Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army											Date: May 2017	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 0603779A / *Environmental Quality Technology - Dem/Val*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	-	8.464	7.785	10.456	-	10.456	11.727	11.403	11.512	10.781	Continuing	Continuing
035: *National Defense Cntr For Enviro Excellence*	-	2.666	2.548	3.779	-	3.779	4.003	3.906	3.982	3.926	Continuing	Continuing
E21: *POLLUTION PREVENTION TECHNOLOGY DEM/VAL*	-	5.798	5.237	6.677	-	6.677	7.724	7.497	7.530	6.855	Continuing	Continuing

A. Mission Description and Budget Item Justification

There is a broad application potential for environmental quality technology (EQT) to be applied to multiple Army weapon systems and installations. However, technology must be demonstrated and validated (total ownership cost and performance data identified) before potential users will consider exploiting it. This Program Element includes Projects focused on validating the general military utility or cost reduction potential of technology when applied to different types of infrastructure, military equipment or techniques. It may include validations and proof-of-principle demonstrations in field exercises to evaluate upgrades or provide new operational capabilities. The validation of technologies will be in as realistic an operating environment as possible to assess performance or cost reduction potential. EQT demonstration/ validation is systemic, i.e. applies to a class of systems (e.g., vehicles or aircraft) or to a Department of Army-wide, multiple site/installation problem (e.g. unexploded ordnance detection and discrimination). This PE will address, and eventually resource, programs in each of the Army environmental quality technology pillars (military materials in the environment, sustainable ranges and lands, compliance, and pollution prevention). All work must be endorsed by potential users and supported by a state-of-the-art assessment (i.e. "technology is heading for user to implement").

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	8.813	7.785	8.213	-	8.213
Current President's Budget	8.464	7.785	10.456	-	10.456
Total Adjustments	-0.349	0.000	2.243	-	2.243
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.349	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	0.000	0.000	2.243	-	2.243

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Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603779A *I Environmental Quality Technology - Dem/Val*

Change Summary Explanation

FY 2018 increase of $2.243M: $0.4M in support of National Defense Center for Environmental Excellence; $1.8M in support of Pollution Prevention Technology Dem/Val efforts.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603779A / *Environmental Quality Technology - Dem/Val*	Project (Number/Name) 035 / *National Defense Cntr For Enviro Excellence*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
035: *National Defense Cntr For Enviro Excellence*	-	2.666	2.548	3.779	-	3.779	4.003	3.906	3.982	3.926	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The National Defense Center for Environmental Excellence (NDCEE) was established by Congress in 1990 with a directive to "serve as a national leadership organization to address high priority environmental problems for the Department of Defense (DoD), other government organizations, and the industrial community." The NDCEE Program is a national resource for developing and disseminating advanced environmental technologies. The NDCEE is used to: demonstrate environmentally acceptable technology to industry; validate new technology prior to transferring that technology; and assist in the training of potential users as part of that technology transfer process. The NDCEE is a DoD resource for environmental quality management and technology validation. This Project is managed by the Army on behalf of the Office of the Assistant Deputy Under Secretary of Defense for Installations & Environment. In May 2008, the Project name was redesignated from the National Defense Center for Environmental Excellence to the National Defense Center for Energy and Environment to ensure that the Center's mission recognizes and addresses the strategic interdependence of energy and environmental technology requirements within an overall sustainability framework in support of our installations, weapons systems and war fighters. This name change also directly supports the DoD's proactive implementation of Executive Order 13423, "Strengthening Federal Environmental, Energy and Transportation Management."

The United States (U.S.) Army's broadly encompassing and growing mobile, personal and stationary advanced energy technology requirements include infrastructure, alternative and synthetic fuels, surety, renewables, storage, distribution, advanced power, micro-grids, transportation, systems integration and others. Further, to train as we fight, validated energy and environmental technologies need to be available and implemented at Army installations. The NDCEE will continue to demonstrate, validate, and transfer these technologies supporting our integrated environment, safety, occupational health and energy objectives with full consideration of the triple bottom line of mission, environment and community.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
Title: Conduct demonstration/validation of environmentally acceptable technologies that enhance military readiness and reduce production, operating, and/or disposal costs.	2.329	1.569	2.935
Description: Supports the demonstration and validation of environmental, safety, occupational health, and energy technologies that support the Army's Environmental Quality Technology mission. The objective is to determine if the technology is ready for implementation that will enhance military readiness and reduce production, operating, and/or disposal costs.			
FY 2016 Accomplishments:			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
Conducted demonstration/validation of environmentally acceptable technologies that enhance military readiness and reduce production, operating, and/or disposal costs. Technologies demonstrated consisted of technologies selected by the NDCEE Technical Working Group. ***FY 2017 Plans:*** Conduct demonstration/validation of environmentally acceptable technologies that enhance military readiness and reduce production, operating, and/or disposal costs. Technologies to be demonstrated consist of technologies selected by the NDCEE Technical Working Group and approved by the NDCEE Executive Advisory Board. ***FY 2018 Plans:*** Will conduct demonstration/validation of ESOH and Energy technologies that enhance military readiness and reduce production, operating, and/or disposal costs. Conduct project selection process for potential Fiscal Year (FY) 19 new starts. Technologies will be selected by the NDCEE Technical Working Group and approved by the NDCEE Executive Advisory Board.			
Title: NDCEE Government program management during contract negotiations and during project formulation, execution, and technology transfer. ***Description:*** Funds the government program management office for the NDCEE. This consists of personnel assisting in contract negotiations and during project formulation, execution, and technology transfer. ***FY 2016 Accomplishments:*** Funded NDCEE government program management during contract negotiations and during project formulation, execution, and technology transfer. ***FY 2017 Plans:*** Fund NDCEE Government program management during contract negotiations and during project formulation, execution, and technology transfer. ***FY 2018 Plans:*** Will fund NDCEE Government program management during contract negotiations and project formulation, execution, and technology transfer.	0.337	0.979	0.844
Accomplishments/Planned Programs Subtotals	2.666	2.548	3.779

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

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D. Acquisition Strategy

The NDCEE is a national asset focused on DoD applications that include technology transfer to appropriate DoD organizations. The NDCEE fosters an outreach program to describe its products and capabilities that include publication of results and participation in professional meetings, symposia, conferences, and appropriate coordination with industry. The management strategy for the NDCEE centers on a DoD Executive Advisory Board (EAB) chaired by the DoD NDCEE Executive Agent on behalf of the Deputy Undersecretary of Defense for Installations and Environment and composed of senior DoD leadership to oversee NDCEE operations. The EAB is supported by the NDCEE Technical Working Group (TWG) that includes senior level staff members from each of the offices represented on the EAB. The NDCEE TWG coordinates all NDCEE activities, votes on proposed joint NDCEE projects, and reports back to the EAB Principals. Working at the tactical levels, three Focus Groups (environment, safety/occupational health, and energy) were established to develop joint projects. The Army's Environmental Quality Technology Program participating in the Focus Groups also assists in the formulation of suggested environmental technology projects to be demonstrated within the NDCEE Program. The contracting strategy of the NDCEE is based on using an NDCEE Contracting Officer's Representative to validate all the contractual portions of the NDCEE and by technical monitors (TM) to oversee the technical aspects of each contracted task. A prime contractor operates NDCEE test facility to validate environmentally compatible technologies on a representative "shop floor". The NDCEE accounts for and conducts work for: (1) direct funded Army tasks; (2) reimbursable tasks from within DoD and from other Government agencies; and (3) when applicable Congressionally directed and funded tasks.

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603779A / *Environmental Quality Technology - Dem/Val*	Project (Number/Name) E21 / *POLLUTION PREVENTION TECHNOLOGY DEM/VAL*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
E21: *POLLUTION PREVENTION TECHNOLOGY DEM/VAL*	-	5.798	5.237	6.677	-	6.677	7.724	7.497	7.530	6.855	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project supports Advanced Component Development and Prototypes of environmental quality technologies developed within the Army Environmental Quality Technology program. The Project increases operational sustainment and warfighter training capabilities by reducing soldier and worker health risks and environmental quality impacts that would otherwise result in restoration needs and compliance enforcement actions against installations while simultaneously increasing performance and standardization across the Army. The Project expedites technology transition from the laboratory to operational use by demonstrating new materials and processes to fulfill the performance requirements outlined in Material Specifications, Depot Maintenance Work Requirements, Technical Manuals, Drawings and other technical data. Materials and processes demonstrated under this project are inherently more sustainable than the baseline with respect to environmental, safety and occupational health concerns, thereby reducing life cycle costs incurred by acquisition, industrial base and installation end users.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
Title: Environmental quality technology demonstration and validation: Toxic Metal Reduction in Surface Finishing of Army Weapon Systems ***Description:*** Increase readiness and environmental sustainability of Army depots and maintenance facilities by reducing or eliminating the use of hexavalent chromium, cadmium and associated toxic or carcinogenic materials used in surface finishing processes. ***FY 2016 Accomplishments:*** Conducted large-scale demonstrations of sustainable alternatives for conversion coating, surface activation and copper/silver electroplating processes. ***FY 2017 Plans:*** Conduct qualification testing for alternatives products in mixed metal pretreatment, conversion coating and surface activation applications. ***FY 2018 Plans:*** Will establish hexavalent chromium-free pilot processes for depositing and repairing hard chrome surfaces; will validate alternative products for sealing black oxide, hard anodize and zinc plated surfaces at Army depots.	2.843	2.150	2.628
Title: Environmental quality technology demonstration and validation: Airborne Lead Reduction from Army Weapon Systems	1.825	1.600	1.277

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Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603779A / *Environmental Quality Technology - Dem/Val*	**Project (Number/Name)** E21 / *POLLUTION PREVENTION TECHNOLOGY DEM/VAL*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
Description: Sustain soldier training readiness and ensure compliance at Army installations by reducing or eliminating the use of lead compounds in rocket and missile propellants and primary explosives (primers/detonators/initiators). ***FY 2016 Accomplishments:*** Qualified a promising lead-free primary explosive composition and will demonstrate a lead-free percussion primer in a relevant end item configuration. ***FY 2017 Plans:*** Demonstrate a green, improved process for loading lead-free primers and will scale up formation of a reduced-lead alternative to current extruded rocket propellants. ***FY 2018 Plans:*** Will load lead-free primers into relevant end items using new pilot-scale automated process and conduct initial performance testing; will conduct flight testing for rocket systems utilizing reduced-lead extruded rocket propellants.			
Title: Environmental quality technology demonstration and validation: ESOH Impacts of Short-Term Noise Assessment Procedures ***Description:*** Demonstrate and validate the technologies, including the underlying computational algorithms, for the impact of short-term noise assessment procedures on environmental footprint and Soldier readiness. When completed the program will: 1) have validated short-term noise assessment procedures, including uncertainty metrics and 2) have on-line, self-guided training modules for Sustainable Range Program range officers on performing and interpreting short-term noise assessment results. ***FY 2016 Accomplishments:*** Incorporated community response blast noise metrics into all short-term noise assessment tools. Incorporated and validated single event metrics and thresholds determined in the Blast Noise study into the noise models. Validated that single event propagation tables are properly and consistently accessed by each noise model to be tested. Used existing validation sets (Ft. Sill and Ft. Knox), initiated validation that all models produced identical results for each of the test cases. Demonstrated an initial methodology for automating simulations, given source and propagation condition inputs for future model update validations testing. Compared and validated model outputs for the Long-Range Sound Propagation dataset, treating the desert and temperate environments separately. ***FY 2017 Plans:***	0.570	0.586	0.625

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
Incorporate community response blast noise metrics into all short-term noise assessment tools. Conduct comparisons and validation of models using installation validation sets (Ft. Sill and Ft. Knox). Initiate comparisons and validations of models using additional installation dataset (Ft. AP Hill). Design sampling protocols and methods. ***FY 2018 Plans:*** Will complete analysis of all datasets including any updates indicated by the demonstration / validation results. Test model updates to ensure continued accuracy and document the updates / validation results. Initiate developments of training modules for range managers.			
Title: Environmental quality technology demonstration and validation: Advanced Water Reuse Technology for Fixed Installations ***Description:*** Demonstrate and validate advanced water reuse technology for fixed installations and assess ESOH impacts. At the completion of this program, the following will be accomplished: 1) demonstration of energy efficient advanced water reuse technology at installations, 2) ESOH analysis of three water reuse technologies for installations including shower water recycling, distributed water reclamation, and centralized reclamation; 3) reports on best practices for permitting, design, and safe operation of advanced reuse technologies; and 4) marketing materials comparing quality of advanced reuse water to tap and bottled water to support technology adoption campaigns at installations and contingency bases. ***FY 2016 Accomplishments:*** Performed analysis of toxicity and full suite of potential water contaminants (Disinfection By-Products, Pentachlorophenol, viruses, Total Organic Carbon) at Technology Enabled Capabilities Demonstration sites and at active Environmental Security Technology Certification Program demonstration sites; supported permitting of advanced water reuse technology demonstration; and contracted for a demonstration/validation system prototype. ***FY 2017 Plans:*** Perform analysis of toxicity and full suite of potential water contaminants (Disinfection By-Products, Pentachlorophenol, viruses, Total Organic Carbon) at Technology Enabled Capabilities Demonstration sites and at active Environmental Security Technology Certification Program demonstration sites; support permitting of advanced water reuse technology demonstration; and develop a demonstration/validation system prototype. ***FY 2018 Plans:*** Will execute demonstration testing at Tobyhanna Weapons Depot, Fort Riley and Fort Carson. Demonstrations will include measurements of technology performance with a focus on removal of emerging micro-pollutants to guide ESOH analysis in coordination with Army Public Health Center (APHC).	0.560	0.901	0.572
Title: Environmental quality technology demonstration and validation: Insensitive Munitions Wastewater Treatment	-	-	1.575

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
Description: Demonstrate and validate optimized scalable wastewater treatment system basic technology for the destructive treatment of existing and emerging insensitive munitions (IM) contaminated production wastewater generated during Army ammunition plant munitions production. ***FY 2018 Plans:*** Will demonstrate new IMX production process wastewater remediation technology to allow efficient, low cost destruction of harmful and regulated contaminates for increased surface water discharge. Technology will allow increased production rates of munitions compounds while meeting permit regulatory thresholds for wastewater discharge.			
Accomplishments/Planned Programs Subtotals	5.798	5.237	6.677

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• 0605857A 06I: *Pollution Prevention Tech Support*	0.262	0.110	0.710	-	0.710	1.055	0.681	0.652	0.496	Continuing	Continuing

Remarks

D. Acquisition Strategy

The project ultimately transitions successfully demonstrated environmental quality technologies to Army acquisition, industrial base and installation end users. As part of the Army's Environmental Quality Technology Program, all technology efforts address a valid Army Environmental Requirements and Technology Assessments (AERTA) requirement. The Army's Environmental Technology Integrated Product Team conducts a thorough assessment and makes funding recommendations to senior Army environmental leadership. Efforts approved by senior Army environmental leadership receive Advanced Component Development and Prototype funding to fully demonstrate and validate the technology for transition to end users for follow on implementation.

E. Performance Metrics

N/A