

Secretary of Defense Environmental Security Awards (FY 2003)

Name of Installation: Marine Corps Air Station, Cherry Point

Award category: Environmental Restoration - Installation

Nominee and POC:

George W. Radford

Environmental Affairs Department LN

C/O Commanding General

Marine Corps Air Station

PSC 8006

Cherry Point, North Carolina 28533-0006

radfordgw@cherrypoint.usmc.mil

COM (252) 466-4599

DSN 582-4599

FAX (252) 466-2000

Financial POC:

Gwindy Stewart

Comptroller's Office

C/O Commanding General

Marine Corps Air Station

PSC Box 8006

Cherry Point, North Carolina 28533

stewartgf@cherrypoint.usmc.mil

COM (252) 466-4336

DSN 582-4336

FAX (252) 466-2880

Abstract:

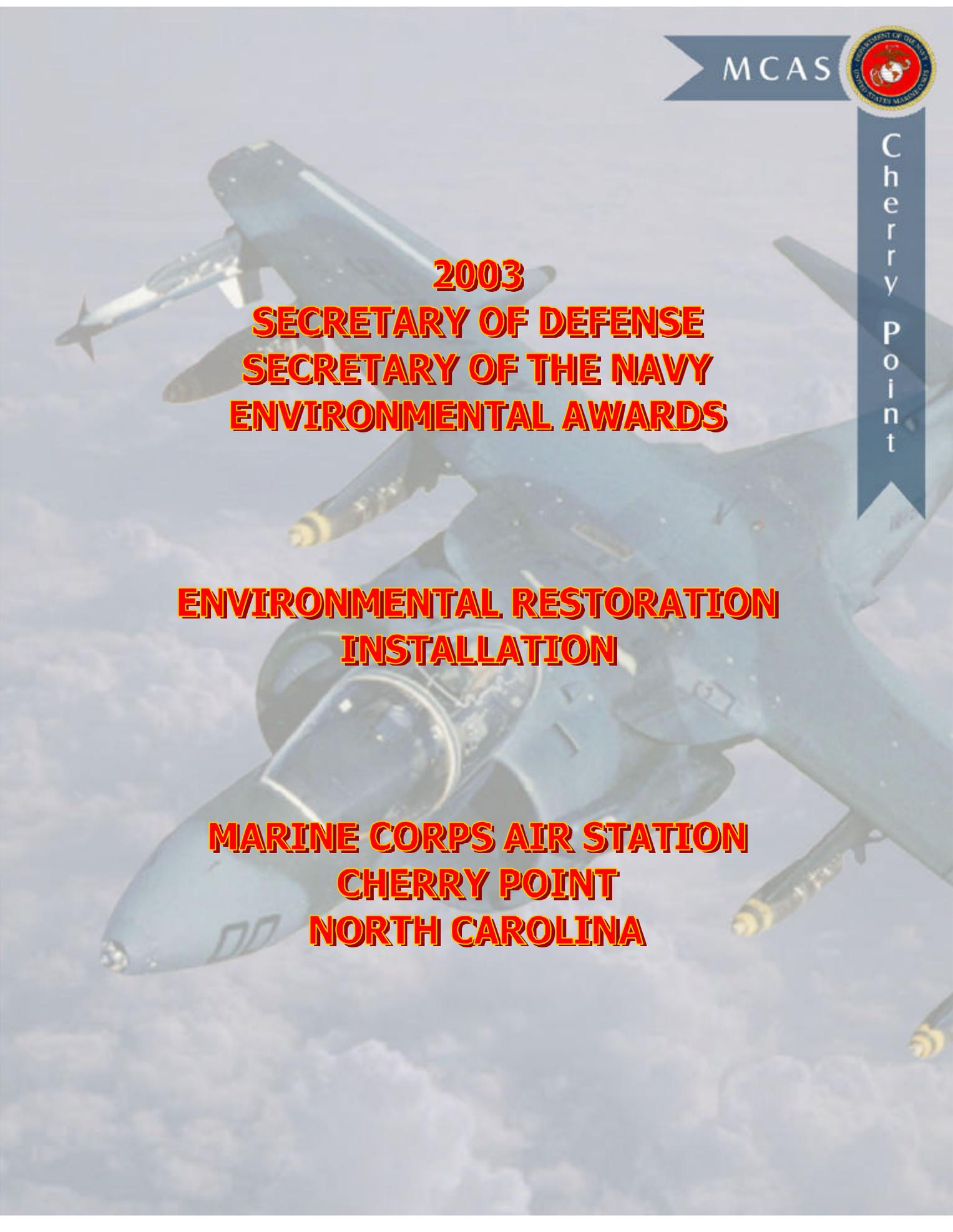
Marine Corps Air Station Cherry Point has embraced innovative and effective partnering, site management, investigation, and cleanup techniques to create a program that protects human health and the environment, supports the installation, and promotes efficient and cost effective site closure. Cherry Point's commitment to protecting human health resulted in recent multi-program initiatives that led to a USEPA determination that the interim and final remedies currently in place are protecting the health of the Air Station's residents, workers, visitors, and neighbors. The Cherry Point restoration team actively seeks innovative ways to transfer successful ideas from one program area to another. One such initiative led to highly successful aspects of the Underground Storage Tank Cleanup Program being applied to Cherry Point's other cleanup efforts and resulted in a significant improvement in regulatory cooperation; cooperation that was manifested as a remarkable increase in document completions, site closures, and cost reductions. The cleanup team also spearheaded efforts to implement a recovered fuel/used oil-blending program that will support the Air Station by eliminating over \$200,000 annually in virgin boiler fuel acquisition costs. Other initiatives supported the local community by dramatically increasing small and disadvantaged business participation and improving the public's access to restoration program information.



MCAS



C
h
e
r
r
y
P
o
i
n
t



**2003
SECRETARY OF DEFENSE
SECRETARY OF THE NAVY
ENVIRONMENTAL AWARDS**

**ENVIRONMENTAL RESTORATION
INSTALLATION**

**MARINE CORPS AIR STATION
CHERRY POINT
NORTH CAROLINA**



INTRODUCTION

Commissioned in 1942, MCAS Cherry Point and Naval Aviation Depot (NAVAVNDEPOT) have served the country for more than half a century. Home to 8,000 Marines and sailors, 19,200 dependants, and 5,700 civilian employees, Cherry Point is the Marine Corps' largest air station. With over 3,700 employees, NAVAVNDEPOT, Cherry Point, is also the single largest industrial facility in Eastern North Carolina.

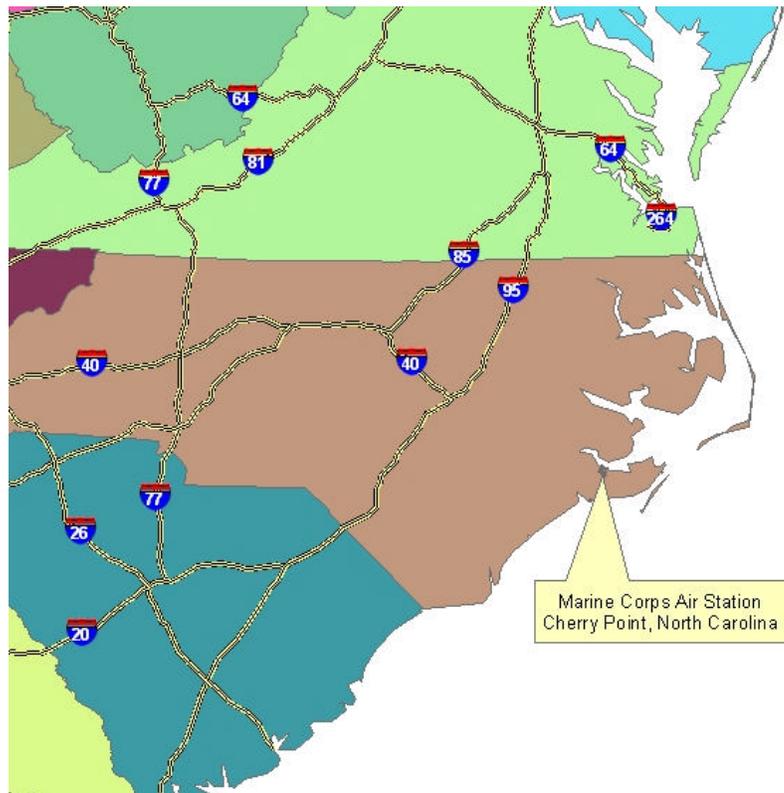
As its primary mission, MCAS Cherry Point operates facilities and provides services in support of three major tenant commands, the 2nd Marine Aircraft Wing (2d MAW), NAVAVNDEPOT, and the Naval Hospital. The 2d MAW operates both flying and ground support assets at Cherry Point. These include an air traffic control group, a low altitude air defense group, three AV-8B Harrier II squadrons, four EA-6B Prowler squadrons, one KC-130 Hercules refueling squadron, and the Marine Corps' only Harrier and Hercules training squadrons. The Naval Aviation Depot provides full service repair, rework, and support capabilities to fleet aircraft. In addition to providing ground support services and facilities, the Air Station also operates a squadron of HH-46D search and rescue (SAR) helicopters, C-9 and C-12 fixed wing aircraft, and the vitally important BT-9 and BT-11 air-to-ground target range complexes and the Mid-Atlantic Electronic Warfare Range. In addition to supporting the 2d MAW training mission, the Air Station's SAR aircraft provide a vital and visible presence in the local community by supporting fire fighting, medical evacuation, and the 5th Coast Guard District and U.S. Air Force SAR missions.

Cherry Point covers 11,717 acres with an additional 15,980 acres in outlying support areas. The uplands consist

generally of pine flatwoods along with various habitats that support numerous species of plants and animals, including white-tailed deer, wild turkey, and endangered species such as the American alligator, spring goldenrod and bald eagle.

MCAS Cherry Point is surrounded on three sides by the environmentally sensitive waters of Slocum Creek, Hancock Creek, and the Neuse River. As well as offering recreational opportunities for Air Station residents and the local community, this estuarine environment serves as habitat for many species of migratory birds and as a nursery for coastal shore birds and marine life.

With only 135,000 people living in the surrounding Carteret, Craven, and Pamlico counties, the area retains a rural character. However, encroachment and demographic changes from significant population growth - particularly along the Atlantic Ocean beaches of Carteret County - bring





increasing challenges for both environmental and operations staff and highlight the need for innovative thinking and active communication with the surrounding communities.

BACKGROUND

Environmental Cleanup Challenges

The environmental restoration challenges faced by Cherry Point's cleanup team stem primarily from past activities at the industrial center of the Air Station, including the NAVAVNDEPOT. Poor practices related to the handling and disposal of industrial chemicals, wastes, and fuels over the years have resulted in several extensive contaminant plumes and numerous smaller waste disposal units.

Several of the Air Station's cleanup sites are extremely large and complex. The central industrial area alone includes a large grouping of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Program sites designated as Operable Unit 1 (OU1), several petroleum sites being addressed under the Air Station's Underground Storage Tank (UST) Program, as well as several Solid Waste Management Units (SWMUs) that are being addressed under the Resource Conservation and Recovery Act (RCRA) SWMU Management Program. Operable Unit 1 alone encompasses over 500 acres and contains more than 100 potential contaminant source areas and multiple commingled contaminant plumes.

MCAS Cherry Point's hydro-geological, industrial, and ecological settings create unique resource protection and human health concerns. The Air Station and several nearby municipalities rely on the groundwater underlying the facility for their drinking water supplies. Numerous construction and maintenance projects are implemented each year in the central industrial area alone. Each of these projects must be closely

CHALLENGES

1. *Remediating Large, Complex Sites*
2. *Addressing Unique Resource Protection and Human Health Concerns*
3. *Integrating Varied Regulations, Organizations, and Their Philosophies*
4. *Reestablishing an Atmosphere of Open Communication and Trust Following Numerous Personnel Changes*

tracked to ensure that contractors are advised of the presence of contamination and that worker exposure is minimized. In addition, MCAS Cherry Point and its outlying fields are located in the environmentally sensitive coastal plain of North Carolina. The surrounding estuarine environment is vitally important to the local commercial fishing industry. Thorough planning and effective implementation of remedial projects is critical to ensure protection of wetlands, surface water bodies, groundwater aquifers, drinking water wells, and other sensitive receptors.

The MCAS Cherry Point restoration team is also faced with unique challenges relating to integration of various regulatory programs and organizations. The MCAS Cherry Point Environmental Affairs Department (EAD) is responsible for restoration and compliance efforts on three outlying airfields that are located in two different North Carolina counties (in addition to Cherry Point's home county) and are monitored by different regional offices of the North Carolina Department of Environment and Natural Resources (NCDENR). MCAS Cherry Point has the distinction of being the only DoD facility on the CERCLA National Priorities List that is also subject to a RCRA 3008(h) Administrative Order. This means that the restoration process must integrate the regulatory requirements of RCRA, CERCLA, and the State of North Carolina's various responsible agencies.



Possibly our greatest challenge, and our greatest success, has been in reestablishing an atmosphere of open communication and trust between the regulatory community and the facility's restoration team. During 2000 and 2001, the Air Station's CERCLA and RCRA cleanup programs suffered slow progress following numerous staffing changes in both the Air Station's restoration team and the regulatory community.

Environmental Cleanup Program

The Installation Restoration (IR) Section of EAD is staffed with two environmental engineers, two environmental scientists and one chemist. Management responsibilities for individual sites are assigned according to the site's primary regulating program: CERCLA, RCRA, or UST.

Managers are empowered to pursue open dialogue with State and federal regulatory agencies to solve technical, political, and regulatory issues. To effectively integrate the various regulatory programs and ensure that consistent standards are developed and applied, a teaming approach has been adopted. The IR staff therefore works closely together to share ideas and prioritize sites based on regulatory requirements and funding availability. Major cross program issues (such as management of contaminated soils during construction projects) are assigned to a single program manager to ensure that everyone's input is obtained and consistent policies are applied.

With the military activation of two of the restoration staff in support of Operation Iraqi Freedom, remaining program managers all pitched in to ensure that those programs were not adversely affected and continuing progress was achieved.

Community Outreach Programs

The success of MCAS Cherry Point's community outreach program is evident in the outstanding relationship that the Air Station enjoys with the surrounding community. The Air Station has made great efforts to ensure that the community is well informed of cleanup processes and decisions. These efforts include:

- holding quarterly public meetings of the Cherry Point Restoration Advisory Board (RAB);
- recruiting additional RAB community members;
- providing technical site tours to RAB members and the public;
- upgrading and maintaining extensive information repositories at two local libraries;
- publishing a Restoration Advisory Board newsletter; and
- developing a sophisticated community-

Visit the MCAS Cherry Point Installation Restoration Program web site at:

www.lantops-ir.org/cherrypoint

centered section for the Air Station's IR program web site.

In addition to these ongoing programs, the Cherry Point team is completing a major update and transformation of the Installation Restoration Program's Community Relations Plan (CRP) to a Community Involvement Plan (CIP) and has completed an update of the administrative record along with a significant upgrade of the two local document repositories. When complete, the CIP will include detailed information on electronic resources available to those seeking information on restoration activities and will integrate with searchable electronic access to Cherry Point's updated administrative record provided at two local libraries and via the restoration program web



site.

The net effect of these programs is that the surrounding communities believe Cherry Point to be a good neighbor that will look out for their interests and “do the right thing” for the taxpayer, the community, and the environment. The Air Station’s community outreach efforts have been so effective, in fact, that when one of the Cherry Point RAB members attended the Department of Defense Environmental Cleanup Stakeholders Forum she was shocked by the complaints she heard from other RAB members across the country. She remarked that she felt “exceedingly well treated” because of the Air Station’s efforts to be responsive to the community’s concerns and to ensure that the community understood the technical issues, regardless of how complex.

In March of 2002, MCAS Cherry Point, the U.S. Environmental Protection Agency, and the North Carolina Department of Environment and Natural Resources (NCDENR) acknowledged the RAB members for their outstanding service and commitment to the community by presenting each member with a Certificate of Recognition.

Environmental Restoration Agreements, Cleanup Plans, and



Dr. Patricia McClellan-Green, Co-Chair, MCAS Cherry Point Restoration Advisory Board, accompanies her Duke University Marine Lab students on a technical tour of the air sparge system at Operable Unit 1, Site 16.

Schedules

A summary of MCAS Cherry Point’s major environmental restoration agreements, cleanup plans, and schedules for the last five fiscal years is presented below. Historically significant milestones that occurred prior to this time period include completion of the *Initial Assessment Study* in 1983, initial *RCRA Facility Assessment* in 1987, execution of the *RCRA 3008(h) Administrative Order on Consent* in 1989, issuance of the RCRA Part B Permit in 1992, and listing of MCAS Cherry Point on the National Priorities List in 1994. Other highlights include:

- approval and implementation of the *Interim Record of Decision for Operable Unit 1 (Groundwater)* in 1997 and 1998;
- implementation of execution of the *Land Use Control Assurance Plan* in May 1999;
- approval of the *Record of Decision for Operable Unit 2* by the US Environmental Protection Agency (US EPA) in September 1999;
- approval of the *Record of Decision for Operable Unit 3* by US EPA in October 2000; and
- development of a *Site Management Plan* for the Air Station’s CERCLA sites in October 2000.

During the past two years, the CERCLA and RCRA programs resolved several contentious issues and eliminated a document backlog that had developed over the previous two years. Some highlights of the many agreements reached include:

- signature of the Record of Decision (ROD) for Operable Unit 15;
- transfer of Operable Unit 7 to the UST Program where site closure was subsequently



- achieved;
- final approval of the remedial investigation (RI) reports for three operable units including the massive *Remedial Investigation Report for Operable Unit 1*;

- final approval of the *Solid Waste*

Fiscal Year	Agreement/Plan/Schedule Type	Number by Program			Total
		CERCLA	RCRA	UST	
2003	Investigation	3	4	18	25
	Cleanup	4	2	6	12
	Closure	1	--	5	6
	Other	2	2	1	5
	Total	10	8	30	48
2002	Investigation	7	--	26	33
	Cleanup	7	1	7	15
	Closure	3	4	5	12
	Other	2	1	--	3
	Total	19	6	38	63
2001	Investigation	5	1	27	33
	Cleanup	2	--	6	8
	Closure	--	--	5	5
	Other	2	1	--	3
	Total	9	2	38	49
2000	Investigation	2	--	17	19
	Cleanup	7	--	4	11
	Closure	--	--	9	9
	Other	2	--	--	2
	Total	11	0	30	41
1999	Investigation	5	3	18	26
	Cleanup	1	1	2	4
	Closure	--	--	10	10
	Other	2	--	--	2
	Total	8	4	30	42

Investigation Agreements include: Limited Site Assessments (UST), Risk Based Corrective Action Rules Soil and /or Groundwater Investigations (UST), Comprehensive Site Assessments (UST); RCRA Facility Investigations, SWMU Assessments (RCRA); Remedial Investigations (CERCLA)

Cleanup Agreements include: Corrective Action Plans (UST and RCRA); Removal Actions (RCRA and CERCLA); Feasibility Studies, Proposed Remedial Action Plans, Records of Decision, Interim Records of Decision, Basis of Design, Explanations of Significant Difference (CERCLA), Remedial Design Work Plans, Remedial Action Reports, Long-term Remedial Actions Plans, Groundwater Monitoring Plans

Closure Agreements include: No Further Action Agreements, Closure Reports

- agreement on the handling of low level dioxin contamination at two operable units, a highly contentious issue that had stalled approval of the RI reports for both units for 12 months;
- agreement on the closure of four RCRA SWMUs and five UST sites;
- agreement on the investigation plans for three additional operable units;
- approval of plans to incorporate the post closure care monitoring of a SWMU into the long term remedial monitoring of the surrounding operable unit;
- agreement that interim human health protection goals as defined by the RCRA environmental indicator for protection of human health have been met; and
- approval of the investigation/cleanup methodology at 64 oil/water separators aboard the Air Station.

PROGRAM SUMMARY

Cleanup Objectives

The IR Program's primary focus is to identify and restore sites posing a threat to human health and the environment in a technically sound, timely, and cost-effective manner. To this end, the Cherry Point restoration team has the following objectives:

- Prevent unacceptable risks to human health or the environment.
- Meet all regulatory requirements and deadlines.
- Use teamwork to share successful cleanup strategies that can be applied across regulatory programs.
- Maximize the use of innovative technologies and management approaches to support the installation missions and unit readiness, reduce

costs, increase small business participation, and close sites.

- Improve relations with the community and the regulators by fostering an atmosphere of openness and trust.

Restoration Program Initiatives

To fulfill these objectives, the Cherry Point team must constantly seek to improve the restoration program and has implemented several significant initiatives. These include:

- Completing a cross-program human health risk assessment, implementing contaminated media screening for construction projects, and continuing operation of the interim remedial measures in Operable Unit 1. These efforts allowed the US EPA to determine that the Air Station has met the RCRA environmental indicator for protection of human health.
- Applying transferable aspects of the Air Station's highly successful *UST Monitoring Strategy* to the SWMU Cleanup Program. This initiative resulted in the accelerated development and approval of the *SWMU Management Plan*, which in turn led to the closure of four SWMUs and monitoring program changes that will save approximately \$35,000 per year.
- Constructing and providing seed funding for start-up of a recovered fuel/used oil blending facility. Fully operational in FY03, the blending facility allows the Air Station to reutilize two waste streams and eliminate over \$200,000 annually in virgin fuel acquisition costs.
- Improving community access to restoration program information. A multi-pronged initiative to update and transform the Air Station's Community Relations Plan and administrative record with versions that takes full advantage of today's information technologies.
- Constructing and commencing operations of



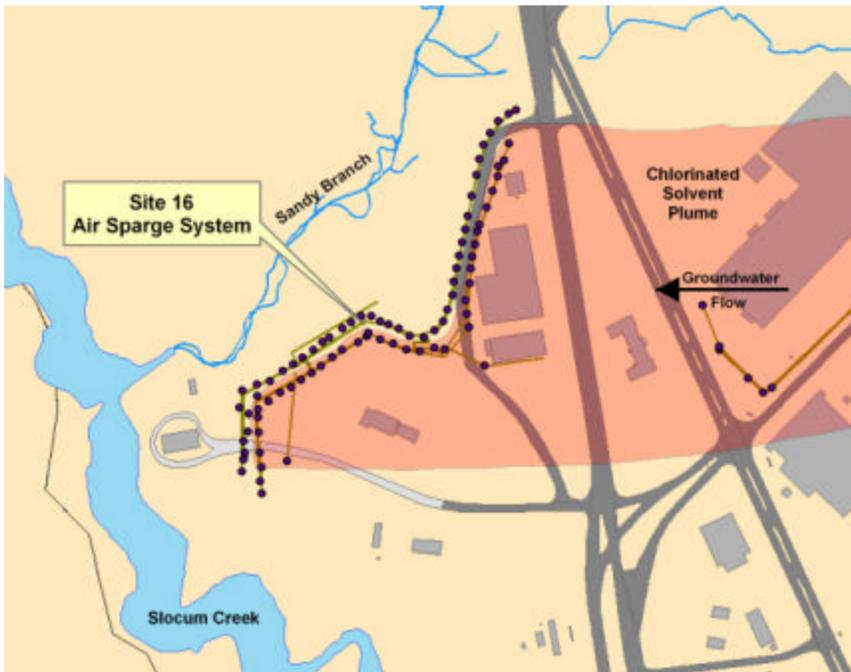
an air sparge/soil venting remedial system and a soil vapor extraction remedial system at two petroleum release sites and the remedial system expansion at a third petroleum release site.

- Fostering an atmosphere of openness and trust with the regulatory community. A concerted effort by restoration personnel to increase program efficiency by improving the Air Station/regulator relationship, this initiative also grew out of successes demonstrated in our highly successful UST program and the results are impressive. In addition to meeting all of our regulatory requirements and deadlines, nearly twice as many CERCLA and RCRA program decisions and agreements were made during fiscal year 2002 and 2003 when compared to the previous four years combined. This remarkable progress allowed the restoration team to finalize and clear a backlog of documents that had built up through 2000 and 2001.
- Applying innovative restoration technologies and management methods to improve

program efficiency. Another multi-faceted cost saving initiative that includes shifting our operation and maintenance (O&M) contracting from “cost plus” to “firm fixed price” and implementing innovative cost saving

technologies such as biological chlorinated source reduction, diffusion bag sampling, and on-site x-ray fluorescent analysis. In addition to reducing our overall O&M costs (which currently consume half of our restoration resources), firm fixed price contracting increases access to restoration projects by small and disadvantaged businesses. During 2002, the first year of this initiative, \$181,000 in O&M business was contracted directly to small business entities at a savings of 11.7 percent. In FY2003, four additional CERCLA O&M sites and seven UST sites (including the Air Station’s largest and most complex UST system) were rolled into the program; annual fixed price contracting directly to

small businesses exceeded 1.78 million dollars – or 75.7% of the total Environmental Restoration, Navy (ERN) budget for Cherry Point.



During 2002, O&M of the Site 16 Air Sparge System was contracted to a small business at a savings of more than \$21,000. The Air Station implemented air sparging at Site 16 as an interim measure to prevent groundwater contaminants from migrating to the environmentally sensitive Sandy Branch and Slocum Creek.

ACCOMPLISHMENTS

Human Health Risks Controlled

During 2002, the MCAS Cherry Point Installation Restoration Partnering Team completed a cross-program, multi-media reassessment of the risks to human health posed by



the contamination remaining at the Air Station. The team concluded that the interim and final remedial measures that have been implemented are effectively protecting the health of Cherry Point's residents, workers, visitors, and neighbors. This evaluation was based upon the guidance published by US EPA for assessment of the Government Performance Results Act environmental indicator for the protection of human health.

A significant portion of this protection is derived from the management programs that the Air Station has in place to prevent inadvertent exposure, including the provisions established in the Land Use Control Assurance Plan (LUCAP). The LUCAP is an agreement between the Air Station, US EPA, and NC DENR that outlines the administrative procedures and activities that the Air Station will implement to ensure that the land use assumptions used to develop the remedy implemented under a ROD will remain valid throughout the life of the remedy.

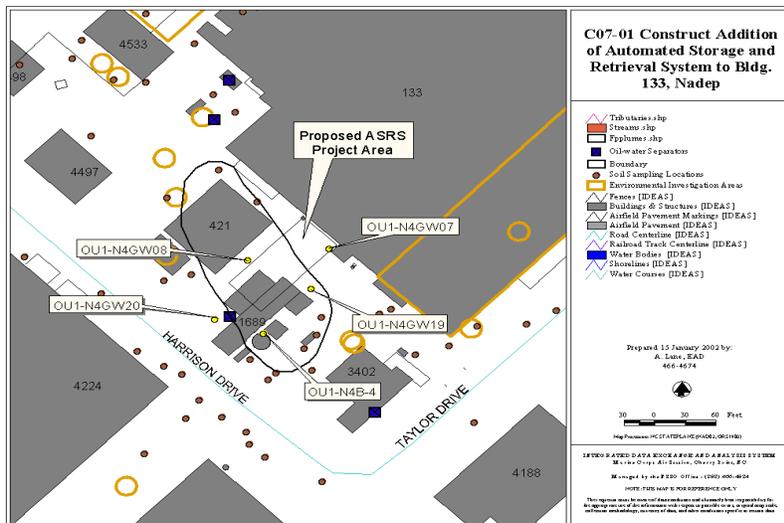
To protect workers and the general public at sites where no ROD is in place, the Air Station independently developed a screening process to

ensure that no contaminated media is moved or improperly handled during the many construction and maintenance projects that are completed at non-CERCLA, non-ROD sites each year. The contaminated media screening takes place during the environmental review and project tracking process accounting for nearly 300 project review cycles. The screening takes advantage of an extensive database of environmental sampling results that was geographically linked to the base GIS as part of past initiatives to improve our ability to manage the vast amount of data generated by the cleanup programs.

During the screening process, existing environmental sampling data for the project area is downloaded from the Air Station's GIS and provided to the project planners along with specific soil handling and disposal guidance. This program not only allows the project developers to plan for the proper handling and disposal of contaminated media, but makes certain that site conditions are clearly established in the project bid documents, thereby ensuring that construction and maintenance contractors are fully informed of the environmental conditions at the work site and preventing their inadvertent exposure to contaminants.

Successful Innovative Source Reduction Technology Implemented

MCAS Cherry Point has successfully completed an innovative recalcitrant contaminant source reduction treatability assessment in the Building 137 Stripper Barn source area. Because the stripper barn's chlorinated solvent plume is located beneath a large building in the highly congested Naval Aviation Depot, applying conventional treatment



One of nearly 300 projects reviewed, a GIS map shows the Automated Storage and Retrieval System's project location in relation to nearby environmental data points.



technologies such as pump-and-treat or air sparging posed a myriad of technical problems that could be overcome only at very high cost. Rather than allow these problems to slow the clean-up effort, the Cherry Point project team instead chose to examine innovative source reduction technologies.

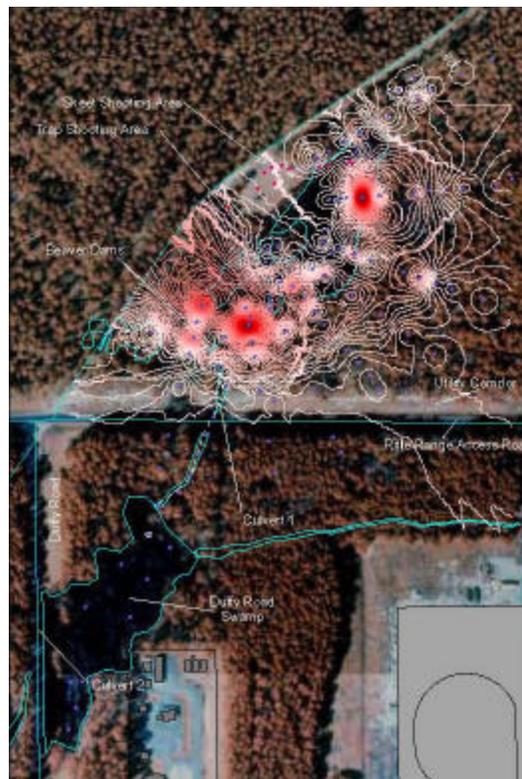
The team ultimately chose to implement enhanced in-situ bioremediation using injected Hydrogen Releasing Compound, or HRC[®]. HRC[®] slowly dissolves into the aquifer and provides a food source for indigenous bacteria that co-metabolize and de-chlorinate the solvents.

In the year since the HRC[®] was injected, chlorinated contaminant levels have decreased by 95 percent, proving that the technology is effective. Since HRC[®] injection can be implemented at a fraction of the cost of constructing a traditional treatment system, it is also extremely cost efficient. The team is now examining other contaminant source areas as additional candidates for this promising technology.

Innovative Range Characterization Technique Validated

After lead was discovered in creek sediments downstream of an inactive skeet and trap range, the Air Station's range cleanup team needed to quickly assess the on-range extent and off-range migration potential of the residual lead contamination. The team decided to collect numerous soil and sediment samples for on-site analysis using x-ray fluorescence (XRF) techniques. The real-time results were used to guide the assessment team's ongoing investigation and were later validated through laboratory analysis of select samples.

The study results demonstrated that the lead poses an ongoing risk of migration from the range and a follow-up study is underway. The XRF technique proved to offer an effective tool to quickly and accurately assess the lead contamination at the range. In November 2002,



Lead concentration contours depict expected shotfall pattern and demonstrates site hydrology resulted in lead transport downgradient toward beaver dams into low energy forested wetland.

the project team presented the results of the investigation at the Society of Environmental Toxicology and Chemistry (SETAC) Conference in Salt Lake City.

Fuel Blending Reduces Waste and Supports Installation

For several years, the Air Station has utilized the jet fuel recovered at petroleum release sites as supplemental boiler fuel at the Air Station's Central Heating Plant, saving the Air Station approximately \$100,000 per year in avoided boiler fuel purchases and waste disposal costs. In 2003, the Air Station began to take advantage of the physical characteristics of the recovered fuel to allow the full use of another resource, used oil.

Through the combined efforts of the Environmental Affairs Office, Facilities Development Office, Facilities Maintenance

Department, and the Fuels Division, the Air Station developed and constructed a used oil blending facility that allows the recovered fuel's low sulfur and ash content to offset the high sulfur and ash content that might otherwise prohibit the use of the used oil as fuel. At the same time, the used oil's high flash point offsets the relatively low flashpoint that sometimes prevents the use of the recovered fuel.

Operational startup of the blending facility in 2003 allows the Air Station to take advantage of the complimentary properties of what would otherwise be two waste streams. The Air Station has created a valuable resource that will eliminate over \$200,000 annually in virgin fuel acquisition costs.

SWMU Cleanup Program Reduces Costs and Closes Sites

Although the adage "a SWMU is forever" may remain true, during 2002 the Air Station's SWMU Cleanup Program demonstrated that, with proactive SWMU management and an open and trusting relationship with your regulators, it is possible to cut through RCRA's red tape and reduce costs. Examples of program successes include:

- Beginning in FY2003, the Air Station began to realize annual savings of \$30,000 per year in post-closure care sampling at SWMU I-10b. SWMU I-10b is located within the boundary of the CERCLA Operable Unit 2 (OU2), and the Air Station was able to obtain regulatory buy-in for eliminating its post-closure monitoring as a redundant duplication of the long term monitoring conducted for OU2.
- The Air Station was able to eliminate an additional

\$2,200 in annual sediment and surface water sampling under the Air Station's RCRA subpart X permit by demonstrating to the regulatory agencies that no impact was likely to occur.

- Faced with an apparent requirement to conduct blanket investigations at each of the Air Station's 64 oil/water separators (OWSs), most of which had never been identified as release sites, the Air Station secured regulatory concurrence with a plan to defer investigation of each individual OWS until there is either an indication of a release, or until the OWS is taken out of service.
- To complete the year, the SWMU management program obtained regulatory "no further action" status at four units.



The Used Oil Blending Facility combines recovered fuel with used oil into a useful resource saving an estimated \$200,000 in annual virgin fuel acquisition costs.