

# 2005 Secretary of Defense Environmental Restoration Award Installation



*"The Robins AFB Restoration Program is exceptional with obvious and real commitments to environmental stewardship, continued remedial process optimization, and developing cooperative partnerships with the GA EPD and US EPA..."*

*Carol A. Couch, Ph.D.,  
Director GA DNR*



## INTRODUCTION

Robins Air Force Base (Robins AFB) is located in Middle Georgia near the City of Warner Robins. The base is located on 8,435 acres and is home to the Warner Robins Air Logistics Center (WR-ALC) and more than 60 other units that make up an integral part of the U.S. Air Force (AF) warfighting team within the Department of Defense (DoD). The mission of WR-ALC, as one of three ALCs with a weapon systems depot maintenance mission, is to provide effective combat capabilities through superior sustainment of the weapons systems managed by the Center (including the F-15, C-130, C-5, C-17, U-2, and E-8C Joint STARS aircraft). Robins AFB, along with the greater community of Middle Georgia, make up Team Robins Plus, which is dedicated to protecting the environment while supporting the warfighter. Robins AFB is the largest industrial complex in Georgia, employing a work force of over 26,000 civil service employees, military members, and contractors. The Center provides an economic benefit to the region of over \$4.2 billion annually. In support of our mission, Robins AFB maintains one of the most wide-ranging and proactive installation environmental programs in the nation.

## BACKGROUND

The Environmental Restoration Program (ERP) is a key component of environmental stewardship on Robins AFB. Like most DoD installations, Robins AFB has sites where soil and groundwater have been contaminated by past industrial operations essential to the base's mission. These sites include areas formerly used for landfills, fire protection training, and waste disposal, as well as sites of fuel and industrial chemical releases.

At Robins AFB, 42 ERP sites have been identified as requiring clean-up, one of which is a National Priorities List (NPL) site, consisting of Landfill 4 and the Sludge Lagoon. Robins has continued to have a highly productive partnering program with the Georgia Environmental Protection Division (GA EPD) and U.S. Environmental Protection Agency (U.S. EPA) since the signing of the Federal Facilities Agreement in 1989.

A DoD benchmark final Record of Decision (ROD) for the NPL site signed in 2004 contains model language agreed to by all stakeholders, expediting resolution of long-standing agency-level issues associated with land use controls. To date, 26 of the 42 ERP sites have been cleaned up, requiring no further action (NFA).

Robins AFB has a long and distinguished history of involving the public in the clean-up process. The Restoration Advisory Board (RAB) was established in 1994 to serve as a forum to foster open discussion and information exchange with community members. Robins AFB has one of the most active, involved, and productive RAB organizations in DoD, with RAB members truly serving as ambassadors to their local communities and professional colleagues in translating our accomplishments to the public.



*Supporting the Warfighter through Environmental Excellence*

# ROBINS AIR FORCE BASE, GEORGIA



### ■ *First-Rate Restoration Team*

A highly qualified restoration team is the key to executing a successful ERP. At Robins, the ERP Team consists of a Remedial Program Manager (RPM) and a group of first-rate and forward-thinking engineers and scientists, supported by the Environmental Protection Committee membership and environmental contractors.

The environmental integrity and stewardship exemplified by the team has earned the trust of the community. The extraordinary progress made by this team is remarkable because it is operating under required organizational restructuring and implementation of Circular A-76 Competitive Sourcing.

The Restoration Team is supported by a strong partnership with GA EPD and U.S. EPA. Each agency is an integral team member that addresses technical and regulatory issues and works together with Robins to utilize innovative technologies and come to mutual agreements on clean-up goals. Working as a team with the regulatory community has proven to be invaluable in reducing costs and schedules associated with achieving program objectives.

During the past two years, the Robins AFB Restoration Team has shared their accomplishments and success through presentations at DoD conferences, public meetings, interviews with community leaders, and technical tours. Most recently, the Robins ERP was recognized as “Superior” by the Office of the Deputy Under Secretary of Defense for Cleanup and GA EPD at a 2005 DoD-EPA Region 4 Environmental Conference.

### ■ *Maintaining a Dynamic Management Approach*

The Restoration Team, with the support of Air Base Wing (ABW) and ALC commanders, is empowered to make sound financial and technical decisions regarding site cleanup and final closure of sites. In compliance with AF goals, the accountability for cleanup progress and cost expenditure is taken very seriously.

Great strides are made to reduce costs and schedules of cleanup activities. A proactive approach is taken to ensure all remedial strategies are based on sound scientific and cost effective judgment.

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### PROGRAM SUMMARY

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Robins has committed to meeting or exceeding objectives of the ERP and exceeding AF clean-up goals! Our specific objectives include:

- Reduce or eliminate potential risks to human health and the environment
- Ensure no adverse impact to the warfighter
- Exceed Air Force clean-up goals
- Implement Performance Based Management
- Restore sites to allow for unrestricted use
- Reduce cost-to-complete and schedule-to-complete
- Ensure full adherence with Environmental Compliance Assessment Management Program (ECAMP) requirements
- Assure program rigor through Air Force Materiel Command (AFMC) and peer reviews
- Execute an intensive Remedial Process Optimization (RPO) Program
- Support the AF goals by using small business in accomplishing clean-up activities
- Foster a ‘good neighbor’ policy by keeping the public informed
- Encourage community participation in the clean-up process

Our rigorous restoration program is exceeding all objectives, while meeting our mission readiness support role. As environmental sites are restored, the land is released for unrestricted use in support of the warfighter.

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### ACCOMPLISHMENTS

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#### ■ *Fast Track Clean-up*

Robins AFB has pioneered many AF benchmarks for fast track cleanup since the beginning of the cleanup program in 1982. Recently, the focus has shifted to innovative approaches, treatment system optimization, and



Lean events to streamline the ERP process and accelerate cleanup. A summary of most recent accomplishments follows:

► Robins AFB is the first ALC to achieve “Remedy-in-Place” (RIP) at all ERP sites; this major milestone was reached in April 2005! With the accomplishment of RIP at the last of 42 ERP sites, the base is nine years ahead of AF goals. The RIP success reflects the outstanding and unified efforts of the restoration program staff, dedicated senior leadership, and effective partnering with various stakeholders.

► The unique Groundwater Treatment System (GWTS) is a key to the fast-track clean-up program, as seen in the Highlights table below. The use of a centralized single treatment system versus multiple treatment systems has saved millions of dollars in construction and Operations and Maintenance (O&M) costs. The GWTS has garnered numerous awards from the Georgia Water and Pollution Control Association during the past two years, including the Gold Award, two Safety Awards, the Public Education Awareness Award, and to a GWTS operator, the District Operator of the Year Award.



**GWTS Highlights**

- First activated in 1997
- Centralized single system saved more than \$600 thousand (K) over construction of multiple distributed systems and \$760K in annual O&M costs
- GWTS has been expanded twice; now treats groundwater from six restoration sites and other restoration-generated liquids
- 3,200+ pounds of Volatile Organic Compounds (VOCs) removed in 2004 operating year
- System typically operates at 99+ percent up-time
- Rigorous RPO program conducted annually at GWTS sites and in the treatment plant

► A rigorous RPO program at the GWTS saves Robins AFB more than \$1 million (M) annually while optimizing the fast-track clean-up of associated sites. Effective stewardship of funds has been demonstrated by early shutdown of some systems and components where RPO shows goals have been met, saving labor, sampling and analysis costs, and reporting efforts. The annual GWTS optimization produces outstanding results, including rehabilitation efforts on extraction wells at five sites, resulting in consistent plume size reduction, reducing time to meet clean-up goals. As a result of the RPO, the base turned off selected wells at each of four sites with regulatory approval as concentrations dropped, reducing O&M costs.

<b>Other Outstanding RPO Successes</b>	
<b>Site/Area &amp; RPO Action</b>	<b>Result</b>
GBIA, AS/SVE optimization	95 percent run time exceeds State and Robins AFB goals
GBIA, Thermal destruction unit converted to catalytic oxidation	Cost-to-complete reduced while optimizing destruction technology
GBIA, New passive venting wells; Shallow wells converted to permanent SVE wells	Improvements in subsurface air flow led to enlarged area of influence, faster soil clean-up
Building 645 Horizontal Well, Performance Analysis/ rehabilitation	Groundwater extraction rate from 5 gallons per minute (gpm) to 40-60 gpm, removing 91 additional pounds (lbs) of contaminant mass; lowered water table so SVE system operates more efficiently
Landfill 3, Extended depth of leachate extraction wells	Increase of 50 percent in contaminant removal
Consolidated equipment pad during ramp relocation	Mass removal rates increased by improvements in electrical and wastewater systems

▶ As part of optimizing remedial systems, multiple air sparge (AS) and soil vapor extraction (SVE) systems have been installed at ERP sites in the Greater Base Industrial Area (GBIA). Since the 2003 start-up, over 1.3M lbs of constituents have been removed.

▶ A Performance-Based Contract (PBC) at our Horse Pasture site, a unique and complex site, has reduced costs by \$6M and schedule by 25 years, producing a true expedited cleanup while utilizing small business participation. The 5.5 year program, after almost two years, has seen completion of excavation, stabilization, and disposal of 74,000 tons of soil and pilot testing of innovative in-situ chemical oxidation for groundwater treatment.

### ■ ***Innovative Technology Demonstration Validation and Implementation***

The Robins AFB Restoration Program has set the standard for actively seeking out opportunities to incorporate innovative technologies. Such technologies have included those directly applicable to site restoration on base, as well as projects to support the combat operations in field deployments. A summary of key innovative technology activities during the award period follows:

▶ A sophisticated, integrated basewide groundwater-surface water computer modeling tool specific to Robins AFB is being developed through a project initiated in 2004. The goal is to monitor potential impacts of surface water to groundwater resources, to ensure that contaminant plumes keep shrinking as aggressive restoration continues and remain isolated from the deep drinking water aquifer.

▶ A partnership with the Advanced Power Technology Office has led to installation of ten fuel cells at the Groundwater Treatment Plant being tested as a means of power supply, saving government funds, reducing pollution, and supplying power back to the grid. These fuel cells also demonstrate a potential power source for deployed troops.

▶ Development of a unique base-specific evaluation tool for tracking restoration systems performance has proven to be an extremely valuable tool. The Operational Efficiency Index (OEI) evaluates restoration system performance, enhances system improvements, and reduces recurrence of system problems. Monitoring of the OEI allows the base to incentivize contractors to improve systems operation. The current OEI exceeds 90 percent.

▶ The Environmental Security Technology Certification Program (ESTCP) selected Robins AFB for field evaluation of two innovative bioremediation projects, with both underway in 2005.



ESTCP  
Bioaugmentation  
project support  
provided by  
researchers

In the first project, bioaugmentation is being evaluated for the expedited destruction of chlorinated compounds in groundwater. In the second project, five promising technologies for control of biological fouling in subsurface remediation are being evaluated with cost and performance data on each. Both projects have direct application at Robins AFB and

throughout DoD, cutting restoration costs and schedules.

### ■ ***Partnerships with Other Entities***

Partnering with various stakeholders within and outside DoD has played a major role in the remarkable success of the Base Restoration Program. Following are examples of noteworthy partnering achievements:

▶ The Defense and State Memorandum of Agreement between GA EPD and Robins AFB has been executed as a seamless team. This partnership expedites the clean-up process by accelerating decision-making at all stages.

▶ Partnering with GA EPD led to the agency's approval of Risk-Based Clean-up Levels instead

of Maximum Contaminant Levels at the base gas station, saving \$1.5M and enabling site closure five years early.

▶ A multi-agency cooperative data gathering effort is underway for inclusion in the basewide groundwater model now in development. Houston County and the cities of Warner Robins and Centerville are collecting and sharing groundwater elevation data on a semi-annual basis. The U.S. Geological Survey is collecting Ocmulgee River flow data during the fall 2005 season and is providing peer review of the groundwater modeling report.

▶ Partnering with GA EPD led to approval of alternative earthen cover instead of an

*“...Real-world results and examples of ... commitments are too numerous to name; although I will cite the facts that Robins Air Force Base has all remedies in-place at her restoration sites, completed (or is in the process of completing) a number of final remedies ahead of schedule and below initial cost estimates, and a vital and active Restoration Advisory Board.”*

Carol A. Couch, Ph.D., Director  
GA Department of Natural Resources

engineered geosynthetic cover at the Sanitary Sludge Placement Area, saving the base more than \$1M.

▶ Adoption of Risk Based Remedial Levels at a wetlands site increased the area left undisturbed during remediation, conserving much needed sensitive wildlife habitat.

▶ Savings of more than \$3.3M have been achieved at a fuel spill site by partnering with GA EPD. The base’s demonstrations of plume reduction by monitored natural attenuation led to GA EPD approval of NFA at this site, resulting in closure eight years ahead of schedule.

▶ Partnering with US EPA and other agencies was a key in developing the ROD for the base’s NPL site, and led to development of model language agreed to by all stakeholders,

expediting resolution of long-standing agency-level issues associated with land use controls. The final ROD, signed in 2004, is a DoD benchmark!

■ **Restoration Advisory Board**

Robins AFB has one of the most active and productive RAB organizations in DoD. The RAB has marshaled community and regulatory


*“Robins AFB is the first Federal NPL Facility in the region to achieve ‘construction complete’ status. Their commitment toward achieving environmental goals through technological excellence and effective partnering with State and Federal regulators and the community is unmatched among DoD installations.”*

Dr. Dann Spariosu, RPM, EPA Region 4

leaders in the base’s quest to provide full and open communication with stakeholders for more than 10 years. Examples of recent significant RAB accomplishments follow:

▶ A new Robins AFB RAB web site was developed during 2004 that provides the public easy access to quarterly RAB meeting minutes, Fact Sheets, and briefing slides.

▶ In 2004 and 2005 Robins AFB conducted training sessions for RAB members which focused primarily on bioremediation and other



*“Robins has done an outstanding job in cleaning up their environmental sites and keeping the community informed. Their commitment has improved the quality of life for those living and working on and around the base. The RAB is pleased with their dedication and will continue to support their efforts.”*

Mr. James Harden  
RAB Community Co-Chair

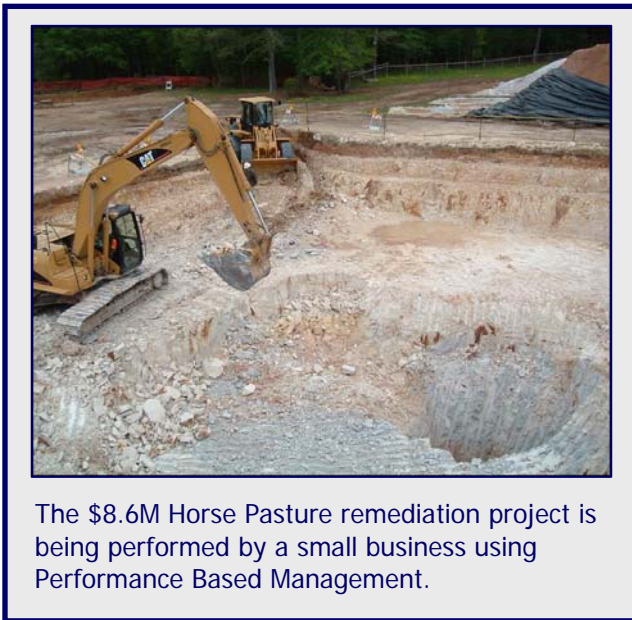


advanced technologies. RAB members state that training provides them the most current information to share with their communities.

► Robins AFB was recognized by Environmental Protection Magazine as one of the “Top Five in 2004” in its national competition. The Restoration Program successes and public involvement through the RAB were cited as major factors in the submittal.

■ **Opportunities for Small and Disadvantaged Businesses**

Robins AFB aggressively supports AF goals of using small and disadvantaged businesses in support of the Restoration Program. During 2003-2005, Robins AFB awarded nearly \$20M to these businesses, including \$2.6M to a woman-owned and Native American-owned small business for a wetlands restoration and a cap cover. An \$8.6M PBC project was awarded to a small business for clean-up of our Horse Pasture site requiring soil and groundwater



The \$8.6M Horse Pasture remediation project is being performed by a small business using Performance Based Management.

remediation. Other small business remediation activities include the rehabilitation of the Bldg 645 horizontal well, installation/routine monitoring of AS/SVE systems in the GBIA, and remediation of a debris pit containing unexploded ordnance.

■ **Reducing Risk to Human Health and the Environment**

Operational Risk Management (ORM) provides Robins a decisive tool for maintaining readiness in peacetime and success in wartime. Reducing risk to human health and the environment under ORM has been the driving force for all restoration projects undertaken by the Robins AFB Restoration Team. At the same time, out-of-the-box thinking and approaches have led to reductions in cost-to-complete and schedule-to-complete, thereby meeting and exceeding other performance metrics as well. Examples of projects in which explicit accomplishments in reducing risk were key factors are as follows:

**Risk Reduction Strategies that Work!**

- Rehabilitating natural resources at wetlands site restores key habitat and frees up land for other uses!
- Reduction in groundwater concentrations of 50 percent were achieved at the Horse Pasture site by careful sequencing of remedies, reducing risk to human health and the environment. By first staging soil removal, the contamination source was minimized so groundwater concentrations dropped rapidly, reducing the total clean-up time and cost.
- Focus on safety has enabled the remediation system installations and operations to proceed with zero lost-time incidents.
- A \$1.5M cost saving and huge schedule reduction at Duck Lake was accomplished by using an innovative exit strategy. Risks associated with sediment removal and disposals were eliminated in a new strategy making closure feasible within one year.

**CONCLUSION**

The Robins AFB Restoration Team reflects the best of the best ... commitment to environmental stewardship, continued innovation and remedial optimization, partnership with the community, and support of the warfighter. Robins leads the way in DoD!