in FY91, with a Record of Decision (ROD) signed in FY93. Between FY85 and FY93, 60 Underground Storage Tanks (UST) were removed, and 27 UST sites were found to require cleanup or further confirmatory sampling. In addition, 3,325 cubic yards of contaminated soil surrounding two UST sites was removed in FY93. Two RCRA-permitted hazardous waste storage facilities are also located at the installation.

Removal Actions conducted at four sites between FY86 and FY91 removed approximately 775 cubic yards of contaminated soil. Two interim groundwater air-stripping systems operated from FY87 to FY90 to treat and control the migration of the a tichloroethene (TCE) plume. Before FY93, 211 monitoring wells were installed to determine the extent of contamination and migration patterns.

FY94 CLEANUP PROGRESS

Corrective Actions were performed at 14 UST sites, and eight sites were closed. In-situ technologies such as soil venting are proposed to remediate the remaining sites. Approximately 4,000 cubic yards of contaminated soil was removed. Field work was also completed for the installation-wide RI/FS addressing soil contamination.

Following completion of an Engineering Evaluation and Cost Analysis and Removal Action Memorandum, the installation awarded a contract to clean up the Pesticide Mixing Area.

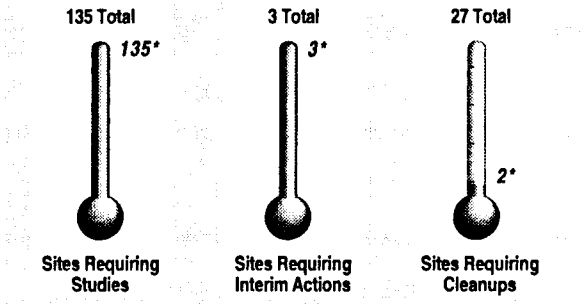
A contract was awarded to construct a third air stripper to treat the central plumes in accordance with the groundwater ROD. Five additional wells were added to the two interim systems. The effluent disposal methods include the use of injection wells, percolation ponds, and discharge by a National Pollutant Discharge Elimination System permit.

PLAN OF ACTION

- Initiate cleanup at the Pesticide Mixing Area in FY95
- Perform Corrective Actions at the remaining 10 UST sites requiring cleanup by FY96
- Operate in-situ pilot test equipment as interim TCE soil vapor extraction system
- Complete final installation-wide RI/FS addressing soil contamination, including receiving public comment and signing the ROD in FY95
- Perform Corrective Action at lead- and chromium-contaminated sites in FY96 and FY97
- Perform Corrective Action at TCE-contaminated sites from FY96 through FY01

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 135**
- **Estimated Date of Completion = 2015**



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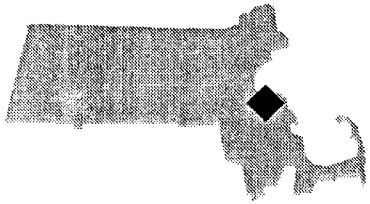
South Weymouth Naval Air Station

NPL

Size:	1,442 acres
Mission:	Provide administrative coordination and logistics support for Reserve Units; provide logistic support for the Marine Air Reserve Training Detachment South Weymouth
HRS Score:	50.00; Placed on NPL in May 1994
IAG Status:	None
Contaminants:	Petroleum hydrocarbons, solvents, acids, paints, metals, photographic chemicals, industrial wastes
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$2.3 million



Weymouth, Massachusetts

CLEANUP BACKGROUND

Eight CERCLA sites and one RCRA Underground Storage Tank (UST) site have been identified at South Weymouth Naval Air Station. The major sites include a landfill, a tank storage area, a tank farm where jet fuel is stored in five USTs, and a rubble disposal area.

In FY91, the installation removed the waste oil tank from the RCRA UST site, and completed an initial investigation for the site in FY93. The installation also removed several compressed chlorine gas cylinders and pesticide containers at an old sewage treatment plant, Site 7, in FY92. In FY93, the Navy conducted a second Removal Action at another site to remove contaminated soils and liquids.

In FY92, the Navy established the Technical Review Committee (TRC). The TRC provided a means for the Navy to work closely with regulatory agencies and community members to develop the cleanup strategy for the installation. The increased communication between the installation and the regulatory agencies has facilitated more rapid decision-making regarding the cleanup process. The Administrative Record and three Information Repositories also were established in FY92.

FY94 CLEANUP PROGRESS

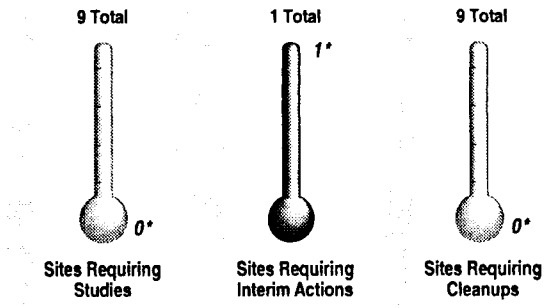
The installation began converting the TRC to a Restoration Advisory Board (RAB). The installation completed the draft work plan to conduct Remedial Investigations (RI) of the eight CERCLA sites.

PLAN OF ACTION

- Complete the Community Relations Plan, using input from the RAB, during FY95
- Complete the Corrective Action Plan and design for the UST site in FY95, and implement Corrective Measures for the site by FY98
- Complete the RI for eight sites during FY96, and sign Records of Decision for the same sites during FY96
- Complete Remedial Actions for all sites in FY99

Project Accomplishments

- Total Number of Sites = 9
- Estimated Date of Completion = 2003



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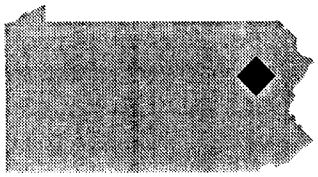
TOBYHANNA ARMY DEPOT

NPL

Size:	1,293 acres
Mission:	Provide logistics for communications and electronics equipment
HRS Score:	37.93; Placed on NPL in 1990
IAG Status:	IAG signed in September 1990
Contaminants:	Heavy metals and VOCs
Media Affected:	Groundwater, surface water/sediments, and soil
Funding to Date:	$9.7 million



Tobyhanna, Pennsylvania

CLEANUP BACKGROUND

Tobyhanna Army Depot began environmental studies in FY80. Previous environmental studies identified several sites including: landfills; a disposal pit; burn areas; drum staging areas; a surface disposal area; a waste treatment plant; a spill site area; a UXO area; and a fire training area. The most prominent sites include the burn area and the drum staging area, considered Operable Unit (OU) 1.

Contaminants and associated affected media at these sites include VOCs, solvents, and heavy metals in groundwater; solvents, heavy metals, PCBs, and petroleum/oil/lubricants (POL) in surface water and sediments; and solvents, heavy metals, PCBs, POLs, and UXO in soils.

The Army initiated several Interim Actions at the installation between FY87 and FY91. The installation provided bottled water to 26 residences and one business, and in FY91, the Army constructed a waterline extension from the installation to the affected residents. Since FY90, the Army has removed 17 Underground Storage Tanks (UST).

Remedial Investigation and Feasibility Study (RI/FS) activities have been ongoing since FY90. In FY92, RI field work was completed at OU1 and a Phase I RI began at 11 additional sites. Also in FY92, the installation completed a treatability study at OU1 using a soil volatilization technology.

Tobyhanna Army Depot personnel have worked closely with the regulatory agencies regarding cleanup activities since the signing of the Federal Facility Agreement in FY90.

FY94 CLEANUP PROGRESS

The installation submitted a Proposed Plan for OU1 for public comment. After the public comment period, the Army began preparing the Record of Decision (ROD).

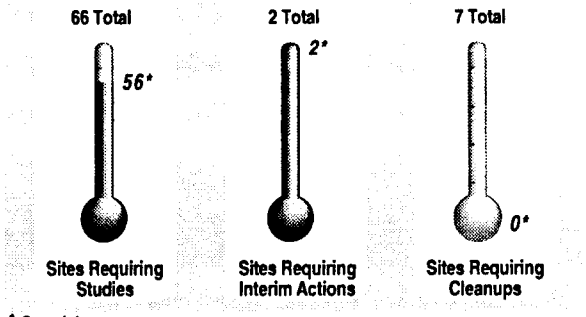
The installation initiated a base-wide Ecological Assessment, completed the Phase I RI field investigation at 11 sites, and submitted the draft technical report for regulatory review. A Removal Action also was performed at one of the 11 sites. The soil contained PCB contamination.

PLAN OF ACTION

- Convert Technical Review Committee to a Restoration Advisory Board in FY95 by soliciting membership from the community and scheduling initial meetings
- Complete base-wide Ecological Assessment; sites determined to potentially pose significant ecological risks will be further evaluated in an Ecological Risk Assessment to be conducted in FY95
- Complete OU1 ROD for cleanup of groundwater and soil containing solvents

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 66**
- **Estimated Date of Completion = 2024**



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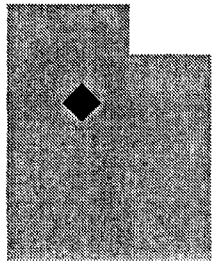
TOOELE ARMY DEPOT

(NORTH AREA)

Size:	24,732 acres (acres excess TBD)
Mission:	Store munitions; maintain equipment
HRS Score:	53.95; Placed on NPL in October 1990
IAG Status:	Federal Facility Agreement signed in September 1991
Contaminants:	Solvents, metals, explosives, petroleum hydrocarbons, and PCBs
Media Affected:	Groundwater and soil
Funding to Date:	$66.5 million



Tooele, Utah

CLEANUP BACKGROUND

Installation maintenance operations at Tooele Army Depot include vapor degreasing, paint stripping, metal parts cleaning, anodizing, electroplating, and sand blasting. These operations use and generate acids, caustics, solvents, oils, and heavy metals. Industrial wastewater and stormwater were collected in ditches and a lagoon. In FY88, the lagoon and ditches were closed and capped.

In July 1993, the BRAC Commission recommended realignment of Tooele Army Depot by reducing it to a depot activity and placing it under the command and control of Red River Army Depot. The BRAC Commission also recommended retainment of the Conventional Ammunition Storage and the Chemical Demilitarization Mission.

Environmental studies have been ongoing since FY79. Sites identified through previous studies include: open burning/open detonation (OB/OD) areas; an ammunition demilitarization facility; landfills; firing ranges; industrial sites; Underground Storage Tanks (UST); surface impoundments and lagoons; and drain fields. Organic solvents are the prominent contaminants affecting groundwater.

The installation completed construction of an industrial wastewater collection system and treatment facility in FY88, removal of PCB-contaminated soil in the mid 1980s, cleanup of degreaser unit residue sludge, and soil and debris removal. In FY93, a groundwater extraction and treatment system using an airstripper began operation. The installation completed an Interim Remedial Action (IRA) at the Tire Disposal site in FY93.

The Technical Review Committee serves to expedite information exchange and support consensus decision-making, and helps to maintain good working relationships between the installation and federal, state, and local regulatory agencies and the general public.

FY94 CLEANUP PROGRESS

The Restoration Advisory Board (RAB) was formed and initial efforts focused on training and familiarizing the RAB members with the details of the cleanup program. Three public informational meetings were held before formation of the RAB. The first working RAB meeting was held in late FY94.

Another example of the partnering of Army and regulatory agency personnel is the participation of the TRC and RAB members with several state committees addressing issues such as solvent use reduction and OB/OD activities. A team of installation, Army, EPA and state representatives interviewed 25 individuals representing different segments of the communities surrounding the installation, as a prelude to updating the Community Relations Plan.

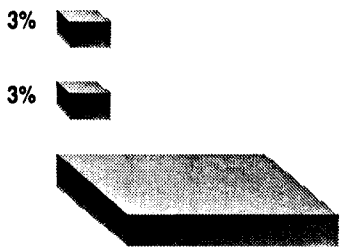
Interim Actions conducted at the installation include the closure and removal of 13 USTs. The installation completed Remedial Investigation and Feasibility Study (RI/FS) activities and submitted a Record of Decision for four Operable Units. The installation began RI activities at new BRAC sites and an enhanced Preliminary Assessment was completed, and an additional seven sites were identified.

A final CERFA report was completed and submitted for regulatory agency review.

PLAN OF ACTION

- Complete a draft reuse plan for the installation property to be transferred.
- Complete realignment of installation by FY97
- Continue RI activities at new BRAC sites in FY95
- Initiate and complete Remedial Design activities for two sites in mid-FY95
- Initiate and complete RA activities for two sites in early FY96

CERFA CLEAN ACREAGE



Concurred CERFA Clean Acreage –	TBD
Proposed CERFA Clean Acreage –	716
Acreage Available for Transfer –	716 *
Total Acreage –	24,732

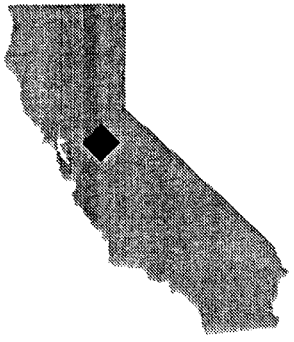
** Environmental Condition of Property Categories 1-4*

TRACY SITE, DEFENSE DISTRIBUTION REGION WEST

NPL

(FORMERLY TRACY DEFENSE DEPOT)

Size:	908 acres
Mission:	Store and distribute medical, textile, food, electronic, industrial, construction, chemical, and other supplies and equipment
HRS Score:	37.16; Placed on NPL in 1990
IAG Status:	Federal Facility Agreement signed in 1991
Contaminants:	Chlorinated solvents, heavy metals, pesticides, petroleum/oil/lubricants, and VOCs
Media Affected:	Groundwater and soil
Funding to Date:	$35 million



Tracy, California

CLEANUP BACKGROUND

The Tracy Defense Depot was placed on the NPL in FY90 because of groundwater and soil contamination resulting from material storage. The shallow aquifer both on and off the installation property is contaminated. Environmental studies began in FY80 and identified 65 sites. The primary site types include Underground Storage Tanks (UST), burn and disposal pits, maintenance facilities, and hazardous waste storage sites.

In FY86, the installation initiated Remedial Investigation and Feasibility Study (RI/FS) activities at the sites. A base-wide RI/FS to determine the nature and extent of contamination on the installation property was initiated in FY91. In FY90 and FY91, a RCRA Facility Assessment identified 32 Solid Waste Management Units (SWMU).

Detection of VOCs in groundwater wells triggered Interim Actions. In FY92, the installation provided bottled water to two nearby residences. The installation also completed the following: installation of an air stripper to remove the VOC contaminants from groundwater; and installation of five groundwater extraction wells, three injection wells, and 10 additional monitoring wells. In FY93, 20 monitoring wells were added to the system, and the air stripper was upgraded.

In FY92 and FY93, the installation removed two USTs and a total of 1,050 cubic yards of contaminated soil.

In FY93, a Record of Decision was signed ahead of schedule for groundwater cleanup. The installation purchased adjacent property, serving as the location for the cleanup equipment.

FY94 CLEANUP PROGRESS

The base-wide RI/FS initiated in FY91 continued through FY94. The installation developed an Engineering Evaluation and Cost Analysis to address two SWMUs.

An Interim Remedial Action to further control migration of groundwater contamination involved installing infiltration galleries and a chimney drain to dispose of the treated water from the air stripper. The use of the infiltration galleries and chimney drains is an innovative approach intended to cut project installation, operation, and maintenance costs.

The installation implemented a well monitoring system using low-flow sampling pumps as a demonstration project. If adequate results are obtained, an expanded system is expected to provide a substantial savings to the government.

The installation improved site characterization by using geophysical monitoring techniques such as ground penetrating radar, infrared survey, transient electromagnetics, and the hydropunch and cone penetrometer.

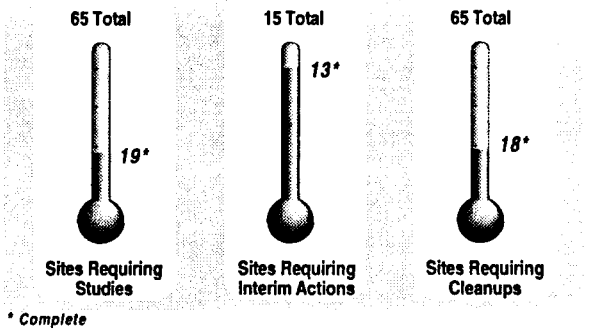
A carbon filter water treatment system was also installed, and a maintenance contract awarded for a private residence water system for those affected by activities at the installation.

PLAN OF ACTION

- Conduct partnering meeting with new contractor and various regulatory agencies and personnel
- Award long-term contract to one contractor for Defense Distribution Region West Sharpe and Tracy facilities
- Finalize ROD for base-wide RI/FS in FY96

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 65
- Estimated Date of Completion = 2015



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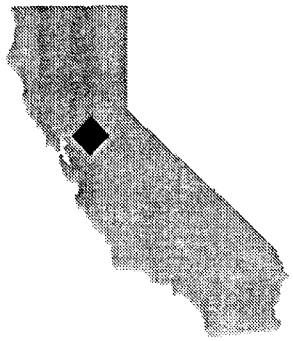
TRAVIS AIR FORCE BASE

NPL

Size:	5,025 acres
Mission:	Provide strategic airlift services for troops, cargo, and equipment
HRS Score:	29.49; Placed on NPL in 1989
IAG Status:	Federal Facility Agreement signed in September 1990 and amended in May 1993
Contaminants:	VOCs, heavy metals, and PAHs
Media Affected:	Groundwater, surface water/sediments, and soils
Funding to Date:	$31.6 million



Solano County, California

CLEANUP BACKGROUND

Travis Air Force Base has supported Air Force operations since 1943 by providing airlift services for troops, cargo, and equipment. Past base activities have resulted in numerous releases of fuels, solvents, and petroleum/oils/lubricants (POL) that have migrated to groundwater beneath the installation. Since FY85, investigative activities have delineated 27 sites, including old landfills, a closed sewage treatment plant, four fire training areas, disposal pits, spill areas, and the storm sewage drainage system. Contaminants identified in groundwater include VOCs and heavy metals. Sources of the groundwater contamination include former landfills, fire training areas, solvent cleaning, vehicle maintenance, and fuel spills. Heavy metals and PAHs have been detected in surface water, storm sewer sediments, and Union Creek.

The entire base was divided into four Operable Units (OU) in FY93: North OU, East Industrial OU, West Industrial OU, and the West Annexes and Basewide OU. Delivery deadlines for draft documents were established for each OU.

Several Interim Actions have been implemented at the installation. For example, 27 Underground Storage Tanks (UST) were removed in FY86. A granular activated carbon treatment system also was installed to control releases of trichloroethene (TCE) to storm sewers that discharge to Union Creek. This Interim Action was necessary because sediments in Union Creek showed elevated levels of TCE and heavy metals.

FY94 CLEANUP PROGRESS

Remedial Investigation and Feasibility Study (RI/FS) activities continued throughout the year. Action Memoranda, Engineering Evaluations and Cost Analyses, and project designs were developed for two groundwater treatment plants scheduled for operation in FY95. The treatment plants are intended to address TCE contamination in groundwater at the installation. Two treatability studies were conducted at other locations where soil and groundwater are contaminated with TCE.

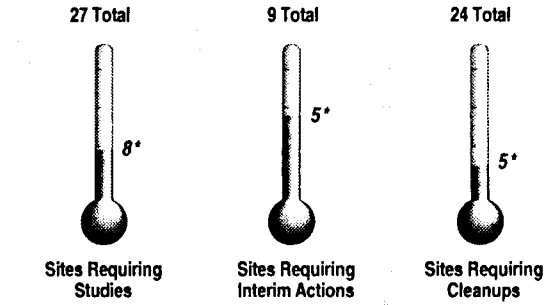
An Interim Remedial Action (IRA) for a groundwater extraction and treatment was initiated that consisted of installing horizontal wells. Another IRA consists of the innovative technology, bioslurping. A pilot study was conducted for bioslurping which pulls free product fuel from the groundwater that allows air to migrate through the soil for bioremediation of the soil. If soil cleanup levels are not met by using bioslurping, the installation will excavate the fuel-contaminated soil and landfarm it.

PLAN OF ACTION

- Complete RI activities at 2 OUs in FY95
- Bring two treatment systems on-line to address TCE-contaminated groundwater
- Continue bioslurping of contaminated free product, fuel, groundwater, and soil
- Complete installation of the groundwater extraction and treatment system for TCE-contaminated groundwater
- Form a committee to review Restoration Advisory Board (RAB) membership applications; the first RAB meeting is scheduled to be held early in FY95

PROJECT ACCOMPLISHMENTS

- Total Number of Sites = 27
- Estimated Date of Completion = 2005



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TREASURE ISLAND NAVAL STATION

Size	1,080 acres (1,080 acres excess)
Mission:	Provide services and materials to support units of operating forces and designated shore activities
HRS Score:	N/A
IAG Status:	Federal Facility Site Remediation Agreement signed in September 1992
Contaminants:	Petroleum hydrocarbons, VOCs, semi-VOCs, chlorinated solvents, metals, pesticides, and PCBs
Media Affected:	Groundwater and soil
Funding to Date:	$4.6 million

Treasure Island, California

CLEANUP BACKGROUND

In July 1993, the BRAC Commission recommended closure of Treasure Island Naval Station. The BRAC Commission also recommended relocating the Naval Reserve Center to Alameda, California, and the Naval Technical Training Center to Great Lakes, Illinois, and Little Creek, Virginia. Following closure, which is scheduled for September 1997, Treasure Island will be available, pending cleanup, for redevelopment and transfer to the community.

Sites identified by environmental investigations include a former fire training area, a landfill, a former dry cleaning facility, an old bunker area, fuel farms and a service station. The installation began Remedial Investigation and Feasibility Study (RI/FS) activities in FY93 and is currently planning Phase II RI/FS activities, an Ecological Risk Assessment, and a Baseline Human Health Risk Assessment.

Of 73 Underground Storage Tanks (UST) identified at Treasure Island, 30 have been removed, and three have been closed in place.

FY94 CLEANUP PROGRESS

The BRAC Cleanup Team (BCT) was established in early FY94. The BCT has worked closely with the project team to expedite cleanup and to implement cost saving measures. The BCT has agreed that the draft Phase I RI report should be completed following Phase II field activities. This approach will allow both phases of field activities to be included in a draft RI report. The BCT has expedited document review by meeting throughout the preparation of documents to discuss and resolve issues.

The installation formed the Restoration Advisory Board (RAB), and members represent a diverse cross-section of the community, including members of various San Francisco Bay Area communities, local organizations, and environmental groups. The RAB meets monthly, with special metings scheduled to facilitate comments on documents RAB members are reviewing. The BCT has presented workshops on CERCLA and the cleanup process, and it has conducted tours of the installation for community RAB members.

The installation completed the draft Environmental Baseline Survey (EBS) in May, which is expected to be finalized in FY95. The installation expects to designate nine parcels as CERFA clean. The installation completed the BRAC Cleanup Plan (BCP) in March.

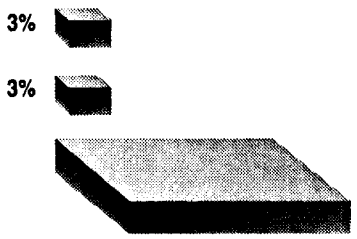
The installation began the Phase II Ecological Risk Assessment, quarterly groundwater monitoring, a tidal influence study, and aquifer testing. The installation also completed the draft initial screening of technologies for the FS. Bioremediation of soil and ultraviolet oxidation of groundwater were recommended as the most appropriate treatment technologies.

The installation is currently developing a standard format no action Decision Document that will be used at sites that require no action. The installation hopes this approach will reduce document development and review for future no action sites.

PLAN OF ACTION

- Complete Engineering Evaluation and Cost Analyses to select Removal Actions at six sites
- Conduct treatability studies for bioremediation of soil and ultraviolet oxidation of groundwater
- Prepare standard format Interim Remedial Action documentation for petroleum-contaminated sites
- Complete removal of silver-contaminated soil at one site and remove free product at one site during FY95
- Investigate and remove the remaining USTs and fuel lines by FY96
- Complete Phase II EBS in FY95
- Prepare Finding of Suitability to Lease for two buildings during FY95

CERFA CLEAN ACREAGE

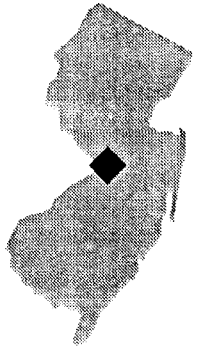


Concurred CERFA Clean Acreage –	TBD
Proposed CERFA Clean Acreage –	32
Acreage Available for Transfer –	32 *
Total Acreage –	1,080

** Environmental Condition of Property Categories 1-4*

TRENTON NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION

Size:	66 acres (66 acres excess)
Mission:	Test engine systems and components
HRS Score:	N/A
IAG Status:	None
Contaminants:	Trichloroethene, ethylene glycol, freon, fuels, and solvents
Media Affected:	Groundwater and soil
Funding To Date:	$5.8 million



Trenton, New Jersey

CLEANUP BACKGROUND

In July 1993, the BRAC Commission recommended the closure of the Trenton Naval Air Warfare Center Aircraft Division. After closure, the installation's operations will be relocated to the Arnold Engineering Development Center in Tullahoma, Tennessee, and the Naval Air Warfare Center in Patuxent River, Maryland. The installation's mission is to test small and large engines. In order to perform the aircraft engine tests, various fuels are used to run the engines, and trichloroethene, ethylene glycol, and freon are utilized for cooling the air entering the engines. Fuel and solvent residues have been detected in the groundwater and soil at the installation.

A Restoration Advisory Board (RAB) was formed in FY93 and consists of representatives from the Navy, EPA, state, and community.

FY94 CLEANUP PROGRESS

Community outreach efforts were expanded with the formation of the BRAC Cleanup Team (BCT). The BCT prepared a BRAC Cleanup Plan (BCP) to identify opportunities for streamlining and accelerating the cleanup process and facilitating community involvement. The BCT has also developed a partnering agreement that establishes a series of goals for meaningful community involvement in the cleanup process.

The RAB's first meeting was held in FY94 and was open to the public. RAB meetings were held bimonthly with community activities to ensure effective communication between the BCT, RAB, and the installation reuse committee members. Reuse committee members provided input on the Environmental Baseline Survey (EBS), were apprised of cleanup activities and the plans for future uses of installation property, and received copies of RAB meeting minutes.

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, and the EBS for the parcels was completed. One area covering approximately ten acres has been identified as CERFA clean.

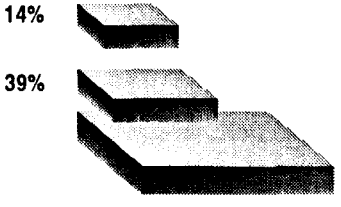
The installation achieved several key milestones during the fiscal year. A draft Remedial Investigation report was completed early in the year. An Interim Remedial Action (IRA) plan was conducted for the installation of an on-site groundwater treatment facility to treat solvent residues in groundwater and to prevent contaminant migration. The groundwater treatment facility operation began in December and is expected to continue for up to two years.

In November, a Removal Action was conducted to remove contaminated sludge at one site.

PLAN OF ACTION

- Complete Phase II of the EBS in FY95
- Complete Community Reuse Plan and Environmental Impact Statement in FY96
- Sign partnering agreement between state and federal regulatory agencies and members of BCT
- Begin operation of groundwater treatment facility in FY95
- Close sites that were recommended for no further action
- Complete Removal Action of contaminated sludge
- Eliminate contamination in the stormwater system
- Close the installation in FY98

CERFA CLEAN ACREAGE



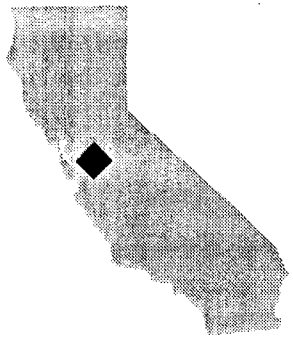
Concurred CERFA Clean Acreage –	TBD
Proposed CERFA Clean Acreage –	9
Acreage Available for Transfer –	26 *
Total Acreage –	66

** Environmental Condition of Property Categories 1-4*

RIVERBANK ARMY AMMUNITION PLANT

NPL

Size:	172 acres
Mission:	Manufacture grenades, projectiles, and steel cartridge casings
HRS Score:	63.94; Placed on NPL in January 1990
IAG Status:	IAG signed in April 1990
Contaminants:	Chromium, cyanide, and zinc
Media Affected:	Groundwater and soil
Funding to Date:	$22.7 million



Riverbank, California

CLEANUP BACKGROUND

In 1942, the Army constructed what is now the Riverbank Army Ammunition Plant as an aluminum reduction plant to supply military requirements. Since 1951, the installation has been used to manufacture steel cartridge cases for the Army and the Navy. Other manufactured products include grenades and projectiles that are shipped to other ammunition plants for loading operations.

In FY85, chromium was detected in drinking water wells at residences located west of the installation. As an Interim Action, the installation began a quarterly groundwater monitoring program. Five contaminated drinking water wells were replaced with deeper drinking water wells. Currently, the installation monitors 70 private wells semiannually.

In FY85, a Preliminary Assessment and Site Inspection identified the following three sites: the Industrial Wastewater Treatment Plant, an abandoned landfill, and four evaporation and percolation ponds located north of the plant near the Stanislaus River. Chromium, cyanide, and zinc are the primary contaminants affecting groundwater and soil.

In FY90, the installation executed an Interim Action by constructing a groundwater extraction and treatment system. The Army also constructed a water distribution system for 70 nearby residences in FY92.

In FY93, the regulatory agencies approved the final Remedial Investigation (RI) and Feasibility Study (FS) reports. The Army also presented the Proposed Plan to the public for review in FY93. The plan recommends: (1) expanding the groundwater extraction and treatment system to provide complete capture of the contaminated groundwater plume; and (2) placing a final cap over the abandoned landfill.

The installation formed a Technical Review Committee (TRC) consisting of representatives of the Army, EPA, and the state regulatory agencies. The TRC holds monthly meetings to discuss outstanding issues. The TRC also developed a concurrent document preparation and review process to accelerate cleanup progress. This process allowed Army, EPA, and the state regulatory agency personnel to review the draft FS report while the Army began work on the Record of Decision (ROD).

FY94 CLEANUP PROGRESS

The installation completed a Removal Action at the four evaporation ponds. The action consisted of excavating and disposing of 950 cubic yards of contaminated sediments. The evaporation ponds require no further action.

In late March, the regulatory agencies approved the installation-wide ROD. The installation began the designs of the landfill cap and the expansion of the groundwater extraction and treatment system in the third quarter of FY94. The ROD specified the following: (1) the landfill be capped with a clay cap; and (2) that the groundwater extraction and treatment system be expanded to include off-base wells with a total pumping capacity to fully capture and contain groundwater plumes.

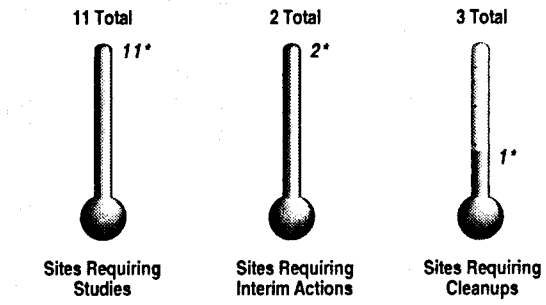
The TRC continued meeting throughout the year to review landfill and groundwater extraction and treatment system expansion designs.

PLAN OF ACTION

- Complete landfill cap in FY95 and begin Long-Term Monitoring (LTM)
- Complete design for the groundwater treatment system expansion in FY95
- Complete expansion of groundwater extraction and treatment system in FY96; conduct LTM throughout cleanup activities

PROJECT ACCOMPLISHMENTS

- **Total Number of Sites = 11**
- **Estimated Date of Completion = 2016**



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