Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy											Date: February 2018	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 0603721N *I Environmental Protection*							
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
Total Program Element	442.286	19.117	20.214	19.811	-	19.811	20.351	20.333	20.688	21.141	Continuing	Continuing
0401: *Shipboard Waste Mgmt*	351.165	8.191	7.920	7.776	-	7.776	8.007	8.915	9.047	9.276	Continuing	Continuing
0817: *Environmental Sustainability Development (NESDI)*	44.352	5.600	4.782	4.266	-	4.266	4.439	6.120	6.237	6.358	Continuing	Continuing
9204: *Marine Mammal Research*	46.769	5.326	4.512	4.769	-	4.769	4.905	5.298	5.404	5.507	Continuing	Continuing
9205: *Marine Mammal Settlement*	0.000	0.000	3.000	3.000	-	3.000	3.000	0.000	0.000	0.000	0.000	9.000

A. Mission Description and Budget Item Justification

This program develops and evaluates processes, hardware, systems, operational procedures, scientific methods, and environmental studies that will allow the Navy to operate in U.S., foreign, and international waters, air, space, and land areas while complying with environmental laws, regulations, Executive Orders, policies and international agreements.

Many environmental laws, regulations, and policies impose restrictions on Navy training and testing, vessels, aircraft, and facilities that interfere with operations and/or increase the cost of operations. The Navy must be able to conduct its national security mission in compliance with applicable environmental requirements in the U.S. and abroad without compromising performance, safety, or health, while simultaneously minimizing the cost of compliance. The projects for this Program Element (PE) support the Navy's compliance with the (a) Clean Water Act, (b) Act to Prevent Pollution from Ships, (c) International Convention for the Prevention of Pollution from Ships, (d) DoD Regulations on Vessels Owned or Operated by the Department of Defense, (e) OPNAV Environmental and Natural Resources Program Manual, (f) Uniform National Discharge Standards [UNDS] Phase I Standard, (EO) 13148, Greening the Government Through Leadership in Environmental Management, (g) Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, (h) National Invasive Species Act of 1996, (i) Ballast Water Management for Control of Nonindigenous Species in Waters of the United States, (j) Clean Air Act, (k) Federal Insecticide, Fungicide, and Rodenticide Act, (l) Marine Mammal Protection Act, and (m) Endangered Species Act. References (a) through (m) establish Level I environmental protection requirements. Project 0401, Shipboard Waste Management, supports efforts that enable Navy ships and submarines to comply with laws, regulations, and policies in six major areas: (1) Liquid Wastes, (2) UNDS Rulemaking, (3) Hazardous Materials and Pollution Prevention, (4) Hull Antifouling Paints, (5) Technical Authority, and (6) Ballast Water Exchange Improvements. Project 0817, Environmental Sustainability Development, supports the development and validation of technologies to enable Navy facilities to comply with environmental laws, regulations, and policies in a cost-effective manner.

The Marine Mammal Research (MMR) program is responsible for applied research and works to address the Navy's key research needs and transition the results and technologies for use within the Navy's at-sea environmental compliance and permitting processes in compliance with the Marine Mammal Protection Act and the Endangered Species Act, with the goals of improving marine species impact analysis (including marine mammal take estimates), mitigation measures and monitoring capabilities. Key points of the MMR mission are: (1) Improve the best available science regarding the potential impacts to marine species from Navy activities, (2)

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy	Date: February 2018
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603721N *I Environmental Protection*

Expand the technology and methods available to the U.S. Navy marine species monitoring program (3) Preserve core Navy readiness capabilities. The This funding allows the Navy to avoid or reduce the chances of costly litigation for non-compliance.

$3.000M added in FY 2018 and FY2019 in accordance with settlement agreement under Marine Mammal Protection Act (new project created).

B. Program Change Summary ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	20.343	20.214	23.606	-	23.606
Current President's Budget	19.117	20.214	19.811	-	19.811
Total Adjustments	-1.226	0.000	-3.795	-	-3.795
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.004	0.000			
• Program Adjustments	0.000	0.000	-2.988	-	-2.988
• Rate/Misc Adjustments	0.000	0.000	-0.807	-	-0.807
• Congressional Directed Reductions Adjustments	-1.222	-	-	-	-

Change Summary Explanation

The FY 2019 funding request was reduced by ($.104) million to reflect the Department of Navy's effort to support the Office of Management and Budget directed reforms for Efficiency and Effectiveness that include a lean, accountable, more efficient government.
Technical: FY19: TA reduced to support Ballast Water Management tasking related to procurement and testing of Navy approved Ballast Water Treatment System. Liquid Waste decrease due to completion of shipboard piping modifications for long-term assessment of sewage and graywater piping development, prevention, and cleaning. Non-copper Anti-fouling decrease reflects completion of in-situ testing of antifouling coatings.
Schedule: Not applicable.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603721N / *Environmental Protection*	Project (Number/Name) 0401 / *Shipboard Waste Mgmt*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
0401: *Shipboard Waste Mgmt*	351.165	8.191	7.920	7.776	-	7.776	8.007	8.915	9.047	9.276	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Navy ships and submarines must routinely operate in U.S., international, and foreign waters, and visit numerous U.S. and foreign ports. No body of water is without environmental restrictions that impact the movements and operations of Navy vessels. Environmental requirements tend to be most restrictive in port and in coastal waters, where the Navy's increasing littoral presence places ships and submarines in discharge-restricted waters for longer periods of time. Growing international cooperation in addressing global environmental concerns is resulting in expanding areas of ocean considered environmentally susceptible, where special prohibitions on ship discharges and operations are imposed. Navy vessels must comply with applicable environmental legal requirements while maintaining continued access to all waters for operations, exercises, training, and port access. The large crews and limited on-board space of Navy ships and submarines severely constrain their ability to hold wastes for return to port for shore side disposal.

Project 0401, Shipboard Waste Management, evaluates and develops shipboard environmental equipment, systems, technologies, processes, and practices to comply with environmental laws, regulations, Executive Orders, international agreements, foreign-country requirements, and DoD and Navy policies. The project focuses on providing engineering criteria, design guidance, and performance specifications for selecting, procuring, installing, integrating, and operating environmental equipment and systems on Navy ships and submarines, and on defining and developing processes, procedures and logistics support requirements. Environmental equipment, systems, processes and practices must meet legal and environmental requirements and be reliable, maintainable and achievable at sea, and impose no or low manning burden. Environmental equipment and systems must meet Navy-unique shipboard requirements (performance, space, weight, shock, vibration, electromagnetic compatibility, manning, automation, etc.), incorporate integrated logistics support, minimize life-cycle cost, and include validated acquisition, design, installation, and operating documentation. Shipboard processes and practices must be feasible and must be compatible with ship and submarine operational, maintenance, manning, habitability, health, and safety requirements. It also addresses afloat environmental issues other than shipboard wastes, e.g., access to environmental data for planning Fleet operations and exercises.

The Afloat Environmental Quality Program supports the designated Technical Warrant Holders for Environmental Systems & Materials Engineering, with responsibility and accountability for ensuring that ships and submarines are designed and upgraded, and can be operated, in compliance with existing and anticipated environmental requirements while minimizing total ownership cost and manning. This responsibility encompasses legacy platforms and new vessel designs, as well as Fleet operations exercises, and training.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Technical Authority (TA)	0.750	1.685	1.500	0.000	1.500
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0401 / *Shipboard Waste Mgmt*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Description: Funding in support of TA utilized to develop waste stream design criteria and guidance. This includes system/technology selection, processing capacity, interfaces, shipboard integration, test and qualification protocols, processes and practices, and performance specifications. FY19 TA reduced to support Ballast Water Management tasking related to procurement and testing of Navy approved Ballast Water Treatment System. ***FY 2018 Plans:*** - Identify waste management systems for detailed acquisition and evaluation. - Perform a study on Rapid Tank design to minimize residuals and for optimized operation. - Work with Fleet, acquisition programs, and technical authorities to review and provide comments on issues, risks, and opportunities so as minimize the cost and risk to the Navy. - Review emergent ship spills and other oil spill discharge violations and determine root causes. - Identify opportunities to reduce the risk of future oil spill violations and communicate these to the fleet. - Meet with NATO and foreign Navy data exchange partners to leverage lessons learned on afloat environmental compliance. - Continue development of environmental equipment/system requirements documentation, design criteria/ guidance, specification standards, and certification protocols. - Perform assessments of emergent air emission processes and technologies to enable effective compliance at minimal life cycle cost and risk to operations. - Investigate impact of the use of environmentally sound refrigerants on refrigeration systems. ***FY 2019 Base Plans:*** - Identify waste management systems for detailed acquisition and evaluation. - Work with Fleet, acquisition programs, and technical authorities to review and provide comments on issues, risks, and opportunities so as minimize the cost and risk to the Navy. - Review emergent ship spills and other oil spill discharge violations and determine root causes. - Identify opportunities to reduce the risk of future oil spill violations and communicate these to the fleet. - Meet with NATO and foreign Navy data exchange partners to leverage lessons learned on afloat environmental compliance. - Continue development of environmental equipment/system requirements documentation, design criteria/ guidance, specification standards, and certification protocols. - Perform assessments of emergent air emission processes and technologies to enable effective compliance at minimal life cycle cost and risk to operations.					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0401 / *Shipboard Waste Mgmt*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
- Continue to investigate impact of environmentally sound refrigerants and refrigerant systems. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease in FY19 funds to support Ballast Water Management tasking related to procurement and testing of Navy approved Ballast Water Treatment System.					
Title: Liquid Wastes	2.451	2.354	2.275	0.000	2.275
Articles:	-	-	-	-	-
Description: Navy ships must be able to operate anywhere in the world, train realistically, and visit any port without operational, safety, or health constraints arising due to international, Federal, and local environmental regulations. This effort addresses liquid wastes in two (2) major areas: Marine Sanitation Devices (MSDs) and Marine Pollution Control Devices. FY19 decrease due to completion of shipboard piping modifications for long-term assessment of sewage and graywater piping development, prevention, and cleaning. ***FY 2018 Plans:*** - Perform assessments of emergent commercial off the shelf Marine Pollution Control processes and technologies that would enable effective compliance at minimal life cycle cost and risk to operations. Identify systems for detailed acquisition and evaluation Oil Pollution Abatement: - Complete installation package for shipboard testing of a commercial centrifugal oil water separator including ship check, installation drawings, and adjudication of Navy ship environmental requirements. - Initiate shipboard evaluation of centrifugal Oil Water Separator (OWS) including system inspection and operational checks. - Continue development of specifications for Navy centrifugal OWS. - Finalize and demonstrate in the Fleet procedures for regenerating membrane systems. - Investigate oil content monitor compatibility with centrifugal OWS. Non-Oily Waste: - Complete laboratory test and evaluation of membrane bioreactor layup and startup procedures and tools.					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0401 / *Shipboard Waste Mgmt*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
- Continue laboratory evaluation of microbial biosensor to assess bioreactor health. - Continue long-term assessment of sewage and graywater piping development, prevention and cleaning. - Initiate shipboard evaluation of vacuum instrumentation isolation ***FY 2019 Base Plans:*** - Perform assessments of emergent commercial off the shelf Marine Pollution Control processes and technologies that would enable effective compliance at minimal life cycle cost and risk to operations. Identify systems for detailed acquisition and evaluation Oil Pollution Abatement: - Perform shipboard evaluation of centrifugal oil water separator (OWS). - Develop specifications for Navy centrifugal OWS. - Initiate laboratory evaluation of alternative membrane coatings. - Initiate laboratory evaluation of commercial Wilden Transfer Pumps. - Begin specification development for submersible pumps. - Investigate commercial oil content monitors for potential new discharge standard. - Refine specifications for Navy small ship OWS. Non-Oily Waste: - Complete laboratory evaluation of sludge pretreatment system to support procurement specification development. - Prepare for shipboard evaluation of grease pretreatment system - Complete documentation for new hydrogen sulfide gas sensor. - Continue long-term assessment of sewage and graywater piping development, prevention and cleaning. - Initiate laboratory evaluation of alternative vacuum pumps. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** No significant changes from FY18 to FY19.					
Title: Hazardous Material Control and Management	1.000	0.995	1.015	0.000	1.015
Articles:	-	-	-	-	-
Description: A wide variety of Hazardous Materials (HM) are used to construct, operate and maintain Navy ships and submarines. These HMs include cleaning compounds, solvents, adhesives, sealants, corrosion					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0401 / *Shipboard Waste Mgmt*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
preventive compounds, acids, alkalis, oxidizers, lubricants, functional fluids, and many other products. HM addresses environmental, safety and health risks to ship construction workers, Ship's Force (S/F), and shipyard workers. FY19 increase for acquisition, installation and shipboard evaluation of automatic cleaner dispensers, and finalization of commercial item description. ***FY 2018 Plans:*** - Perform assessments of emergent commercial off the shelf hazardous material management processes and pollution prevention technologies that would enable effective compliance at minimal life cycle cost and risk to operations. - Identify hazardous material control/pollution prevention systems for detailed acquisition and evaluation. - Revise the NAVSEA Hazardous Material Avoidance Process. - Identify, research, and evaluate less hazardous or non-hazardous substitutes for high-risk hazardous materials. - Acquire, install and perform shipboard evaluation of automated cleaner dispensers. - Initiate commercial item description for automatic cleaner dispensers. ***FY 2019 Base Plans:*** - Perform assessments of emergent commercial off the shelf hazardous material management processes and pollution prevention technologies that would enable effective compliance at minimal life cycle cost and risk to operations. - Identify hazardous material control/pollution prevention systems for detailed acquisition and evaluation. - Revise the NAVSEA Hazardous Material Avoidance Process. - Identify, research, and evaluate less hazardous or non-hazardous substitutes for high-risk hazardous materials. - Acquire, install and perform shipboard evaluation of automated cleaner dispensers. - Finalize commercial item description for automatic cleaner dispensers. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** No significant changes from FY18 to FY19.					
Title: Solid Waste Management	1.190	1.000	1.050	0.000	1.050
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0401 / *Shipboard Waste Mgmt*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Description: Solid Waste Management supports the Act to Prevent Pollution from Ships (APPS) which regulates all garbage discharges from ships at sea. FY19 will address APPS compliant Solid Waste Management systems. ***FY 2018 Plans:*** - Perform assessments of emergent commercial off the shelf solid waste management processes and technologies that would enable effective compliance at minimal life cycle cost and risk to operations. - Identify solid waste systems for detailed acquisition and evaluation. - Complete laboratory test and evaluation and prepare final reports on the Act to Prevent Pollution from Ships (APPS) compliant Micro Auto Gasification System. ***FY 2019 Base Plans:*** - Perform assessments of emergent commercial off the shelf solid waste management processes and technologies that would enable effective compliance at minimal life cycle cost and risk to operations. - Identify solid waste systems for detailed acquisition and evaluation. - Begin installation and testing preparation for the shipboard evaluation and Navy ship environmental testing of convertor, Marine Solid Waste Incinerator and/or Micro Auto Gasification System based on laboratory test results. - Refine Navy ship acquisition requirements for Act to Prevent Pollution from Ships (APPS) compliant solid waste processing systems. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** No significant changes from FY18 to FY19.					
Title: Ballast Water Management	2.700	1.736	1.836	0.000	1.836
Articles:	-	-	-	-	-
Description: The National Invasive Species Act (NISA) requires the Secretary of Defense to implement a ballast water management program to minimize the risk of introduction of unwanted species and pathogens from releases of ballast water.					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0401 / *Shipboard Waste Mgmt*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
FY19 to support Ballast Water Management tasking related to procurement and testing of Navy approved Ballast Water Treatment System (BWTS). ***FY 2018 Plans:*** - Perform assessments of emergent commercial off the shelf ballast water treatment systems that would enable effective compliance at minimal life cycle cost and risk to operations. - Identify systems for detailed acquisition and evaluation. - Finalize full scale evaluation of two commercial ballast water treatment systems to assess system performance, reliability, operability and maintainability, and suitability as a Navy shipboard system. - Initiate full scale evaluation of one commercial ballast water treatment system to assess system performance, reliability, operability and maintainability, and suitability as a Navy shipboard system. - Perform pierside testing to address efficacy of ballast water exchange. - Determine ship services, consumables, manning required to run and maintain ballast water treatment systems. - Refine Navy ship installation guidance for meeting ballast water discharge standards considering damage control and stability requirements. - Develop ballast water treatment system acquisition strategy. ***FY 2019 Base Plans:*** - Perform assessments of emergent commercial off the shelf ballast water treatment systems that would enable effective compliance at minimal life cycle cost and risk to operations. - Identify systems for detailed acquisition and evaluation. - Begin acquisition of a modified commercial ballast water treatment system for laboratory or pierside evaluation. - Continue full scale evaluation of one commercial ballast water treatment system to assess system performance, reliability, operability and maintainability, and suitability as a Navy shipboard system. - Determine ship services, consumables, manning required to run and maintain ballast water treatment systems. - Refine ballast water treatment system performance specification. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase in FY19 funding to support Ballast Water Management tasking related to procurement and testing of Navy approved BWTS.					
Title: Non-Copper Antifouling	0.100	0.150	0.100	0.000	0.100
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0401 / *Shipboard Waste Mgmt*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Description: The copper discharges from underwater hull coatings remain a regulatory concern. The effort focuses on characterizing advanced coating systems and their suitability for Navy-unique operational factors such as speed time profiles, drydocking intervals, and maintenance practices. FY19 reflects completion of in-situ testing of antifouling coatings. ***FY 2018 Plans:*** - Continue execution in-situ testing and provide periods reports on performance. - Evaluate NAVSEA screening and qualification test requirements for fouling release (with and without biocides) and antifouling coatings. - Identify gaps; develop and execute testing to fill gaps. - Compare results from historical qualification tests with full scale data plus Office of Naval Research (ONR) Intersite Calibration Study and Fouling Release Coating Study data. - Prepare final report with recommendations. - Draft qualification procedure modifications as needed. ***FY 2019 Base Plans:*** - Complete in-situ testing and provide final report on performance. - Complete evaluation of NAVSEA screening and qualification test requirements for fouling release (with and without biocides) and antifouling coatings. - Compare results from historical qualification tests with full scale data plus Office of Naval Research (ONR) Intersite Calibration Study and Fouling Release Coating Study data. - Finalize qualification procedure modifications as needed. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** No significant changes from FY18 to FY19.					
Accomplishments/Planned Programs Subtotals	8.191	7.920	7.776	0.000	7.776

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0401 / *Shipboard Waste Mgmt*

D. Acquisition Strategy

RDT&E Contracts are Competitive Procurements.

E. Performance Metrics

Quarterly Program Reviews

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603721N / *Environmental Protection*	Project (Number/Name) 0401 / *Shipboard Waste Mgmt*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Ancillary Hardware Development	Various	Misc. Contracts : Not Specified	19.149	0.000		0.000		0.000		-		0.000	0.000	19.149	Continuing
Primary Hardware Development	C/CPFF	Oceaneering : Not Specified	1.000	0.000		0.000		0.000		-		0.000	0.000	1.000	Continuing
Systems Engineering	C/CPFF	John J. McMullen & Son : Not Specified	4.487	0.000		0.000		0.000		-		0.000	0.000	4.487	Continuing
		Subtotal	24.636	0.000		0.000		0.000		-		0.000	0.000	24.636	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development	WR	SPAWAR : Charleston, SC	10.838	0.000		0.000		0.000		-		0.000	0.000	10.838	Continuing
		Subtotal	10.838	0.000		0.000		0.000		-		0.000	0.000	10.838	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	MIPR	US Army Corps of Engineers : Norfolk, VA	0.687	0.000		0.000		0.000		-		0.000	0.000	0.687	-
Developmental Test & Evaluation	WR	NSWCCD, Bethesda, MD : Bethesda, MD	208.432	6.234	Nov 2016	6.250	Nov 2017	6.800	Nov 2018	-		6.800	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NSWCIHD : Indian Head, MD	1.086	0.000		0.000		0.000		-		0.000	0.000	1.086	-
Developmental Test & Evaluation	WR	NRL,Wash,DC : Wash,DC	31.341	1.235	Nov 2016	0.948	Nov 2017	0.500	Nov 2018	-		0.500	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NSWCPD, Philladelphia, PA : Philladelphia, PA	0.000	0.472	Nov 2016	0.472	Nov 2017	0.301	Nov 2018	-		0.301	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603721N / *Environmental Protection*	Project (Number/Name) 0401 / *Shipboard Waste Mgmt*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	SPAWARSYSCEN : SD,CA	12.308	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	Misc. Govt Labs : TBD	22.975	0.250	Nov 2016	0.250	Nov 2017	0.175	Nov 2018	-		0.175	0.000	23.650	-
Developmental Test & Evaluation	C/CPFF	SAIC : San Diego, CA	15.570	0.000		0.000		0.000		-		0.000	0.000	15.570	-
Developmental Test & Evaluation	C/CPFF	Misc. Contracts : TBD	13.103	0.000		0.000		0.000		-		0.000	0.000	13.103	-
Process Control Engineering	C/CPFF	M. Rosenblatt & Sons : Arlington, VA	6.547	0.000		0.000		0.000		-		0.000	0.000	6.547	Continuing
Developmental Test & Evaluation	C/CPFF	ONR : Arlington, VA	0.400	0.000		0.000		0.000		-		0.000	0.000	0.400	Continuing
Developmental Test & Evaluation	WR	Naval Postgraduate School : Monterey, CA	1.800	0.000		0.000		0.000		-		0.000	0.000	1.800	Continuing
Process Control Engineering	MIPR	EPA, Hdqtrs : Washington, DC	0.840	0.000		0.000		0.000		-		0.000	0.000	0.840	Continuing
		Subtotal	315.089	8.191		7.920		7.776		-		7.776	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	Allot	NAVSEA HQ : Washington, DC	0.375	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
SBIR Assessment	TBD	Not Specified : Not Specified	0.227	0.000		0.000		0.000		-		0.000	0.000	0.227	Continuing
		Subtotal	0.602	0.000		0.000		0.000		-		0.000	Continuing	Continuing	N/A

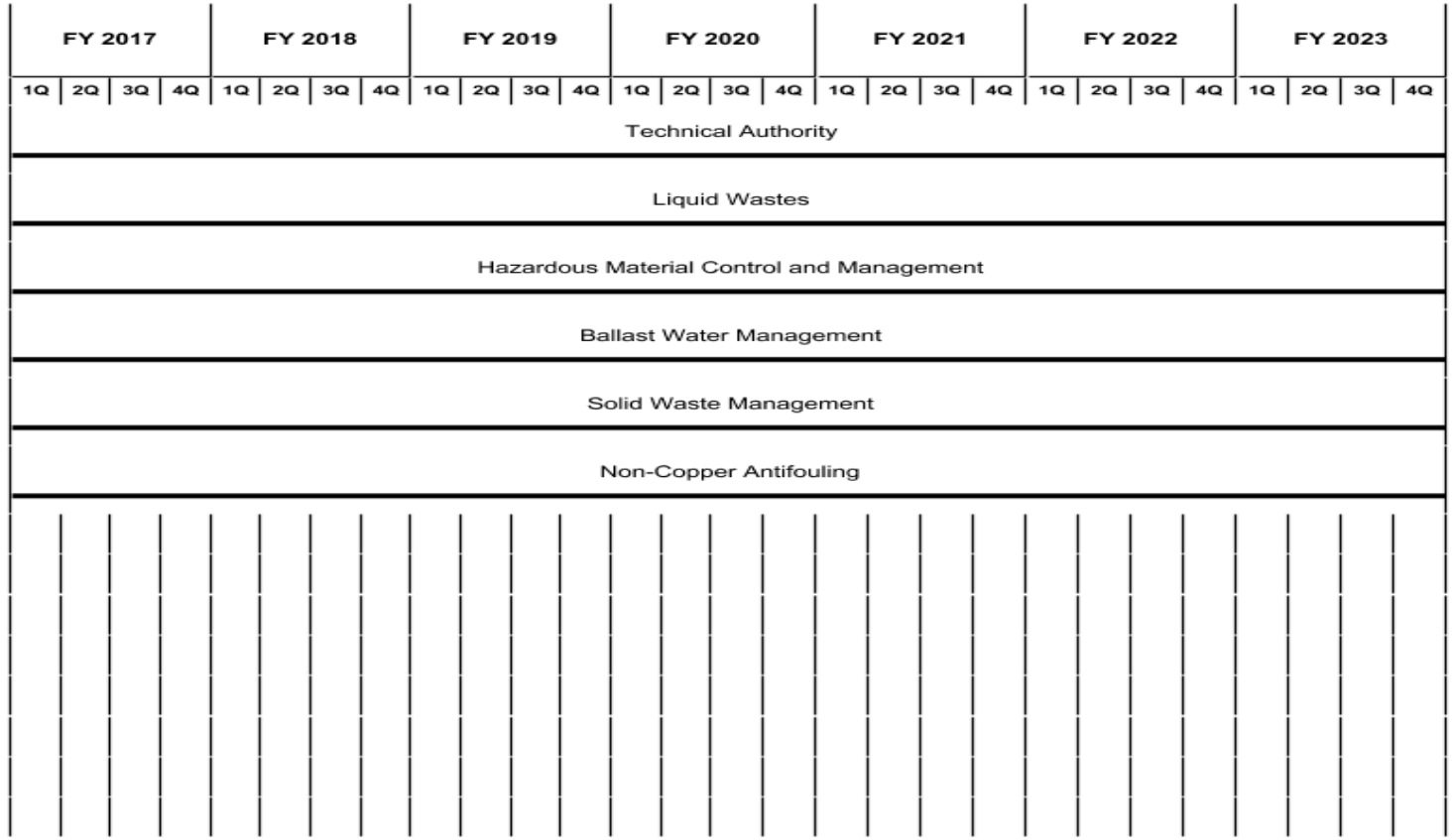
	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	351.165	8.191		7.920		7.776		-		7.776	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603721N / *Environmental Protection*	Project (Number/Name) 0401 / *Shipboard Waste Mgmt*	

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0401 / *Shipboard Waste Mgmt*



2019OSD - 0603721N - 0401

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0401 / *Shipboard Waste Mgmt*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
SHIPBOARD WASTE MANAGEMENT				
Technical Authority	1	2017	4	2023
Liquid Wastes	1	2017	4	2023
Hazardous Material Control and Management	1	2017	4	2023
Ballast Water Management	1	2017	4	2023
Solid Waste Management	1	2017	4	2023
Non-Copper Antifouling	1	2017	4	2023

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603721N / *Environmental Protection*	Project (Number/Name) 0817 / *Environmental Sustainability Development (NESDI)*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
0817: *Environmental Sustainability Development (NESDI)*	44.352	5.600	4.782	4.266	-	4.266	4.439	6.120	6.237	6.358	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Inherent to the realization of the vision outlined in Sea Power 21 are certain environmental consequences that will, to a lesser or greater degree, be an impact on the Navy's ability to fully achieve the strategy outlined in the Navy Capability Pillars (NCP) SEA SHIELD, SEA STRIKE, SEA BASING and FORCEnet and the supporting initiatives of SEA WARRIOR, SEA TRIAL and SEA ENTERPRISE. Readiness and training are primary considerations for determining whether any fighting force is at its peak proficiency. The ability to train our forces in a realistic environment is paramount. Today's reality requires training and operating within environmental constraints (national and international laws and agreements), and searching for alternatives to comply with and alleviate those constraints. Moreover, as we develop new systems and technologies in support of Sea Power 21, the Navy must anticipate potential environmental regulations which, while not currently an issue, could in the future adversely impact our ability to protect and sustain our forces at home and abroad.

This program identifies pervasive Navy shore side environmental requirements and develops and validates information, new processes, and technologies that address requirements that pose significant impact on Naval shore activities in complying with environmental laws, regulations, orders, and policies. The goal of the program is to maximize opportunities for significant cost savings while minimizing personnel liabilities, operational costs, and regulatory oversight and preserving or enhancing the ability of Naval shore activities to accomplish their required missions and functions in support of the Navy's transformational strategy.

Environmental Enabling Capabilities -2 (EEC-2) MAXIMIZE TRAINING AND TESTING RANGE REQUIREMENTS WITHIN ENVIRONMENTAL CONSTRAINTS: This capability addresses environmental impacts and restrictions at Navy land and sea ranges, including munitions testing and manufacturing, to ensure Navy ranges are available to conduct required training and testing operations for the Fleet. Investments in EEC-2 provide validated knowledge, models, and processes to mitigate environmental impacts, restrictions, and costs at Navy training and test ranges to maximize the availability and utilization of the ranges. The results support operational readiness by providing the tools and technologies necessary for sustaining and managing Navy land and sea ranges related to unexploded ordnance (UXO) and munitions, encroachment, air quality, airborne noise, water quality, and wetlands. Capabilities gained include the ability to assess and determine the risks from underwater UXO, the evaluation and prioritization of ordnance contaminated sites for evaluation in environmental programs and the implementation of range specific best management practices by evaluating and modeling available process, procedures, and technologies.

Environmental Enabling Capabilities-3 (EEC-3)PLATFORM MAINTENANCE AND REPAIR WITH MINIMAL ENVIRONMENTAL FOOTPRINT: This capability focuses on minimizing or eliminating environmental impact related to Navy and Marine Corps weapon system repair and maintenance operations. Investments in EEC-3 provide valid knowledge, models, processes, and technologies to minimize regulated emissions, discharges and hazardous material usage during the repair and maintenance of ships, submarines, and surface/sub-surface vehicles and aircraft and air vehicles. The program supports Fleet operational readiness and Navy acquisition communities by investing in information to understand emerging environmental requirements and to develop innovative processes and technologies that result in savings while

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0817 / *Environmental Sustainability Development (NESDI)*

reducing the fleet environmental constraints related to platform maintenance. Capabilities and benefits gained include, but are not limited to, the reduction in the usage of heavy metals used in metal finishing (chromium and cadmium), reduced hazardous air pollutant (HAP) emissions, the development of best management practices and tools to minimize the use of hazardous materials, and the generation of hazardous wastes associated with maintaining and repairing ships, submarines, aircraft, and unmanned vehicles. Results of program investments will be leveraged across weapon system and platform acquisition to ensure continued reduction in lifecycle costs and long-term environmental compliance burdens to the Fleet.

Environmental Enabling Capabilities-4 (EEC-4). SUPPORT SHORE READINESS WITHIN ENVIRONMENTAL CONSTRAINTS: Naval shore establishment requires the capability to operate and maintain facilities and provide waterfront and airfield services to the fleet while complying with applicable environmental regulations and minimizing environmental impacts and costs. The program invests in knowledge and innovative processes and technologies that minimize infrastructure and operational costs, regulated emissions, while minimizing discharges and hazardous material usage from ship (waterfront) and aviation operations. Capabilities and benefits gained under EEC-4 include, reduced costs associated with wastewater treatment, elimination/reduction in the use of HAPs, ozone depleting substances (ODSs), volatile organic compounds (VOCs) and the associated reporting requirements, reduced hazardous waste and disposal costs, and improved storm water management.

Environmental Enabling Capabilities-5 (EEC-5). COST-EFFECTIVE MANAGEMENT OF ENVIRONMENTAL REGULATORY REQUIREMENTS: The environmental compliance regulations require base managers to permit, monitor and report on many processes associated with weapon system and platform operations. Naval shore environmental managers require the capability to efficiently and cost effectively manage these compliance requirements. Under EEC-5, the program invests in improved data collection, methods, and models to assess environmental impacts and ecological risk assessments of Naval Operations on harbors, U.S. waterways, and surrounding communities. Benefits include gaining standardized technical environmental management improvements/techniques related to source control, assessment, and monitoring. EEC-5 also provides validated knowledge, models, processes and technologies to improve environmental monitoring and reporting, and to reduce the cost of compliance with regulations applicable to coastal contamination and contaminated sediments.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Maximize Training & Testing Requirements Within Environmental Constraints	1.095	0.850	0.735	0.000	0.735
Articles:	-	-	-	-	-
FY 2018 Plans: FY18 funds will be applied to: - Continue providing validated knowledge, models, and processes to mitigate environmental impacts, restrictions, and costs of Navy training and test ranges to maximize the availability and utilization of the ranges. - Continue the following initiatives: X-ray inspection system to demilitarize targets; Analysis of the Long-Term Fate of Munitions Constituents on Terrestrial Sites. - Complete the initiative: Underwater low environmental impact munitions breaching technology to better characterize environmental impacts of munitions on training ranges and munitions response sites.					
FY 2019 Base Plans: FY 2019 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0817 / *Environmental Sustainability Development (NESDI)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
- Continue providing validated knowledge, models, and processes to mitigate environmental impacts, restrictions, and costs of Navy training and test ranges to maximize the availability and utilization of the ranges. - Continue the initiative: Analysis of the Long-Term Fate of Munitions Constituents on Terrestrial Sites. - Complete the initiatives: X-ray inspection system to demilitarize targets. - Program to begin to evaluate Cost Effective Main Charge Remediation of Insensitive Munitions for Range Clearance. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** No significant changes from FY18 to FY19.					
Title: Platform Maintenance and Repair With Minimal Environmental Footprint	1.130	1.064	1.007	0.000	1.007
Articles:	-	-	-	-	-
FY 2018 Plans: FY18 funds will be applied to: - Continue evaluations and demonstrations of innovative solutions for difficult and persistent aviation and shipyard platform sustainment issues related to hexavalent chrome, cadmium, volatile organic compounds (VOC) hazardous air pollutants (HAP) and other hazardous compounds at Naval Aviation Systems Command Fleet Readiness Centers and the Navy's shipyards. - Complete the initiatives: Advanced Non-Chromate Primers and Coatings, Portable Treatment for Ship Material Removal Processes, Low-VOC and Low-HAP Wipe Solvent and Paint Thinner Demonstration/Validation. ***FY 2019 Base Plans:*** FY 2019 Base Plans: - Continue providing innovative solutions for difficult and persistent shipyard environmental compliance issues. - Continue the initiatives: Demonstration Of Non-Chromated Adhesive Bond Primer For Metal Repair Bonding, Non-Isocyanate Polyurethane-Free Formulation Coatings for Aircraft and Support Equipment, Multi-Functional Surface Preparation Technology for Maintenance Painting, Demonstration of Optimized non-NMP (n-Methyl-2-pyrrolidone) Solvents for Immersion Chemical Depainting, Initiation Decision Report of Laser Coating Removal on Naval Aircraft Components, Elimination of Hexavalent Chromium from Magnesium Conversion Coating Processes at Fleet Readiness Centers, Low VOC Primers for Ground Support Equipment Application.					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0817 / *Environmental Sustainability Development (NESDI)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
- Complete the initiatives: User Friendly Oxygen Cleaning Alternatives to Navy Oxygen Cleaning (NOC), Enhanced Trivalent Chromium Pretreatment for Improved Coloration and Corrosion Performance of Aluminum Substrates, Naval Air Systems Command Solutions for Engine Washing. - Program to begin to examine Electromagnetic Interference Shielding Tape, Replacement of Cadmium in GSE Avionics Applications. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** No significant changes from FY18 to FY19.					
Title: Support Shore Readiness within Environmental Constraints	1.505	1.187	1.039	0.000	1.039
Articles:	-	-	-	-	-
FY 2018 Plans: FY18 funds will be applied to: - Continue evaluations and demonstrations of innovative solutions to minimize regulated emissions, discharges and hazardous material usage resulting specifically from waterfront support, aviation support, and other base operations. - Continue the initiatives: Analysis of Regulated Garbage Management Processes to Ensure Compliance with Animal and Plant Health Inspection Service Regulations, Evaluation and Implementation of Compliance Options for National Pollutant Discharge Elimination System (NPDES) Cooling Water Intake Structures at Existing Facilities, Quantification of Polychlorinated Biphenyls (PCB) Paint Volatilization, Demonstration of New Strategies for Enhanced Monitored Natural Recovery at Navy Sediment Sites, Diver-less Deployment System for In-Situ Sediment Samplers, Improved Dewatering of Dredged Sediment, NPDES Copper Effluent Control System. - Complete the initiatives: Surface Cleaning of Drydock Floors, Dry Dock Sediment Management. ***FY 2019 Base Plans:*** FY 2019 Base Plans: - Continue the initiatives: Demonstration of New Strategies for Enhanced Monitored Natural Recovery at Navy Sediment Sites, Improved Dewatering of Dredged Sediment, NPDES Copper Effluent Control System. - Continue optimization of ship to shore regulated garbage management, improved dewatering of dredge sediment and demonstration of new strategies for enhanced monitored natural recovery at Navy sediment sites.					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0817 / *Environmental Sustainability Development (NESDI)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
- Complete the initiatives: Analysis of Regulated Garbage Management Processes to Ensure Compliance with Animal and Plant Health Inspection Service Regulations, Evaluation and Implementation of Compliance Options for NPDES Cooling Water Intake Structures at Existing Facilities, Quantification of Polychlorinated Biphenyls (PCB) Paint Volatilization, Diver-less Deployment System for In-Situ Sediment Samplers. - Under Pier Sediment Pile Assessment Tools to be evaluated and started. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** No significant change from FY18 to FY19.					
Title: Cost-Effective Management of Environmental Regulatory Requirements	1.870	1.681	1.485	0.000	1.485
Articles:	-	-	-	-	-
FY 2018 Plans: FY18 funds will be applied to: - Continue providing validated knowledge, models, processes and systems to improve environmental monitoring and reporting, and reduce the cost of compliance with regulations and management of coastal contamination and contaminated sediments. - Continue the initiatives: Evaluation of Alternative Groundwater Supply Sources from a Safe Drinking Water Act Viewpoint, Stable Carbon Isotopes for Tracing in situ Royal Demolition eXplosive (RDX) Remediation, Superhydrophobic Coating for Corrosion Prevention and Leachate Impedance, Forward Looking Infrared Camera for Advanced Discharge Characterization, Smart Electronic Tools for Navy Environmental Compliance Monitoring and Reporting, Utility Vault Water Treatment, Preventative Management of Contaminated Silt, Using Stable-Isotope Labeled Tracers to Validate Natural Attenuation of RDX in Groundwater, In Situ Treatment of 1,4-Dioxane using Enhanced Biodegradation, Demonstration of Improved Toxicity Methodology to Link Stormwater Discharges to Receiving Water Impacts, Sewer Gas Elimination Technology, Impact of Sediment Resuspension by Propeller Wash and Shore Sediment Dynamics on Remediation Options, Study of Waste Management and Minimization for Aqueous Film Forming Foam (AFFF) Wastewater, Addressing Temporal Variability in Industrial Buildings during Vapor Intrusion Assessments, Demonstrating the Effectiveness of Novel Treatment Technologies for the Removal of Poly- and Perfluoroalkyl (PFOS/PFOA) Substances from Groundwater, Enterprise-wide Hazardous Material Standardization and Minimization of General Use Consumables, In-situ Automatic Stormwater Sampling Device for Use at Tidally Impacted Sampling Locations, Background analysis and tracer study to identify metal contaminant source contributions to stormwater runoff, Biochar Adsorption					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0817 / *Environmental Sustainability Development (NESDI)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
for Dry Dock Effluent, Development and Demonstration of a Portable, Temporary Barrier to Aid in Cargo and Equipment Inspections to Prevent Brown Treesnake Dispersal, Implementation of Biotic Ligand Model-Based Water Quality Standards for Copper at Navy Sites, Source Metal Particle Removal for Stormwater Compliance, Business Processes and Requirements Enabling Technology Integration. - Complete the initiatives: Initiation Decision Report Passive Sampling for Stormwater, A Comprehensive Analysis and Strategy for Contaminated Sediment Management. ***FY 2019 Base Plans:*** FY 2019 Base Plans: - Complete the initiatives: Forward Looking Infrared Camera for Advanced Discharge Characterization, Smart Electronic Tools for Navy Environmental Compliance Monitoring and Reporting, Study of Waste Management and Minimization for AFFF Wastewater. - New program evaluate and demonstration/validation of Air Filtration for Indoor Air Quality, Stormwater Piping-Based Pollutant Best Management Practice, Improving Site Closure Decision-Making with Time-Integrated Groundwater Samples. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** No significant changes from FY18 to FY19.					
Accomplishments/Planned Programs Subtotals	5.600	4.782	4.266	0.000	4.266

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

This project is categorized as Non-ACAT (Non Acquisition). The project delivers a broad spectrum of products that require a variety of acquisition processes to implement. Equipment products for naval stations and other mission funded activities are often procured directly through the base operating budget. Equipment products for Shipyards and other Navy Working Capital Fund (NWCF) activities costing over $250K are procured through their Capital Investment Program (CIP). For both types of activities, equipment products costing less than $250K, and process changes not requiring the purchase of new equipment such as consumable material or product substitutions, are funded through the activity's operating budgets. Occasionally there is a technology that must be implemented as a specialized facility. These are acquired through the Military Construction (MILCON) Program. All these acquisition processes are pursued using a common strategy that satisfies the needs of all

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0817 / *Environmental Sustainability Development (NESDI)*

the critical stakeholders: 1) fleet end user; 2) funding sponsor for the Navy end user; 3) other stakeholders with cognizance over the Navy process or operation being changed, 4) cognizant environmental federal, state, and local regulators; and 5) the private or government organization that will produce the product.

E. Performance Metrics

Quarterly Budget Reviews

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0817 / *Environmental Sustainability Development (NESDI)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
EEC 2	Various	EXWC : PT HUENEME, CA	5.585	0.740	Oct 2016	0.500	Oct 2017	0.410	Oct 2018	-		0.410	Continuing	Continuing	Continuing
EEC 2	Various	SSC : SAN DIEGO, CA	5.549	0.355	Oct 2016	0.350	Dec 2017	0.325	Dec 2018	-		0.325	Continuing	Continuing	Continuing
EEC 3	WR	NAWC : PATUXENT RIVER, MD	1.916	0.175	Jul 2017	0.202	Mar 2018	0.135	Mar 2019	-		0.135	Continuing	Continuing	Continuing
EEC 3	Various	NSWC : BETHESDA, MD	3.630	0.220	May 2017	0.192	Nov 2017	0.175	Feb 2019	-		0.175	Continuing	Continuing	Continuing
EEC 3b	Various	EXWC : PT HUENEME, CA	1.307	0.105	May 2017	0.050	Mar 2018	0.077	Mar 2019	-		0.077	Continuing	Continuing	Continuing
EEC 4	Various	EXWC : PT HUENEME, CA	7.780	0.600	Mar 2017	0.540	Mar 2018	0.404	Mar 2019	-		0.404	Continuing	Continuing	Continuing
EEC 4	Various	NSWC : BETHESDA, MD	3.813	0.575	Oct 2016	0.307	Nov 2017	0.260	Nov 2018	-		0.260	Continuing	Continuing	Continuing
EEC 4a	Various	SSC : SAN DIEGO, CA	3.235	0.330	Jan 2017	0.340	Jan 2018	0.375	Apr 2019	-		0.375	Continuing	Continuing	Continuing
EEC 5	Various	EXWC : PT HUENEME, CA	2.986	0.590	Jan 2017	0.535	Nov 2017	0.433	Nov 2018	-		0.433	Continuing	Continuing	Continuing
EEC 5	Various	SSC : SAN DIEGO, CA	1.540	0.270	Feb 2017	0.395	Feb 2018	0.350	Feb 2019	-		0.350	Continuing	Continuing	Continuing
EEC 5	Various	NAWC : PATUXENT RIVER, MD	1.187	0.140	Jun 2017	0.050	Jun 2018	0.100	Jun 2019	-		0.100	Continuing	Continuing	Continuing
EEC 5	Various	NSWC : BETHESDA, MD	1.750	0.540	Jan 2017	0.504	Jan 2018	0.387	Jan 2019	-		0.387	Continuing	Continuing	Continuing
EEC 5	WR	NAWCWD : CHINA LAKE, CA	1.145	0.215	Oct 2016	0.122	Dec 2017	0.140	Dec 2018	-		0.140	Continuing	Continuing	Continuing
EEC 5	WR	NAWC : LAKE HURST, NJ	0.716	0.115	Nov 2016	0.075	Nov 2017	0.075	Nov 2018	-		0.075	Continuing	Continuing	Continuing
EEC 3	WR	FRC - SE : JACKSONVILLE, FL	1.305	0.380	Feb 2017	0.380	May 2018	0.380	May 2019	-		0.380	Continuing	Continuing	Continuing
EEC 3	Various	NSWC : San Diego, CA	0.000	0.060	Jun 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0817 / *Environmental Sustainability Development (NESDI)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
EEC 3	WR	FRC - CE : Cherry Point, NC	0.320	0.060	Jun 2017	0.075	Jun 2018	0.075	Jun 2019	-		0.075	Continuing	Continuing	Continuing
EEC 3	Various	FRC-SW : San Diego, CA	0.588	0.130	Mar 2017	0.165	Mar 2018	0.165	Mar 2019	-		0.165	Continuing	Continuing	Continuing
		Subtotal	44.352	5.600		4.782		4.266		-		4.266	Continuing	Continuing	N/A

Remarks

Performing Activities: Naval Surface Warfare Center, Carderock Division (NSWC/CD); Engineering and Expeditionary Warfare Center (EXWC), Port Hueneme, CA; Naval Surface Warfare Center, Indian Head Division (NSWC/IH); Space and Warfare Systems Center, San Diego (SSC/SD); Naval Air Warfare Center Aircraft Division Patuxent River (NAWCAD/PAX); Naval Air Warfare Center (NAWCWD/China Lake); Naval Air Warfare Center Aircraft Division Lakehurst (NAWCAD/Lakehurst); Fleet Readiness Center Southeast, Jacksonville FL (FRC-SE); Fleet Readiness Center Southwest, San Diego (FRC-SW), Fleet Readiness Center East, Cherry Point (FRC-CE). Total Prior Years Cost: Subtotal does not include performing activities from prior years that are no longer performing activities. Award Dates: About 55% of the project is executed via contracts awarded by the performing activities.

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	44.352	5.600		4.782		4.266		-		4.266	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0817 / *Environmental Sustainability Development (NESDI)*

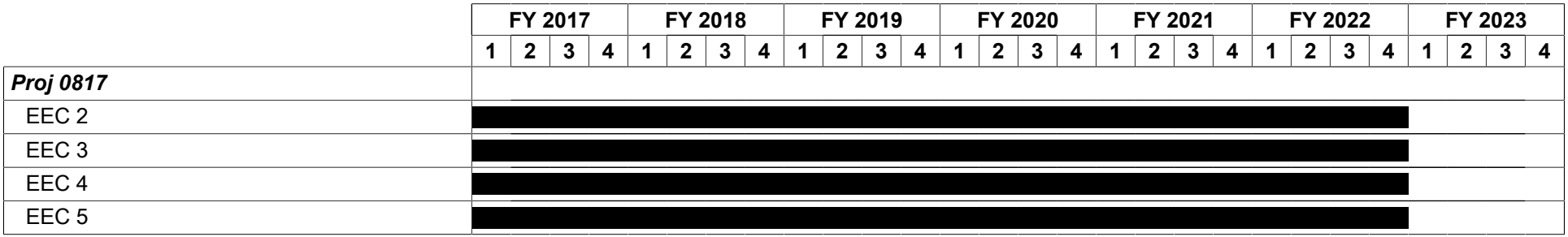


Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0817 / *Environmental Sustainability Development (NESDI)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0817				
EEC 2	1	2017	4	2022
EEC 3	1	2017	4	2022
EEC 4	1	2017	4	2022
EEC 5	1	2017	4	2022

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy											Date: February 2018	
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603721N / *Environmental Protection*				Project (Number/Name) 9204 / *Marine Mammal Research*			
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
9204: *Marine Mammal Research*	46.769	5.326	4.512	4.769	-	4.769	4.905	5.298	5.404	5.507	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Navy has been and will continue to be subject to litigation with regard to the potential injuring, killing or biologically significant disturbance of marine animals by the use of intense underwater sound. Since Fleet operation and training areas coincide with known or probable habitats, migration routes, or breeding areas of marine mammals and other protected marine species, the possibility exists that such incidents are likely to continue in the future. The increasing public interest and pressure has resulted in escalating Fleet costs. For example, Fleet and SYSCOM development activities have been interrupted; modified, or altogether cancelled and environmental regulations have, among other things, required new ship construction shock trials to obtain Federal permits and conduct extensive environmental planning that can take several years to complete. The incorporation of mitigation measures in Fleet training operations to minimize the potential adverse effects on protected marine animals can significantly reduce the realism of these operations. In addition, the testing, evaluation, and deployment of new sonar detection and monitoring systems that use active acoustics are under intense public scrutiny for their potential adverse effects on whales and other marine mammals. Navy needs scientific evidence to substantiate its claims of limited or inconsequential adverse effects to marine life from operations.

This project primarily focuses on the development of planning, monitoring, and mitigating tools to aid the Fleet in minimizing contact with and the potential harassment of protected marine animals during operations, exercises, training, and undersea surveillance and weapons testing. These new capabilities will encompass historical and newly acquired data and analytical models that together can predict marine animal habitats (where they are likely to be), and their natural and expected behavior (diving patterns, prey localization, calling activity, etc.). This project consists of three major areas that will help ensure Navy compliance with the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA).
These areas are (1) Marine Ecology and Population Dynamics - determine the likelihood of the presence of marine mammals or other protected species by developing habitat and ecological models. Refine marine animal survey techniques to optimize the accuracy of abundance estimates in small ocean regions of Navy interest.
(2) Criteria, Thresholds, and Mitigation - Establish criteria and thresholds from which to measure potential impact on marine mammals and other marine species from Navy training operations. Determine the effectiveness and usefulness of various mitigation measures in relation to the potential impact of Navy operations on marine mammals; and (3) Mitigation Methodologies - Determine the observation, detection and classification measures required to develop effective monitoring and mitigation procedures for Fleet and SYSCOM use. Focus on improving marine animal monitoring capabilities over current methods by developing new technologies or improving existing technologies that improve monitoring and mitigation effectiveness, reduce cost and minimize impacts on readiness activities.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**
Title: Marine Ecology and Population Dynamics	0.871	0.815	0.900	0.000	0.900
Articles:	-	-	-	-	-
FY 2018 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 9204 / *Marine Mammal Research*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Continue ongoing research on the topics of density estimation from passive acoustic monitoring, development of tools for acoustic-only behavioral response studies, and standards/metrics development. Ongoing work on the topic of density estimation from passive acoustic monitoring is focused on the fieldwork/data collection stage in FY 2018. The ongoing work on the topic of standards/metrics development is focused on continued development of the proposed passive acoustic monitoring metadata database system. Three studies are expected to be completed in FY2018: -Developing tools for acoustic-only behavioral response studies at Navy instrumented ranges, -Standardization of auditory evoked potential audiometry methods to ensure comparable data inclusion in a national database, and -Acoustical Society of America (ASA) standard on towed passive acoustic systems. One study was initiated in FY2018 in response to a need to develop an automated sonar detector in order to establish consistency amongst projects analyzing passive acoustic data for potential impacts from the use of sonar.					
FY 2019 Base Plans: Continue ongoing research on the topics of density estimation from passive acoustic monitoring, standards/ metrics development, and development of an automated sonar detector. Ongoing work on the topic of density estimation from passive acoustic monitoring are in the height of the fieldwork/data collection stage in FY2019. The ongoing work on the topic of standards/metrics development is now in the second half of the project and should be focused on refinements/testing of the passive acoustic monitoring metadata database system and standards development. The ongoing work to develop an automated sonar detector will be focused on comparing available detectors to determine which one is performing the best. None of the ongoing studies in these topic areas are scheduled to be completed in FY2019. One study is expected to be initiated in FY2019 in response to a need to collect data on potential impacts to coral from Navy activities. In addition, based on feedback from the Fleets and SYSCOMS, there is a need for continued investment in passive acoustic data analysis tools in FY2019.					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement:					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 9204 / *Marine Mammal Research*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
No significant changes from FY18 to FY19.					
Title: Criteria and Thresholds, Physiology and Behavior, and Effects of Sound	2.732	2.486	2.654	0.000	2.654
Articles:	-	-	-	-	-
FY 2018 Plans: Continue ongoing research on the topics of hearing (in birds, monk seals, harbor porpoise), temporary threshold shift (in harbor porpoises and bottlenose dolphins), effects on fish from underwater explosions, and behavioral response studies (beaked whales, fin whales, sperm whales). Ongoing studies in these topic areas are all in the middle of the data collection/fieldwork stage in FY2018. Two studies are expected to be completed in FY2018: -Hawaiian monk seal auditory hearing study. -Blainville's beaked whale behavioral risk function for Hawaiian populations. Two studies were initiated in FY2018 in response to a need to collect in-situ explosive sound characterization and propagation data and harbor seal hearing and temporary threshold shift. Funding in these topic areas is particularly important because the results are needed by early 2020 to update the criteria and thresholds for the Phase IV acoustic effects modeling.					
FY 2019 Base Plans: Continue ongoing research on the topics of hearing (in birds, harbor porpoises and harbor seals), temporary threshold shift (in harbor porpoises and harbor seals), effects on fish from underwater explosions, behavioral response studies (beaked whales, fin whales, sperm whales), and in-situ explosive sound and propagation characterization. Most ongoing studies are in the middle of the data collection/fieldwork stage in FY2019, but two projects are the final data analysis and report writing stage. Two studies are expected to be completed in FY2019: -Frequency-dependent growth and recovery of temporary threshold shift in bottlenose dolphins, and -Temporary threshold shift in harbor porpoises due to naval sonar sounds and recovering of hearing. Funding in this topic area is particularly important because the results are needed by the end of 2020 to update the criteria and thresholds for the Phase IV acoustic effects modeling. If emergent needs are identified in FY2018, then they would need to be funded in late FY2018/early 2019 to meet the 2020 goal.					
FY 2019 OCO Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 9204 / *Marine Mammal Research*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** The increase in funding from FY18 to FY19 can be attributed to the study on in-situ explosive sound and propagation characterization ramping up into the fieldwork/testing phase in FY19.					
Title: Mitigation Methodologies: Monitoring, New Technology, and Risk Assess	1.723	1.211	1.215	0.000	1.215
Articles:	-	-	-	-	-
FY 2018 Plans: Continue ongoing research on passive acoustic monitoring technology, tagging demonstrations, and development of the M3R (Marine Mammal Monitoring on Navy Ranges) system. All ongoing efforts are in the data collection/fieldwork phase and in some cases are in the analysis phase. Three studies are expected to be completed in FY2018: -Integrated Real-Time Autonomous Passive Acoustic Monitoring (IRAP) System, -Extended duration acoustic tagging of right whales, and -High fidelity acoustic and fine-scale movement tags to enable behavioral response research on deep diving whales. Once the existing projects are completed and an analysis of the status of the research is conducted, then new needs will be identified in FY2018 for follow-on research. ***FY 2019 Base Plans:*** Continue ongoing research on monitoring technology and development of the M3R (Marine Mammal Monitoring on Navy Ranges) system. None of the ongoing studies are scheduled to be completed in FY2019. After an analysis of the status of the passive acoustic monitoring technologies and tagging demonstrations are complete, it is anticipated that there will be a need to fund follow-on efforts in FY 2019. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:***					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 9204 / *Marine Mammal Research*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
No significant change from FY18 to FY19.					
Accomplishments/Planned Programs Subtotals	5.326	4.512	4.769	0.000	4.769

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

RDTEN Contracts are Competitive Procurements.

E. Performance Metrics

Quarterly Program Reviews

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603721N / *Environmental Protection*	Project (Number/Name) 9204 / *Marine Mammal Research*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Mar Ecol & Pop Dynamics	Various	EXWC : Port Hueneme, CA	1.872	0.550	Oct 2016	0.555	Nov 2017	0.745	Oct 2018	-		0.745	Continuing	Continuing	Continuing
Criteria & Thresholds	SS/CPFF	NMMF : San Diego, CA	0.000	0.135	Oct 2016	0.049	Nov 2017	0.000		-		0.000	0.000	0.184	-
Mitigation Methods	SS/CPFF	SDSU : San Diego, CA	0.000	0.216	Oct 2016	0.358	Nov 2017	0.000		-		0.000	0.000	0.574	-
Criteria & Thresholds	SS/CPFF	SEAMARCO : Netherlands	0.000	0.276	Oct 2016	0.040	Nov 2017	0.000		-		0.000	0.000	0.316	-
Mitigation Methods	WR	OASIS Technologies, Inc. : Lexington, MA	1.110	0.228	Oct 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Criteria & Thresholds	SS/CPFF	U Saint Andrews : United Kingdom	0.000	0.163	Oct 2016	0.343	Nov 2017	0.400	Oct 2018	-		0.400	0.000	0.906	-
Mitigation Methods	SS/CPFF	Biowaves : San Diego, CA	0.000	0.139	Oct 2016	0.000		0.000		-		0.000	0.000	0.139	-
Mitigation Methods	SS/CPFF	Syracuse U : Syracuse, NY	0.000	0.000		0.030	Nov 2017	0.000		-		0.000	0.000	0.030	-
Criteria & Thresholds	SS/CPFF	WHOI : Falmouth, MA	0.000	0.000		0.138	Nov 2017	0.200	Oct 2018	-		0.200	0.000	0.338	-
Mitigation Methods	WR	SPAWAR : San Diego, CA	0.861	0.127	Jan 2017	0.085	Nov 2017	0.100	Oct 2018	-		0.100	Continuing	Continuing	Continuing
Criteria & Thresholds	SS/CPFF	MARECOTEL : Seabeck, WA	0.000	0.000		0.560	Nov 2017	0.600	Oct 2018	-		0.600	0.000	1.160	-
Mitigation Methods	SS/CPFF	Scripps Institute : San Diego, CA	0.500	0.251	Jan 2017	0.297	Nov 2017	0.200	Oct 2018	-		0.200	Continuing	Continuing	Continuing
Criteria & Thresholds	SS/CPFF	U Washington : Seattle, WA	0.000	0.000		0.403	Nov 2017	0.300	Oct 2018	-		0.300	0.000	0.703	-
Mitigation Methods	SS/CPFF	Oregon State Univ : OR & HI	0.606	0.148	Jan 2017	0.055	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Criteria & Thresholds	Various	EXWC : Port Hueneme, CA	0.000	0.000		0.647	Jan 2018	0.651	Jan 2019	-		0.651	0.000	1.298	-
Mar Ecol & Pop Dynamics	WR	NAVAIR : Lakehurst, NJ	0.302	0.075	Oct 2016	0.130	Nov 2017	0.075	Oct 2018	-		0.075	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603721N / *Environmental Protection*	Project (Number/Name) 9204 / *Marine Mammal Research*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Mitigan Methods	Various	EXWC : Port Hueneme, CA	0.000	0.000		0.183	Jan 2018	0.515	Jan 2019	-		0.515	Continuing	Continuing	Continuing
Mar Ecol & Pop Dynamics	SS/CPFF	BMC Inc. : Chicago, IL	0.290	0.151	Jan 2017	0.100	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Mitigation Methods	WR	NUWC : Newport, RI	10.043	0.614	Jan 2017	0.194	Nov 2017	0.400	Oct 2018	-		0.400	Continuing	Continuing	Continuing
Mar Ecol & Pop Dynamics	WR	NPGS : Monterey, CA	3.549	0.030	Oct 2016	0.030	Nov 2017	0.030	Oct 2018	-		0.030	Continuing	Continuing	Continuing
Mar Ecol & Pop Dynamics	MIPR	NOAA: Various : La Jolla, CA	3.446	0.065	Jan 2017	0.000		0.050	Oct 2018	-		0.050	Continuing	Continuing	Continuing
Mitigation Methods	SS/CPFF	Scripps Institute : La Jolla, CA	9.715	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Mitigation Methods	SS/CPFF	Oregon State Univ. : Corvallis, OR	2.066	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Criteria & Thresholds	WR	NUWC : Newport, RI	0.000	0.000		0.000		0.100	Oct 2018	-		0.100	0.000	0.100	-
Criteria & Thresholds	SS/CPFF	SPAWAR : San Diego, CA	3.775	0.000		0.315	Nov 2017	0.403	Oct 2018	-		0.403	Continuing	Continuing	Continuing
Criteria & Thresholds	SS/CPFF	Cascadia Research Collective : Olympia, WA	6.390	1.859	Oct 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Criteria & Thresholds	SS/CPFF	San Diego State Univ : San Diego, CA	2.244	0.299	Oct 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	46.769	5.326		4.512		4.769		-		4.769	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	46.769	5.326		4.512		4.769		-		4.769	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 9204 / *Marine Mammal Research*

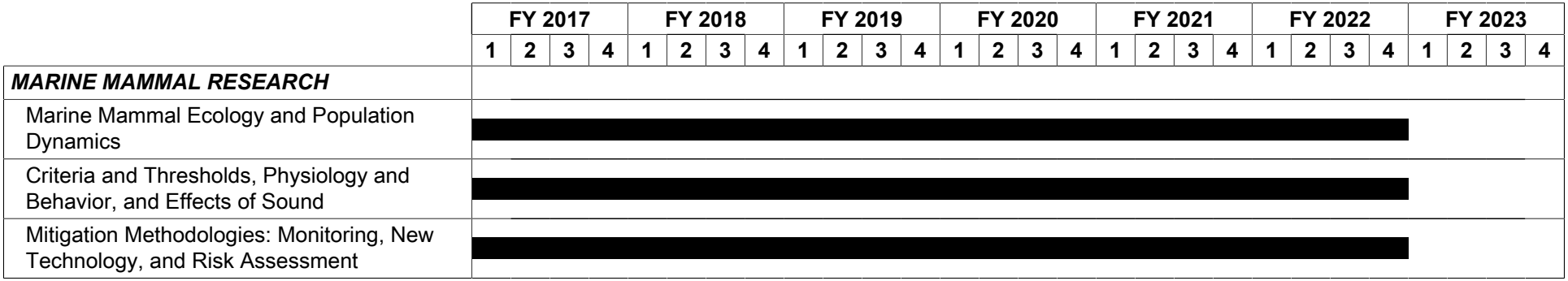


Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 9204 / *Marine Mammal Research*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
MARINE MAMMAL RESEARCH				
Marine Mammal Ecology and Population Dynamics	1	2017	4	2022
Criteria and Thresholds, Physiology and Behavior, and Effects of Sound	1	2017	4	2022
Mitigation Methodologies: Monitoring, New Technology, and Risk Assessment	1	2017	4	2022

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603721N / *Environmental Protection*	Project (Number/Name) 9205 / *Marine Mammal Settlement*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
9205: *Marine Mammal Settlement*	0.000	0.000	3.000	3.000	-	3.000	3.000	0.000	0.000	0.000	0.000	9.000
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Navy developed the Surveillance Towed Array Sensory System (SURTASS) Low Frequency Active (LFA) sonar system to meet the requirement for improved capability to detect quieter and harder to find foreign submarines at greater distances. The Navy employs SURTASS LFA systems onboard up to four U.S. Navy surveillance ships for routine training, testing, and military operations in the Atlantic, Pacific, and Indian Oceans and the Mediterranean Sea. Employment of these systems has been the subject of litigation over the last two decades. The U.S. Navy, the National Oceanic and Atmospheric Administration (NOAA), and the Natural Resources Defense Council et al. entered into a settlement agreement, which has been filed with the U.S. District Court for the Northern District of California, to resolve claims alleged by the plaintiffs that the Navy and NOAA violated the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), and the National Environmental Policy Act (NEPA). The purpose of this funding is to comply with the terms of the settlement agreement filed with the court. Under the terms of the settlement, the Navy agrees to spend $9M over the course of three years from fiscal year 2018 through 2020 to fund research projects within the following research topic areas: 1) Developing capacity to protect acoustic habitats, including in national marine sanctuaries managed under the National Marine Sanctuaries Act 16 U.S.C. 1431 et seq., and high-risk areas for protected species; 2) improve marine mammal density and distribution modeling in data poor areas to assist with the identification of areas of biological importance; and 3) density data collection. Funding of this research will ensure compliance with the settlement agreement and will ensure that SURTASS training, testing and operational activities are able to proceed without interruption.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: MARINE MAMMAL SETTLEMENT	0.000	3.000	3.000	0.000	3.000
Articles:	-	-	-	-	-
FY 2018 Plans: Work in FY2018 will be focused on overall planning, getting the Inter-agency Agreement (IAA) set up with NOAA, and setting up funding for all associated partners. The majority of work conducted in FY2018 will be prioritized under topic areas 1) "Developing capacity to protect acoustic habitats, including in national marine sanctuaries managed under the National Marine Sanctuaries Act 16 U.S.C. 1431 et seq., and high-risk areas for protected species" and 2) "Improving marine mammal density and distribution modeling in data-poor areas". Work under topic area 1 will be focused on finalizing soundscape monitoring plans, holding a soundscape workshop with international experts, purchasing equipment, and preparing for fieldwork in FY2019. Work under					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 9205 / *Marine Mammal Settlement*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
topic area 2 will be focused on holding a workshop and collaborating with the workgroup experts on priority research areas to advance density spatial modeling methods among federal agencies. ***FY 2019 Base Plans:*** Work in FY2019 under topic area 1 will be focused on conducting soundscape monitoring and fieldwork within National Marine Sanctuaries on the East Coast, West Coast, and Hawaii. This will include deployment and maintenance of passive acoustic monitoring equipment, gliders, telemetry stations; organization and communication regarding analysis techniques; and potentially some initial analysis of data collected. Work under topic area 2 will be focused on holding a follow-up workshop and continuing to collaborate with the workgroup experts on priority research areas to advance density spatial modeling methods among federal agencies. Work under topic area 3 will include planning for what experts will be included in the workgroup and for the elicitation process that will occur in FY2020. ***FY 2019 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.000	3.000	3.000	0.000	3.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

RDTEN Contracts are Competitive Procurements.

E. Performance Metrics

Quarterly Program Reviews

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 9205 / *Marine Mammal Settlement*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SURTASS	MIPR	NOAA, HQ : Silver Spring, MD	0.000	0.000		2.500	Oct 2017	2.500	Oct 2018	-		2.500	0.000	5.000	-
SURTASS	WR	EXWC : Port Hueneme, CA	0.000	0.000		0.500	Oct 2017	0.500	Oct 2018	-		0.500	0.000	1.000	-
		Subtotal	0.000	0.000		3.000		3.000		-		3.000	0.000	6.000	N/A

Remarks

Annual funding in the amount of $3M are required to comply with the settlement. Funding will likely be disbursed as indicated below and all monies are required in the 1st Quarter of the Fiscal Year (Oct 1 2017).

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		3.000		3.000		-		3.000	0.000	6.000	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 9205 / *Marine Mammal Settlement*

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Proj 9205																												
SURTASS Marine Mammal Settlement: SURTASS Marine Mammal Settlement					[redacted]																							

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 9205 / *Marine Mammal Settlement*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 9205				
SURTASS Marine Mammal Settlement: SURTASS Marine Mammal Settlement	1	2018	4	2020