	Exhibit R-2a, RDT&E Project Justification						Date: February 2003	
Appropriation/Budget Activity RDT&E. Defense-wide BA 3				**PE 0603716D8Z** Strategic Environmental Research and Development Program (SERDP)				
Cost ($ in millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
SERDP P470	62.165	52.534	47.068	60.012	60.447	61.291	63.077	64.453

(U) Congress established the Strategic Environmental Research and Development Program (SERDP) in 1990 (10 U.S.C. Section 2901-2904) to address Department of Defense (DoD) and Department of Energy (DOE) environmental concerns. It is conducted as a DoD program, jointly planned and executed by the DoD, DOE, and the Environmental Protection Agency (EPA), with strong participation by other Federal agencies, industry, and academia. SERDP`s objective is to improve DoD mission readiness by providing new knowledge, cost-effective technologies, and demonstrations in the areas of environmental Cleanup, Unexploded Ordnance (UXO), Compliance, Conservation, and Pollution Prevention. SERDP does this by (1) addressing high priority, mission-relevant, defense environmental technology needs necessary to enhance military operations, improve military systems` effectiveness, enhance military training/readiness, and help ensure the safety and welfare of military personnel and their dependents; and (2) enhancing pollution prevention capabilities to reduce operational and life-cycle costs, as well as reducing the cost of necessary cleanup actions and compliance with laws and regulations. As a secondary benefit, SERDP helps solve significant national and international environmental problems.

B. Accomplishments/Planned Program

Pollution Prevention		FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/ Effort/Subtotal Cost		18.376	12.110	10.813	13.802
RDT&E Articles Quantity *(as applicable)					

(U) FY 2002 Accomplishments: Pollution Prevention:
Efforts to eliminate or reduce carcinogenic chromium were successful on several fronts; from the linings of gun barrels to sealants and primers to paints and coatings. New technologies to inspect aircraft and other vehicles for corrosion without having to remove the paint were successfully demonstrated. This extends the time between paint stripping and reduces the hazardous waste generated. Efforts continued in the reduction of emissions from jet engines and diesel engines. Several new projects were successfully launched in FY 2002. They included: environmental fate, transport and effects of the new energetic material CL-20; environmentally benign polymer matrix composites; tagging technologies to permit the remote localization and identification of UXO; environmentally benign, low-temperature, powder coatings; environmentally benign packaging for military rations; environmentally acceptable pyrotechnics; technologies to prevent or limit marine fouling of ship hulls and heat exchangers; and environmentally acceptable replacements of fluorescent dyes for nondestructive testing of weapons systems. In addition, a major effort to develop “green” medium caliber ammunition began.

(U) FY 2003 Plans: Pollution Prevention:
The development of “green” munitions and weapon systems that will not impact on the environment are core objectives of pollution prevention. Projects include elimination of hazardous materials from medium caliber munitions and pyrotechnics as well as novel, environmentally preferable synthesis methods for energetic compounds that are found in both explosives and propellants. SERDP will also continue to pursue technologies that will permit the “greening” of our industrial complex. The elimination or reduction of toxic and hazardous materials from our weapons systems and platforms and the processes that we use to repair and maintain them remains a primary objective. The projects include the elimination of heavy metals such as chromium, cadmium and lead, the replacement of volatile organic compounds (VOC’s) with benign alternatives and the development of environmentally friendly ship hull coatings. These technology needs are addressed by both continuing and new start projects.

(U) FY 2004/ 2005 Plans: Pollution Prevention:
There will be no new starts in FY 2004. Those projects in environmentally benign replacements for ammonium perchlorate and incendiary materials, Class II Ozone Depleting Substances and the carcinogen cadmium will be deferred to FY 05. The development of “green” munitions and weapon systems that will not impact on the environment and the elimination of hazardous materials from all aspects of military operations through materials substation and process change remain core objectives of pollution prevention.

Compliance		FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/ Effort/Subtotal Cost		10.164	8.902	8.111	10.351
RDT&E Articles Quantity *(as applicable)					

(U) FY 2002 Accomplishments: Compliance:
An extensive ongoing program to determine the levels of explosives contamination on training and testing ranges and the determination of the fate and transport of these materials into the environmental have already yielded a new understanding of how military operations on the ranges impact the soil and groundwater. This new knowledge will lead to more effective control of range contamination. An innovative, biologically based filter system to remove hazardous gases from paint booth emissions was successfully developed. New technologies developed to measure and characterize fine particulate matter in the air will permit the Department to comply with emerging EPA regulations. New projects to develop technologies to control aquatic non-indigenous species in Navy ships and observation and prediction technologies for hazardous emissions from DoD operations on ranges have been successfully initiated.

(U) FY 2003 Plans: Compliance:
The focus of compliance projects continues to be the development of technologies needed to support the sustainability of DoD's training and testing ranges. Specifically, the development of methods to measure and control air emissions from both tactical vehicles and munitions is key as are methods to assess the impact of noise. The other major driving issue is the need to understand the level of explosives residues on the ranges; how they moves off the range and what effect they have in the environment. New starts on FY 2003 specifically address air emissions from off-road vehicles and non-point source runoff from ranges.

(U) FY 2004/2005 Plans: Compliance:
There will be no new starts in FY 2004. Those projects in military noise prediction on ranges, dust emissions factor on ranges, and emissions factors for military aircraft engines will be deferred until FY 2005. The focus of compliance projects continues to be on technologies for the measurement and control of air emissions from military vehicles as well as industrial processes. Specific attention is focused on the emissions from munitions and the fate and effect of explosive materials on the ranges.

Conservation	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/ Effort/Subtotal Cost	10.513	9.704	8.661	11.017
RDT&E Articles Quantity *(as applicable)				

(U) FY 2002 Accomplishments: Conservation:
The extensive efforts at Fort Benning, GA under the SERDP Ecosystem Management Project (SEMP) yielded the first indicators and thresholds of ecosystem health as related to the impact of military operations. These indicators and thresholds will guide the development of doctrine for the sustainable use of training lands. Work on technologies and protocols to control invasive plants on DoD installations as well as an evaluation of the impact of military noise on marine mammals continued to make progress. New starts focused on techniques to cost effectively detect and evaluate artifacts on DoD ranges that fall under the Native America Graves Protection and Reparation Act; evaluation of the impact of fog oil "smoke generators" on the plants and animals on DoD ranges; and techniques to assess the impact of outside land use changes (urbanization, encroachment) on DoD installations were initiated.

(U) FY 2003 Plans: Conservation:
The SEMP project continues in its effort to develop land management techniques for installations and ranges. Similarly, methods to assess and predict the impact of urbanization and encroachment on our ranges are in their second year of effort. New technologies to detect and control invasive aquatic species that are carried in Navy ships' ballast water are under development. New start projects will determine the impact of military operations on threatened and endangered species and develop methods and protocols for managing our natural resources in estuaries that are dominated by military activity.

(U) FY 2004/2005 Plans: Conservation:
There will be no new starts in FY 2004. Projects on cost effective inventorying and monitoring of and quantification of impact of military operations on

Threatened and Endangered Species, prediction of marine mammal distribution, and cost effective control of invasive species on ranges will be deferred until FY 2005. Ecosystem management techniques for installations and ranges continues to dominate the Conservation thrust area as the SEMP project initiates the next round of projects on adaptive management. Work on technologies to detect and assess cultural resources also continues.

Cleanup	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/ Effort/Subtotal Cost	14.889	10.112	9.191	11.730
RDT&E Articles Quantity *(as applicable)				

(U) FY 2002 Accomplishments: Cleanup:
Work was completed on the development of in-situ bioremediation strategies for ammonium perchlorate. Ammonium perchlorate is a constituent of sold rocket fuel which is being found in drinking water sources with increasing frequency. In 1997 SERDP identified perchlorate as problem contaminant for DoD and the nation, and recently, EPA has begun to regulate this compound. The technologies developed are transitioning to full scale demonstration and will be available in the near future for use in the pending cleanup effort on DoD bases. Advances in bioremediation have been successful for two other major sources of pollution: the explosive materials found on ranges; and the chlorinated solvents (TCE, PCE) found at over half of DoD sites. A significant effort began in FY 2002 to develop technologies to reduce the effort and cost associated with the regulatory long term monitoring of sites that are undergoing cleanup.
(U) FY 2003 Plans: Cleanup:
Projects continue to address the remediation of energetics in soil and groundwater. The development of in-situ alternatives to decades-long "pump and treat" solutions to chlorinated solvent remediation continues. These alternatives include aggressive chemical treatment of source zones, bioremediation and monitored natural attenuation. New start projects include source zone delineation, new diagnostic procedures for evaluating performance and new technologies for the sequestration of toxic heavy metals in soils, such as lead on small arms ranges.
(U) FY 2004/2005 Plans: Cleanup:
There will be no new starts in FY 2004. Projects on remediation of munitions constituents on ranges, abiotic remediation of chlorinated solvents, cost-effective, in-place remediation of sediments, and remediation of heavy metals will be deferred until FY 2005. Projects continue to address the remediation of energetics in soil and groundwater as a key element of training and testing range sustainability. Contamination of drinking water with chlorinate solvents remains a significant issue for most bases.

Unexploded Ordanance (UXO)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/ Effort/Subtotal Cost	8.223	11.706	10.292	13.112
RDT&E Articles Quantity *(as applicable)				

(U) FY 2002 Accomplishments: Unexploded Ordnance (UXO):
This area expanded significantly in FY 2002 due to an increase in the budget contained in the amended President's Budget Request. This increase has been focused on the more difficult issues of detection of underwater UXO and discrimination of UXO in highly cluttered and highly vegetated sites. Work will also commence on the next generation of sensor systems. Ongoing projects in optimization of existing, first generation sensors and development of sophisticated signal processing systems have resulted in increased probability of detection with a reduction in false alarms. These improvements will yield significant reductions in the costs associated with site remediation.
(U) FY 2003 Plans: UXO:
In FY 2003 the investment in UXO increases to address a broad range of aspects of the UXO issue. They range from next generation sensors to multiple sensor platforms to improved, precise geolocation systems to underwater detection and discrimination phenomena and system design to advanced signal processing. Three standardized test sites for the demonstration and evaluation UXO technologies will be fully functional. New starts are focused on innovative, high risk, high payoff sensor designs.
(U) FY 2004/2005 Plans: UXO: There will be no new starts in FY 2004. Projects in improved detection and discrimination, technologies to distinguish inert from explosive UXO and new technologies for underwater UXO will be deferred until FY 2005.
C. Other Program Funding Summary: NA
D. Acquisition Strategy. Not required for Budget Activity 3**.**
Major Performers: None