ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

February 2002

BUDGET ACTIVITY	PE NUMBER AND TITLE
3 - Advanced technology development	**0603728A - Environmental Quality Technology Demonstrations**

	COST (In Thousands)	FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate
	Total Program Element (PE) Cost	10685	7292	8980	9854	7172	4778	5571
002	ENVIRONMENTAL COMPLIANCE TECHNOLOGY	1553	2697	1843	1441	679	1396	2027
025	POLLUTION PREVENTION TECHNOLOGY	0	0	847	2403	3285	3382	3544
03E	ENVIRONMENTAL RESTORATION TECHNOLOGY	0	1095	6290	6010	3208	0	0
03F	CORROSION MEASUREMENT AND CONTROL	9132	0	0	0	0	0	0
EM3	PROTON EXCHANGE MEMBRANE FUEL CELL DEMO	0	3500	0	0	0	0	0

A. Mission Description and Budget Item Justification: The objective of this program element is to mature and demonstrate technologies which will assist Army installations in becoming environmentally compatible without compromising the readiness or training critical to the success of the Objective Force. This program includes technology demonstrations for: restoration of sites contaminated with toxic and/or hazardous materials (such as unexploded ordnance [UXO]) resulting from Army operations; pollution prevention to minimize the Army's use and generation of toxic chemicals and hazardous wastes; compliance with environmental laws by control, treatment, and disposal of hazardous waste products; and conservation of natural and cultural resources while providing a realistic environment for mission activities. This program will include demonstrations of proof of technological feasibility and assessment of operability and producibility that would lead to a capability for Army use, and includes technology transition from the laboratory to operational use. The program is supported by the Office of the Secretary of Defense's Technology Area Review and Assessment process. This program element develops and demonstrates technology to improve the Army's ability to achieve environmental restoration and compliance at its installations, at active and inactive ranges, and its rework and production facilities. Technologies demonstrated will focus on reducing the cost of remediation of Army sites contaminated by hazardous/toxic materiel. Other technologies will focus on reducing the cost of treating hazardous effluents from Army installations including ammunition plants, depots, and arsenals to satisfy increasingly stringent wastewater and air pollutant discharge standards. Army facilities are now subject to fines and facility shutdowns for violation of Federal, state, and local air and wastewater discharge regulations. These technologies are essential for cost-effective removal, control and reduced generation of wastes to satisfy hazardous waste cleanup and reduction goals, and to avoid future hazardous waste site cleanup and disposal costs and liabilities to the Army. Efforts under this program element will enable the Army's Objective Force to prevent pollution of the air, soil, and groundwater at installations, ranges, facilities, operations and to comply with the myriad of Federal, state, and host country regulations dealing with contaminated soil, groundwater, wastewater, air emissions, and solid wastes. The cited work is consistent with the Army Science and Technology Master Plan (ASTMP), the Army Modernization Plan and Project Reliance. The program element contains no duplication with any effort within the Military Departments.

Work is performed by the U.S. Army Engineer Research and Development Center and the U.S. Army Materiel Command. This program supports the Objective Force transition path of the Transformation Campaign Plan (TCP).

B. Program Change Summary	FY 2001	FY 2002	FY 2003
Previous President's Budget (FY2002 PB)	11013	4826	9002
Appropriated Value	11116	7326	0
Adjustments to Appropriated Value	0	0	0
a. Congressional General Reductions	0	-34	0
b. SBIR / STTR	-328	0	0
c. Omnibus or Other Above Threshold Reductions	0	0	0
d. Below Threshold Reprogramming	0	0	0
e. Rescissions	-103	0	0
Adjustments to Budget Years Since FY2002 PB	0	0	-22
Current Budget Submit (FY 2003 PB)	10685	7292	8980

Program Change Summary Explanation:

Significant Change:
FY02 (+$2500) - Includes a Congressional reduction (-$1000) in Environmental Restoration Technology, Project 03E, and a Congressional add (+$3500) for Proton Exchange Membrane (PEM) Fuel Cell Demonstration, Project EM3. (Note: only for the demonstration of domestically produced PEM fuel cells on military facilities).

Projects with no R-2As include:
- ($3500) Proton Exchange Membrane (PEM) Fuel Cell Demonstration, Project EM3: The objective of this one year Congressional add is to purchase, test, demonstrate and validate domestically produced PEM fuel cells for military applications. No additional funding is required to complete this project.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2002

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
3 - Advanced technology development	**0603728A - Environmental Quality Technology Demonstrations**	**002**

COST (In Thousands)		FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate
002	ENVIRONMENTAL COMPLIANCE TECHNOLOGY	1553	2697	1843	1441	679	1396	2027

A. Mission Description and Budget Item Justification: The objective of this project is to mature and demonstrate technology for achieving environmental compliance at Army installations. Technology demonstrated within this project focuses on reducing the cost of treating hazardous effluents from Army installations including ammunition plants, depots and arsenals to satisfy increasingly stringent wastewater and air pollutant discharge standards. Army facilities are now subject to fines and facility shutdowns for violation of Federal, state, and local air and wastewater discharge regulations. This technology is essential to control and reduce the generation of wastes to satisfy hazardous waste reduction goals, and to avoid future hazardous waste disposal costs and liabilities to the Army. Efforts under this project will enable the Army to prevent pollution at installations while complying with the myriad of Federal, state, and host country regulations dealing with hazardous wastewater, air emissions, and solid wastes. The cited work is consistent with the Army Science and Technology Master Plan (ASTMP), the Army Modernization Plan and Project Reliance. The program element contains no duplication with any effort within the Military Departments. Work is performed by the U.S. Army Engineer Research and Development Center. This project supports the Objective Force transition path of the Transformation Campaign Plan (TCP).

FY 2001 Accomplishments:

- 864 - Demonstrated optimal selection of overcoatings and overcoating procedures resulting in a potential cost avoidance of up to 20 percent over current technologies.
- 689 - Demonstrated activated carbon fiber cloth absorber at McAlester Army Ammunition Plant for control of hazardous organic solvents.

Total 1553

FY 2002 Planned Program

- 1021 - Demonstrate in-situ extraction technologies for lead in soil to reduce lead levels to below the Environmental Protection Agency's level of concern (400ppm).
- 1676 - Demonstrate hazardous organic solvent emissions technologies to remove 95 percent of Hazardous Air Pollutants (HAP) and 20 percent cost reduction (baseline - 10,000 cfm unit at $65/cfm).

Total 2697

FY 2003 Planned Program

- 661 - Demonstrate lead removal technologies that result in non-hazardous waste that leaches less than 5ppm lead.
- 1182 - Demonstrate optimized High Efficiency Particulate Air (HEPA)/carbon filter control schema for hazardous waste incineration in support of chemical demilitarization.

Total 1843

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2002

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
3 - Advanced technology development	**0603728A - Environmental Quality Technology Demonstrations**	**03E**

COST (In Thousands)		FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate
03E	ENVIRONMENTAL RESTORATION TECHNOLOGY	0	1095	6290	6010	3208	0	0

A. Mission Description and Budget Item Justification: The objective of this project is to mature and demonstrate new and improved techniques for the restoration of Army sites contaminated with toxic and/or hazardous materials including unexploded ordnance (UXO). This project develops and demonstrates technology to improve the Army's ability to achieve cost-effective environmental restoration of contaminated sites at its installations, active and inactive ranges, and its rework and production facilities. Technologies demonstrated within this project focus on reducing the cost of remediation of Army sites contaminated by hazardous/toxic material and are directly linked to RDT&E Budget Activity 2 technology products originating from program element 0602720A, projects F25 and 835. These technologies are essential for cost-effective removal of hazardous and toxic chemicals and other contaminants to satisfy hazardous waste cleanup goals. Efforts under this project will enable the Army to prevent pollution of the air, soil, and groundwater at installations, ranges, facilities operations, and to comply with the myriad of Federal, state, and host country regulations dealing with contaminated soil and groundwater. This program includes demonstrations of proof of technological feasibility and assessments of operability and productivity that would lead to a capability for Army use, and includes technology transition from the laboratory to demonstration/validation funded under RDT&E program element 0603779A, project 04E. The program is supported by the Office of the Secretary of Defense's Technology Area Review and Assessment process. The cited work is consistent with the Army Science and Technology Master Plan (ASTMP), the Army Modernization Plan and Project Reliance. The program element contains no duplication with any effort within the Military Departments. Work is performed by the U.S. Army Engineer Research and Development Center. This project supports the Objective Force transition path of the Transformation Campaign Plan (TCP).

FY 2001 Accomplishments:

Project not funded in FY 2001.

FY 2002 Planned Program

•	547	- Conduct a demonstration of off-the-shelf UXO sensor fusion analysis methods and techniques for UXO detection/discrimination.
		- Conduct a demonstration of predictive tools for UXO multi-contaminant transport processes in various earth media.
•	548	- Formulate a predictive model demonstration to determine explosives toxicity for avian and marine species.
Total	1095	

FY 2003 Planned Program

•	2133	- Formulate a demonstration plan for a series of UXO detection/discrimination multi-sensing and processing methods, each tailored to a specific set of site environmental conditions.
		- Complete a demonstration of off-the-shelf UXO sensor fusion analysis methods and techniques integrating advanced UXO sensor fusion analysis algorithms to be applied to developing UXO detection/discrimination sensing capabilities.
		- Continue demonstration of an integrated suite of UXO detection multi-sensing and processing modes optimized for site-specific environmental characteristics.
		- Demonstrate an optimized multi-sensor and data fusion analysis UXO detection/discrimination system.
•	4157	- Complete a demonstration of a predictive model to determine explosives toxicity for avian and marine species.
		- Formulate a demonstration of a multi-species model for multi-contaminant pathways.
		- Formulate and conduct a demonstration of a comprehensive model of UXO fate and transport as part of the Army Risk Assessment and Modeling System (ARAMS).
		- Conduct demonstration of integrated bioaccumulation kinetics and toxicity parameters for terrestrial populations as part of ARAMS.
		- Introduce multi-species/multi-contaminant pathways model as part of ARAMS demonstration.
		- Introduce hazard/risk assessment linkage models for multi-terrestrial and aquatic ecosystems as part of ARAMS demonstration.
		- Formulate and conduct a demonstration of fully functional multi-media version of the ARAMS.
Total	6290	