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OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

0603716D8Z - Strategic Environmental Research and Development Program (SERDP)

Cost (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost	54.911	75.429	67.149	70.977	71.111	72.438	73.920
P470 Strategic Environmental Research and Development Program (SERDP)	54.911	75.429	67.149	70.977	71.111	72.438	73.920

A. Mission Description and Budget Item Justification: (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 Restoration, Munitions Management, Sustainable Infrastructure, and Weapons Systems and Platforms. 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, sustain DoDs training and testing range infrastructure, and help ensure the safety and welfare of military personnel and their dependents; and (2) eliminating or reducing the generation of pollution and use of hazardous materials to reduce operational and life-cycle costs, as well as reducing the cost of necessary remedial actions and compliance with laws and regulations. As a secondary benefit, SERDP helps solve significant national and international environmental problems. The keys to a growing list of SERDP technological successes are the ability to respond aggressively to these priority defense needs; the pursuit of universal, world-class technical excellence; emphasis on constant technology transfer to field use; and sound fiscal management. The increase between FY 2005 and FY 2006 and beyond represents an increased investment in technologies for the detection, discrimination and disposal of unexploded ordnance (UXO) and munitions constituents.

<u>B. Program Change Summary</u>	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	56.597	64.101	66.104
Current BES/President's Budget (FY 2007)	54.911	75.429	67.149
Total Adjustments	-1.686	11.328	1.045
Congressional Program Reductions		-1.222	
Congressional Rescissions			
Congressional Increases		12.550	
Reprogrammings	-0.750		
SBIR/STTR Transfer	-0.859		
Other	-0.077		1.045

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0603716D8Z - Strategic Environmental Research and Development Program (SERDP)**C. Other Program Funding Summary:** Not Applicable.**D. Acquisition Strategy:** Not Applicable.**E. Performance Metrics:**

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
	DoD Environmental Requirements					

Comment: Performance in this program is monitored at two levels. At the lowest level, each of the more than 150 individual projects is measured against both technical and financial milestones on a quarterly and annual basis. At a program-wide level, progress is measured against DoD's environmental requirements and the development of technologies that address these requirements as well as the transition of these technologies to either to demonstration and validation programs or to direct use in the field.

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<p><u>B. Accomplishments/Planned Program:</u></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%; padding: 5px;">Accomplishment/Planned Program Title</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2005</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2006</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2007</td> </tr> <tr> <td style="padding: 5px;">Munitions Management (MM):</td> <td style="text-align: center; padding: 5px;">13.728</td> <td style="text-align: center; padding: 5px;">16.526</td> <td style="text-align: center; padding: 5px;">15.417</td> </tr> </table> <p>(U) FY 2005 Accomplishments: Investment in munitions management yielded advanced technology to address the most difficult and persistent issues facing our military testing and training lands, ranging from advanced signal processing approaches for improved detection and discrimination to next generation sensors to unexploded ordnance (UXO) filler material identification methods to underwater characterization technologies. Investigators continued to use the two standardized test sites for the demonstration and evaluation of UXO technologies. New start projects concentrated on improved sensor designs and improving detection and discrimination methods.</p> <p>(U) FY 2006 Plans: Continuing efforts in UXO detection and discrimination technologies, projects include developing navigation tools to support collection of geophysical data, characterizing underwater sites, and developing novel sensors and signal processing techniques.</p> <p>(U) FY 2007 Plans: New initiatives will continue to focus on wide area assessment technologies, advanced sensors, signal processing, supporting technologies and protocols. Continuing efforts include a project to develop model-based, robust methods for UXO discrimination from time and frequency domain Electromagnetic Induction.</p>								Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007	Munitions Management (MM):	13.728	16.526	15.417
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Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007	
Environmental Restoration:	14.826	24.789	18.643	
(U) FY 2005 Accomplishments: In FY 2005 SERDP-funded research continued to address two major contaminants of concern at DoD facilities: munitions constituents (explosives, propellants and pyrotechnics) found on ranges; and chlorinated solvents (TCE, PCE) found at over half of DoD remediation sites. Significant progress was made in the investigation of the genetic and biochemical processes involved in the breakdown of explosive contaminants by plants. Efforts continued to determine the levels of explosives contamination on training and testing ranges and to determine the fate and transport of these materials into the soil and groundwater at training ranges. SERDP Researchers completed a study to assess the fate, transport and ecotoxicological issues of CL-20, a new energetic material. Researchers continued to develop both biological and abiotic technologies to address the remediation of munitions constituents in soil and groundwater and development of technologies to remediate chlorinated solvent plumes with in-situ alternatives to decades-long "pump and treat" solutions. Other continuing projects researched source zone delineation and the sequestration of toxic heavy metals in soils, such as lead on small arms ranges.				
(U) FY 2006 Plans: Efforts will continue in the munitions constituents on ranges and chlorinated solvents areas. Projects will: 1) investigate cost-effective in-situ remediation strategies for sediments; 2) improved understanding of the delivery and distribution of remedial materials in the subsurface; 3) develop technologies to assessment the impact of processes on fate and transport of contaminants in sediments; 4) develop new technologies for containment and/or treatment of energetic materials on ranges. Continue to develop technologies needed to support the sustainability of DoD's training and testing ranges with specific attention on fate and effect of munitions constituents from operational ranges. Characterize the source term of energetic compounds in aquatic environments. Identify and quantify naturally occurring sources of perchlorate and develop new, cost-effective methods for the treatment of perchlorate in drinking water. Congressional additions include \$1,000,000 to continue work at Texas Tech University on risk based approaches for improved toxic chemical management; \$8,750,000 for continued work on wellhead treatment of perchlorate contaminated well; and \$1,000,000 for the remediation of environments contaminated by ammonium perchlorate at the University of Idaho.				
(U) FY 2007 Plans: SERDP will aim to improve scientific understanding and develop innovative cost effective methods for the bioremediation of munitions constituents, specifically energetics and nitroaromatic compounds. Additional initiatives will continue work in the areas of source-zone treatment of dense non-aqueous phase liquids, and the phytoremediation of energetic contaminants. Future initiatives that will be funded to ensure the continued use and sustainability of our training ranges include exposure assessments of the fate and transport of energetic materials, and screening level and modeling tools. The knowledge of the potential sources, the movement of residual energetic materials and/or their breakdown products, and the assessment of environmental exposure will assist in total assessment of potential environmental impacts stemming from the use of test and training ranges.				
Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007	
Sustainable Infrastructure:	13.728	16.408	16.485	
(U) FY 2005 Accomplishments: Completed two initiatives under the SERDP Ecosystem Management Project (SEMP) - understanding ecosystem disturbance thresholds and ecosystem indicators of change. Continued to develop land management techniques for installations and ranges. Completed a sensor fusion approach to assess and characterize archaeological artifacts in DoD installations and ranges. Evaluated the impacts of training noise on the endangered Red Cockaded Woodpecker and on marine mammals. Commenced planning for an estuarine and coastal research land/resources management initiative at Camp LeJeune to address impacts of military training operations in these environments. Developed technologies for estimating the impact of DoD activities on marine estuaries and technologies to control invasive aquatic species in Navy ships. New initiatives: developed methods to identify and control the spread of non-native invasive species (NIS) that may be inadvertently transported by DoD vehicles and/or personnel; determined the fundamental relationships that define migratory land bird habitat and routing; and to understand how these elements can lead to improved monitoring strategies; developed models for biogeochemical cycles that can assist land managers in determining appropriate land uses and land management approaches for ecosystems; and developed new remote sensing technologies to detect high priority threatened and endangered species (TES) and their habitat(s) on DoD lands.				

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<p>(U) FY 2006 Plans: Sustaining use of military ranges requires SERDP to continue efforts on developing cost effective 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. Continuing efforts to understand and manage invasive plant species that negatively affect training activities; predicting marine mammal population densities; characterizing military activities that contribute to the transport of non-indigenous species; monitoring migratory bird species on military lands; and developing remote sensing technologies to identify threatened/endangered species habitats to meet requirements of the Endangered Species Act and Migratory Bird Treaty Act. New initiatives include the Defense Coastal and Estuarine Research Program at Camp LeJeune, developing new techniques for selecting the most effective acquisition of land as buffers for active ranges, understanding the mechanisms of forest decline on installations in the Southeastern US and the impact on habitat, and developing new methods for establishing scientifically defensible population recovery goals for threatened and endangered species. Continue to assess the impact of military noise sources and begin innovative monitoring systems for impulse noise.</p> <p>(U) FY 2007 Plans: SERDP will continue and initiate new efforts to address persistent issues that severely impact installation readiness and their ability to support force training and testing. Research topics include an assessment of the stressors on military lands caused by future larger/centralized force structures, development of new technologies to reduce and/or treat solid waste and develop technologies to safely and effectively dispose of composite materials that come about as a result of manufacturing and repair processes at military depots.</p>			
Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Weapons Systems and Platforms:	12.629	17.706	16.604
<p>(U) FY 2005 Accomplishments: New and continuing efforts focused on eliminating hazardous "red water" from explosives (TNT) manufacturing, cadmium plating on high-strength steels, and solvents containing Class II ozone depleting substances. Alternatives to perchlorate in incendiary mixes and pyrotechnic formulations; Hazardous Air Pollutant (HAP)-free solvents, and environmentally benign "green" gun barrels for medium caliber weapons continued. Researchers developed emissions factors for dust generated by unique military activities, air toxic emissions factors for military aircraft engines, and technologies for the measurement and control of air emissions from tactical vehicles.</p> <p>(U) FY 2006 Plans: SERDP will Continue work on green energetics and determining the emissions factors from exiting and new jet engines including the engines for the Joint Strike fighter. New initiatives include development of a chromium and VOC free paint systems for platforms, reduction of packaging waste for military items, and environmentally benign synthesis of energetic materials and their precursors. The Congressional appropriation included \$1,800,000 for ChemNet Environmax 4.0.</p> <p>(U) FY 2007 Plans: The Weapons Systems and Platforms program will focus on development of "green" energetics, emissions characterization and reduction, and munitions and weapons systems components that have little impact on the environment. Other initiatives include "green biosynthesis routes for energetic materials and elimination of hazardous materials in coatings and coating processes.</p>			
<p><u>C. Other Program Funding Summary:</u> Not Applicable.</p>			
<p><u>D. Acquisition Strategy:</u> Not Applicable.</p>			

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PROJECT

P470

E. Major Performers

Category	Name	Location	Type of Work and Description	Award Date
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Labs

	Army Corps of Engineers	Washington, DC	Funds are provided for U.S. Army staff support to the SERDP Executive Director, Scientific Advisory Board and the SERDP Council; the U.S. Army, U.S. Navy, the U.S. Environmental Protection Agency, the U.S. Department of Energy, the U.S. Department of Agriculture (USDA), and the National Institute of Standards and Technology (NIST) for approved FY 2004 SERDP projects in compliance, cleanup, pollution prevention, and conservation.	26 OCT 2004
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