Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy												Date: May 2021
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 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
Total Program Element	444.517	20.165	20.514	20.677	-	20.677	-	-	-	-	-	-
0401: *Shipboard Waste Mgmt*	348.061	7.949	9.356	9.352	-	9.352	-	-	-	-	-	-
0817: *Environmental Sustainability Development (NESDI)*	58.926	4.269	5.915	5.379	-	5.379	-	-	-	-	-	-
9204: *Marine Mammal Research*	31.530	4.947	5.243	5.946	-	5.946	-	-	-	-	-	-
9205: *Marine Mammal Settlement*	6.000	3.000	0.000	0.000	-	0.000	-	-	-	-	-	-

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 Manual 4715.06, "Regulations on Vessels Owned or Operated by the Department of Defense," Vol 1-4, (f) Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, (g) National Invasive Species Act of 1996, (h) Ballast Water Management for Control of Nonindigenous Species in Waters of the United States, (i) Clean Air Act, (j) Federal Insecticide, Fungicide, and Rodenticide Act, (k) Marine Mammal Protection Act, and (l) Endangered Species Act, (m) Comprehensive Environmental Response, Compensation, and Liability Act, and (n) Resource Conservation and Recovery Act. References (a) through (n) 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) Uniform National Discharge Standards (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 2022 Navy	Date: May 2021
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. This funding allows the Navy to avoid or reduce the chances of costly litigation for non-compliance.

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	20.564	20.601	21.586	-	21.586
Current President's Budget	20.165	20.514	20.677	-	20.677
Total Adjustments	-0.399	-0.087	-0.909	-	-0.909
• Congressional General Reductions	-	-0.087			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.399	0.000			
• Program Adjustments	0.000	0.000	-0.519	-	-0.519
• Rate/Misc Adjustments	0.000	0.000	-0.390	-	-0.390

Change Summary Explanation

The FY22 funding request was increased by $0.163 in support of improving marine animal monitoring capabilities.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy									Date: May 2021			
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 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
0401: *Shipboard Waste Mgmt*	348.061	7.949	9.356	9.352	-	9.352	-	-	-	-	-	-
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.

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 Manual 4715.06, "Regulations on Vessels Owned or Operated by the Department of Defense," Vol 1-4, (f) Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, (g) National Invasive Species Act of 1996, (h) Ballast Water Management for Control of Nonindigenous Species in Waters of the United States, (i) Clean Air Act, (j) Federal Insecticide, Fungicide, and Rodenticide Act, (k) Marine Mammal Protection Act, and (l) Endangered Species Act, (m) Comprehensive Environmental Response, Compensation, and Liability Act, and (n) Resource Conservation and Recovery Act. References (a) through (n) 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) Technical Authority (TA), (2) Liquid Wastes, (3) Hazardous Material Control and Management, (4) Ballast Water Management, (5) Solid Waste Management, and (6) Non-Copper Antifouling.

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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Technical Authority (TA)	1.471	1.649	1.527	0.000	1.527
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Description: Funding in support of TA is utilized to develop waste stream handling equipment design criteria and guidance. This includes system/technology selection, processing capacity, interfaces, shipboard integration, test and qualification protocols, processes and practices, and performance specifications. ***FY 2021 Plans:*** - Update the Ship Oil Spill Database, analyze oil spill root causes and identify policy/training/hardware deficiencies to reduce oil discharges/violations. - Implement class specific training tools and guidance to reduce ship oil spill discharge violations. - Continue initial assessment and on-site evaluations of commercial hull cleaning technologies to determine future feasibility. - 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. - Meet with NATO and foreign Navy data exchange partners to leverage lessons learned on afloat environmental compliance. - Develop environmental equipment/system requirements documentation, design criteria/guidance, standards, and certification protocols based on evolving regulations and policy. - Perform annual assessments of emergent air and water emission processes and technologies to enable effective compliance at minimal life cycle cost and risk to operations. ***FY 2022 Base Plans:*** - Continue to update the Ship Oil Spill Database, analyze oil spill root causes and identify policy/training/ hardware deficiencies to reduce oil discharges/violations. - Implement class specific training tools and guidance to reduce ship oil spill discharge violations. - Initiate evaluation of most promising commercial hull cleaning technologies to determine future system feasibility to meet UNDS requirements. - Continue to 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. - Meet with NATO and foreign Navy data exchange partners to leverage lessons learned on afloat environmental compliance.					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Continue development of environmental equipment/system requirements documentation, design criteria/ guidance, standards, and certification protocols based on evolving regulations and policy. - Perform annual assessments of emergent air and water emission processes and technologies to enable effective compliance at minimal life cycle cost and risk to operations. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Decrease of $0.122M due to funding reallocation to Ballast Water Management tasking to support requirement for development of a Navy certified Ballast Water Treatment System (BWTS).					
Title: Liquid Wastes	3.218	2.690	2.400	0.000	2.400
Articles:	-	-	-	-	-
Description: This effort addresses liquid wastes in two (2) major areas: Oil Pollution Abatement and Non-Oily Waste. ***FY 2021 Plans:*** - Continue 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: - Continue shipboard evaluation of a commercial centrifugal oil water separator (OWS) - Develop transition strategy and plans for implementation of centrifugal OWS into Fleet - Continue evaluation of alternative membrane regeneration cleaners - Continue investigation of appropriate bilge cleaners for Navy use - Develop test plan for evaluation of oily waste transfer pumps Non-Oily Waste (NOW): - Continue long-term monitoring and assessment of sewage and graywater piping scale prevention and pipe degradation - Complete shipboard evaluation of Vacuum Instrumentation Isolation					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Prepare for laboratory evaluation of alternative vacuum pumps. - Conduct shock, vibration, and EMI testing of new hydrogen sulfide detectors ***FY 2022 Base Plans:*** - Continue 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 shipboard evaluation of a commercial centrifugal oil water separator (OWS) - Develop commercial item descriptions (CIDs) for alternative membrane regeneration cleaners - Finalize membrane regeneration procedure documentation - Conduct laboratory evaluation of oily waste transfer pumps - Begin development of small ship Oil Water Separator procurement specification Non-Oily Waste (NOW): - Continue long-term monitoring and assessment of sewage and graywater piping scale prevention and pipe degradation - Start laboratory evaluation of alternative vacuum pumps - Develop CID / performance requirements for hydrogen sulfide detectors ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Decrease of $0.290M from FY21 to FY22 due to the lower potential cost of two laboratory evaluations (oily waste transfer pumps, and alternative sewage vacuum pumps).					
Title: Hazardous Material Control and Management	0.729	0.882	0.900	0.000	0.900
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 preventive compounds, acids, alkalis, oxidizers, lubricants, functional fluids, and many other products.					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Hazardous Material Control and Management (HMC&M) addresses environmental, safety and health risks to ship construction workers, Ship's Force (S/F), and shipyard workers. ***FY 2021 Plans:*** - Continue 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. - Assess less hazardous or non-hazardous substitutes for high-risk hazardous materials regulated under the Toxic Substance Control Act (TSCA). ***FY 2022 Base Plans:*** - Continue 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. - Assess less hazardous or non-hazardous substitutes for high-risk hazardous materials regulated under the Toxic Substance Control Act (TSCA). ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase of $0.018M from FY21 to FY22 due to rate inflation.					
Title: Ballast Water Management	0.849	2.832	3.200	0.000	3.200
Articles:	-	-	-	-	-
Description: The National Invasive Species Act (NISA) requires the Secretary of Defense to implement a Ballast Water Management (BWM) program to minimize the risk of introduction of unwanted species and pathogens from releases of ballast water. ***FY 2021 Plans:*** - Perform eight week shipboard evaluation of full scale commercial electro-chlorination Ballast Water Treatment System (BWTS). - Continue assessments of emergent commercial off the shelf electro-chlorination and ultraviolet based BWTS that would enable effective					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
compliance at minimal life cycle cost and risk to operations. - Develop designs for a modified commercial ultraviolet BWTS. ***FY 2022 Base Plans:*** - Continue assessments of emergent commercial off the shelf electro-chlorination and ultraviolet based BWTS that would enable effective compliance at minimal life cycle cost and risk to operations. - Based on the designs developed in FY21, begin fabrication and evaluation of a modified compact commercial UV BWTS. - Complete design of a modified standard-sized commercial ultraviolet BWTS. - Recommend design modifications to minimize residual water in Rapid Tanks, based on previous physical and theoretical modeling ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase of $0.368M from FY21 to FY22 due to tasking associated with development of a Navy certified BWTS.					
Title: Solid Waste Management	1.502	1.132	1.150	0.000	1.150
Articles:	-	-	-	-	-
Description: Solid Waste Management supports the Act to Prevent Pollution from Ships (APPS) which regulates all garbage discharges from ships at sea. ***FY 2021 Plans:*** - Continue assessments of solid waste management processes and technologies with emphasis on small ships that would enable effective compliance at minimal life cycle cost and risk to operations. - Evaluate solid waste systems for surface ships and submarines. - Conduct laboratory testing of innovative solid waste equipment. - Issue Navy ship acquisition requirements for APPS compliant solid waste processing systems. ***FY 2022 Base Plans:*** - Continue assessments of solid waste management processes and technologies with emphasis on small ships that would enable effective compliance at minimal life cycle cost and risk to operations. - Evaluate solid waste systems for surface ships and submarines. - Conduct shipboard evaluation and Navy ship environmental testing of innovative solid waste equipment. - Perform shipboard evaluation of Medical waste processing equipment for special solid waste.					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
(Feminine Hygiene Products, Pilot Urine bags, etc.) ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase of $0.018M from FY21 to FY22 due to rate inflation.					
Title: Non-Copper Antifouling	0.180	0.171	0.175	0.000	0.175
Articles:	-	-	-	-	-
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. ***FY 2021 Plans:*** - Perform test installations of promising new antifouling coatings on Fleet assets. - Evaluate performance of advanced coating systems. - Assess emergent commercial antifouling coatings. ***FY 2022 Base Plans:*** - Continue test installations of promising new antifouling coatings on Fleet assets. - Continue evaluation of performance of advanced coating systems. - Continue assessing emergent commercial antifouling coatings. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase of $0.004M from FY21 to FY22 due to tasking associated with installation of test paint strip, evaluation of data from test strip, and developing report.					
Accomplishments/Planned Programs Subtotals	7.949	9.356	9.352	0.000	9.352

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
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 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 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	-	-	-
Primary Hardware Development	C/CPFF	Oceaneering : Not Specified	1.000	0.000		0.000		0.000		-		0.000	-	-	-
Systems Engineering	C/CPFF	John J. McMullen & Son : Not Specified	4.487	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	24.636	0.000		0.000		0.000		-		0.000	-	-	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 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	-	-	-
		Subtotal	10.838	0.000		0.000		0.000		-		0.000	-	-	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWCCD, Bethesda, MD : Bethesda, MD	227.686	6.920	Nov 2019	8.047	Nov 2020	8.752	Oct 2021	-		8.752	-	-	-
Developmental Test & Evaluation	WR	NRL,Wash,DC : Wash,DC	34.024	0.050	Nov 2019	0.050	Nov 2020	0.050	Oct 2021	-		0.050	-	-	-
Developmental Test & Evaluation	WR	NSWCPD, Philadelphia, PA : Philadelphia, PA	1.214	0.279	Nov 2019	0.479	Nov 2020	0.000		-		0.000	-	-	-
Developmental Test & Evaluation	WR	SPAWARSYSCEN : SD,CA	12.308	0.000		0.000		0.000		-		0.000	-	-	-
Developmental Test & Evaluation	WR	Misc. Govt Labs : TBD	23.650	0.050	Nov 2019	0.080	May 2021	0.050	Mar 2022	-		0.050	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
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 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	C/CPFF	Misc. Contracts : TBD	13.103	0.650	Jul 2020	0.700	May 2021	0.500	Mar 2022	-		0.500	-	-	-
		Subtotal	311.985	7.949		9.356		9.352		-		9.352	-	-	N/A

Remarks

Increased funding to NSWCCD for Ballast Water Management (BWM) tasking related to testing of both commercial and modified commercial BWTSs; for identification and testing of Capture and Clean Hull Cleaning Technology; and to investigate and spearhead design, integration and testing of innovative solid waste equipment. FY20 and 21 Miscellaneous Contract funding for BWM and Hull Cleaning Technology to be identified in FY20.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 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	-	-	-
SBIR Assessment	TBD	Not Specified : Not Specified	0.227	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	0.602	0.000		0.000		0.000		-		0.000	-	-	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	348.061	7.949		9.356		9.352		-		9.352	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0401 / *Shipboard Waste Mgmt*

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	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
SHIPBOARD WASTE MANAGEMENT																												
Technical Authority									[redacted]																			
Liquid Wastes									[redacted]																			
Hazardous Material Control and Management									[redacted]																			
Ballast Water Management									[redacted]																			
Solid Waste Management									[redacted]																			
Non-Copper Antifouling									[redacted]																			

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
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	2022	4	2022
Liquid Wastes	1	2022	4	2022
Hazardous Material Control and Management	1	2022	4	2022
Ballast Water Management	1	2022	4	2022
Solid Waste Management	1	2022	4	2022
Non-Copper Antifouling	1	2022	4	2022

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy												Date: May 2021
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 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
0817: *Environmental Sustainability Development (NESDI)*	58.926	4.269	5.915	5.379	-	5.379	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The vision outlined in "A Design for Maintaining Maritime Superiority, Version 2.0" (December 2017) and "2018 National Defense Strategy of the United States of America" is for our Navy to become more lethal, resilient and a rapidly innovating joint force. We must maintain a fleet that is trained ready to operate and fight decisively. 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 the National Defense Strategy, the Navy must anticipate and address potential environmental constraints which 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 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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: EEC-2,Maximize Training & Testing Requirements Within Environmental Constraints	0.705	0.587	0.665	0.000	0.665
Articles:	-	-	-	-	-
FY 2021 Plans: FY21 Base Plans: -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 to evaluate the feasibility of Cost Effective Main Charge Remediation of Insensitive Munitions for Range Clearance.					
FY 2022 Base Plans: FY22 Base Plans: -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 Demonstration of the Robust Caisson Structure to Reduce Blast Effects from Underwater Blow-In-Place, Integrated Analytical Approach to Transition from Active to Passive Treatments at Munitions Sites.					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
-Complete evaluate the feasibility of Cost Effective Main Charge Remediation of Insensitive Munitions for Range Clearance. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase of $0.078M from FY21 to FY22 is due to equipment/supply purchases and increase in allocated labor hours for continuing projects.					
Title: EEC-3,Platform Maintenance and Repair With Minimal Environmental Footprint	0.953	1.401	1.395	0.000	1.395
Articles:	-	-	-	-	-
FY 2021 Plans: -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. -Continue the initiatives: Replacement of Cadmium in Ground Support Equipment Avionics Applications, Elimination of Hexavalent Chromium from Magnesium Conversion Coating Processes at Fleet Readiness Centers, Low VOC Primers for Ground Support Equipment Application. -Continue to evaluate the feasibility of Assessment of Cadmium Alternatives for Connector Applications, Development and Implementation of Methods to Reduce Sealant Waste in Fleet/Depot Level Operations. -Complete the initiatives: Electromagnetic Interference Shielding Tape. ***FY 2022 Base Plans:*** -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. -Continue to evaluate the feasibility of Assessment of Cadmium Alternatives for Connector Applications, Development and Implementation of Methods to Reduce Sealant Waste in Fleet/Depot Level Operations, Single-Component (1K) and Fast Curing Metal-Rich Polysiloxane Primer, Dry Ice Paint Removal and Cleaning.					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
-Complete Replacement of Cadmium in Ground Support Equipment Avionics Applications, Elimination of Hexavalent Chromium from Magnesium Conversion Coating Processes at Fleet Readiness Centers, Low VOC Primers for Ground Support Equipment Application. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Decrease of $0.006M from FY21 to FY22 is due to reduction in allocated labor hours for continuing projects.					
Title: EEC-4, Support Shore Readiness within Environmental Constraints	1.068	1.486	1.531	0.000	1.531
Articles:	-	-	-	-	-
FY 2021 Plans: FY 2021 Base Plans: -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 demonstration of New Strategies for Enhanced Monitored Natural Recovery at Navy Sediment Sites. -Continue to evaluate the feasibility of Developing Lines of Evidence to Support Nutrient Compliance at Navy shipyards, Flexible Under Pier Sediment Assessment -Complete the initiative NPDES Copper Effluent Control System. ***FY 2022 Base Plans:*** -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 to evaluate the feasibility of Developing Lines of Evidence to Support Nutrient Compliance at Navy shipyards, Flexible Under Pier Sediment Assessment, Detection Methodology and Treatment Train Technology for PFAS Removal in Bilge and Oily Wastewater (BOW), Effluent Copper Quantification by Flow-Through Optical Detection. -Complete demonstration of New Strategies for Enhanced Monitored Natural Recovery at Navy Sediment Sites. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:***					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Increase of $0.045M from FY21 to FY22 is due to increase in field work for continuing projects.					
Title: EEC-5,Cost-Effective Management of Environmental Regulatory Requirements	1.543	2.441	1.788	0.000	1.788
Articles:	-	-	-	-	-
FY 2021 Plans: FY 2021 Base Plans: -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: Air Filtration for Indoor Air Quality, Improving Site Closure Decision-Making with Time-Integrated Groundwater Samples, Addressing Temporal Variability in Industrial Buildings during Vapor Intrusion Assessments, Development and Demonstration of a Portable, Temporary Barrier to Aid in Cargo and Equipment Inspections to Prevent Brown Treesnake Dispersal. -Continue to evaluate the feasibility of In-situ Biodegradation of 1,4-Dioxane and Chlorinated Solvent Mixtures in Dilute Plumes, Mesocosm Field Testing of In situ PFAs Treatment Trains, Demonstrating the Use of a Novel, Hybrid Polyelectrolyte/Hydrophilic Polymer for In situ PFAS Treatment Applications, Sensor interface and infrastructure for monitoring (SIIM), Contaminant Monitoring and Mapping for Informing Stormwater Best Management Practices, In-well headspace samplers for long-term groundwater chlorinated hydrocarbon monitoring, Innovative Activated Carbon Filters to Address Vapor Intrusion within Commercial/Industrial Buildings, Field Demonstration of Colloidal Activated Carbon for In Situ Sequestration of Per- and Polyfluoroalkyl Substances. Complete the initiatives: Stormwater Piping-Based Pollutant Best Management Practice, In-situ Automatic Stormwater Sampling Device for Use at Tidally Impacted Sampling Locations, Demonstrating the Effectiveness of Novel Treatment Technologies for the Removal of Poly- and Perfluoroalkyl Substances from Groundwater					
FY 2022 Base Plans: -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 Development and Demonstration of a Portable, Temporary Barrier to Aid in Cargo and Equipment Inspections to Prevent Brown Treesnake Dispersal, Evaluate the feasibility of In-situ Biodegradation of 1,4-Dioxane and Chlorinated Solvent Mixtures in Dilute Plumes, Mesocosm Field Testing of In situ PFAs Treatment Trains, Demonstrating the Use of a Novel, Hybrid Polyelectrolyte/Hydrophilic Polymer for In situ PFAS Treatment					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Applications, In-well headspace samplers for long-term groundwater chlorinated hydrocarbon monitoring, Field Demonstration of Colloidal Activated Carbon for In Situ Sequestration of Per- and Polyfluoroalkyl Substances, Low-profile Integrated Porous Pretreatment Swale (LIPPS) for Metals Treatment in Industrial Areas, Real-Time Multi-Contaminant Detection System (RMDS), Locating and Quantifying Groundwater Surface Water Connections using Distributed Temperature Sensing, Evaluating potential effects to marine biota from small-scale, legacy radioactive objects, Demonstration and Application of Amendments Targeting Comingled Organics and Metals in Sediments, High efficiency media for metals removal in NPDES discharges, Rapid Pathogen Detection in Drinking and Surface Waters. Complete the initiatives: Air Filtration for Indoor Air Quality, Improving Site Closure Decision-Making with Time-Integrated Groundwater Samples, Addressing Temporal Variability in Industrial Buildings during Vapor Intrusion Assessments, Sensor interface and infrastructure for monitoring (SIIM), Contaminant Monitoring and Mapping for Informing Stormwater Best Management Practices, Innovative Activated Carbon Filters to Address Vapor Intrusion within Commercial/Industrial Buildings. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Decrease of $0.653M from FY21 to FY22 is due to completion of supply and equipment procurement and reduction of allocated labor hours.					
Accomplishments/Planned Programs Subtotals	4.269	5.915	5.379	0.000	5.379

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

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0817 / *Environmental Sustainability Development (NESDI)*

acquired through the Military Construction (MILCON) Program. All these acquisition processes are pursued using a common strategy that satisfies the needs of all 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.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
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 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
EEC 2	Various	EXWC : PT HUENEME, CA	7.235	0.400	Oct 2019	0.283	Oct 2020	0.350	Oct 2021	-		0.350	-	-	-
EEC 2	Various	SSC : SAN DIEGO, CA	6.579	0.305	Dec 2019	0.300	Dec 2020	0.315	Dec 2021	-		0.315	-	-	-
EEC 3	WR	NAWC : PATUXENT RIVER, MD	2.428	0.120	Mar 2020	0.150	Mar 2021	0.130	Mar 2022	-		0.130	-	-	-
EEC 3	Various	NSWC : BETHESDA, MD	4.217	0.197	Feb 2020	0.200	Feb 2021	0.175	Feb 2022	-		0.175	-	-	-
EEC 3b	Various	EXWC : PT HUENEME, CA	1.539	0.069	Mar 2020	0.160	Mar 2021	0.160	Mar 2022	-		0.160	-	-	-
EEC 4	Various	EXWC : PT HUENEME, CA	9.324	0.390	Mar 2020	0.606	Mar 2021	0.701	Mar 2022	-		0.701	-	-	-
EEC 4	Various	NSWC : BETHESDA, MD	4.955	0.255	Nov 2019	0.300	Nov 2020	0.065	Nov 2021	-		0.065	-	-	-
EEC 4a	Various	SSC : SAN DIEGO, CA	4.280	0.423	Apr 2020	0.580	Apr 2021	0.765	Apr 2022	-		0.765	-	-	-
EEC 5	Various	EXWC : PT HUENEME, CA	4.470	0.489	Nov 2019	0.870	Nov 2020	0.535	Oct 2021	-		0.535	-	-	-
EEC 5	Various	SSC : SAN DIEGO, CA	2.555	0.323	Feb 2020	0.791	Feb 2021	0.663	Oct 2021	-		0.663	-	-	-
EEC 5	Various	NAWC : PATUXENT RIVER, MD	1.477	0.095	Jun 2020	0.130	Jun 2021	0.115	Jun 2022	-		0.115	-	-	-
EEC 5	Various	NSWC : BETHESDA, MD	3.181	0.385	Jan 2020	0.300	Jan 2021	0.165	Jan 2022	-		0.165	-	-	-
EEC 5	WR	NAWCWD : CHINA LAKE, CA	1.622	0.150	Dec 2019	0.210	Dec 2020	0.185	Dec 2021	-		0.185	-	-	-
EEC 5	WR	NAWC : LAKE HURST, NJ	0.981	0.100	Nov 2019	0.140	Nov 2020	0.125	Nov 2021	-		0.125	-	-	-
EEC 3	WR	FRC - SE : JACKSONVILLE, FL	2.445	0.305	May 2020	0.600	May 2021	0.635	May 2022	-		0.635	-	-	-
EEC 3	Various	NSWC : San Diego, CA	0.060	0.000		0.000		0.000		-		0.000	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
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 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
EEC 3	WR	FRC - CE : Cherry Point, NC	0.530	0.085	Jan 2020	0.100	Jan 2021	0.100	Jun 2022	-		0.100	-	-	-
EEC 3	Various	FRC-SW : San Diego, CA	1.048	0.178	Mar 2020	0.195	Mar 2021	0.195	Mar 2022	-		0.195	-	-	-
		Subtotal	58.926	4.269		5.915		5.379		-		5.379	-	-	N/A

Remarks

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. More rigorous contracting, funding and performer work induction processes are slightly increasing project management costs. Contracting and financial management offices across the performing organizations may be understaffed. Projects are derived from field level needs and awarded competitively to performing organizations, the portfolio mix of cost category/performing organization naturally changes from fiscal year to fiscal year. Due to this, individual line items in the R-3 will increase at greater than a 2% escalation factor.

Explanation of increases/decreases greater than 2% between FY2021 and FY2022:
-EEC2 EXWC PT Hueneme CA increase from 0.283 to 0.350 due to equipment/supply purchases for continuing projects such as Robust Caisson Structure to Reduce Blast Effects from Underwater Blow-In-Place.
-EEC2 SSC San Diego CA increased from 0.300 to 0.315 due to increase in allocated labor hours for continuing projects such as Integrated Analytical Approach to Transition from Active to Passive Treatments at Munitions Sites.
-EEC3 NAWC Patuxent River MD decreased from 0.150 to 0.130 due to reduction in labor hours allocated to continuing projects for which they are contributors.
-EEC3 NSWC Bethesda MD decreased from 0.200 to 0.175 due to reduction in labor hours allocated to continuing projects for which they are contributors.
-EEC4 EXWC PT Hueneme CA increased from 0.606 to 0.701 due to increase in field work for continuing projects Detection Methodology and Treatment Train Technology for PFAS Removal in Bilge and Oily Wastewater (BOW).
-EEC4 NSWC Bethesda MD decreased from 0.300 to 0.065 due to reduction in labor hours allocated to continuing projects for which they are contributors.
-EEC4a SSC San Diego CA increased from 0.580 to 0.765 due to increase in allocated labor and field work for continuing projects such as Developing Lines of Evidence to Support Nutrient Compliance at Navy shipyards and Flexible Under Pier Sediment Assessment.
-EEC5 EXWC PT Hueneme CA decreased from 0.870 to 0.535 due to completion of supply and equipment procurements for continuing projects such as Development and Demonstration of a Portable, Temporary Barrier to Aid in Cargo and Equipment Inspections to Prevent Brown Treesnake Dispersal
-EEC5 SSC San Diego CA decreased from 0.791 to 0.663 due to decrease in equipment, supplies required for laboratory and field work for Mesocosm Field Testing of In situ PFAs Treatment Trains.
-EEC5 NAWC Patuxent River MD decreased from 0.130 to 0.115 due to completion of supply and equipment procurements for continuing projects.
-EEC5 NSWC Bethesda MD decreased from 0.300 to 0.165 due to reduction in labor hours allocated to continuing projects for which they are contributors.
-EEC5 NAWCWD China Lake CA decreased from 0.210 to 0.185 due to decrease in labor hours allocated to continuing projects for which they are contributors.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
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 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
-EEC5 NAWC Lakehurst NJ decreased from 0.140 to 0.125 due to decrease in program web page modifications. -EEC3 FRC SE Jacksonville FL increased from 0.600 to 0.635 due to increase in laboratory and equipment supply procurement for continuing projects such as Dry Ice Paint Removal and Cleaning.															

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	58.926	4.269		5.915		5.379		-		5.379	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0817 / *Environmental Sustainability Development (NESDI)*

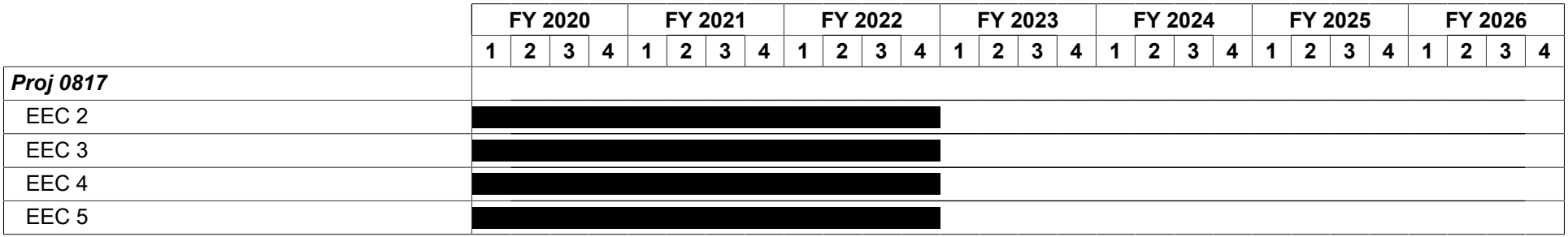

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 0817 / *Environmental Sustainability Development (NESDI)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0817				
EEC 2	1	2020	4	2022
EEC 3	1	2020	4	2022
EEC 4	1	2020	4	2022
EEC 5	1	2020	4	2022

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy									Date: May 2021			
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 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
9204: *Marine Mammal Research*	31.530	4.947	5.243	5.946	-	5.946	-	-	-	-	-	-
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 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**
Title: Marine Ecology and Population Dynamics	0.900	1.019	1.134	0.000	1.134
Articles:	-	-	-	-	-
FY 2021 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Within the area of 'Marine Ecology and Population Dynamics', ongoing work covers topics such as density estimation from passive acoustic data, standards/metrics development and development of an automated sonar detector to standardize analysis of acoustic data. Ongoing studies that will continue into FY2022: -Standardizing Methods and Nomenclature for Automated Detection of Navy Sonar -Analytical methods to support the development of noise exposure criteria for behavioral response -ACCURATE: ACoustic CUe RATEs for passive acoustic density estimation -MSM4PCoD: Marine Species Monitoring for the Population Consequences of Disturbance -Demonstration and validation of passive acoustic density estimation for right whales Ongoing studies that are expected to be completed by the end of FY2021: -Acoustic Metadata Management for Navy Fleet Operations In addition, studies are expected to be initiated in FY2021 in response to needs collected from Navy personnel in FY20.					
FY 2022 Base Plans: Within the area of 'Marine Ecology and Population Dynamics', ongoing work covers topics such as density estimation from passive acoustic data, standards/metrics development and development of an automated sonar detector to standardize analysis of acoustic data. Ongoing studies that will continue into FY2023: -ACCURATE: ACoustic CUe RATEs for passive acoustic density estimation -MSM4PCoD: Marine Species Monitoring for the Population Consequences of Disturbance -Demonstration and validation of passive acoustic density estimation for right whales -Capability enhancements for Tethys, a passive acoustic metadata workbench Ongoing studies that are expected to be completed by the end of FY2022: -Standardizing Methods and Nomenclature for Automated Detection of Navy Sonar -Analytical methods to support the development of noise exposure criteria for behavioral response					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
In addition, studies are expected to be initiated in FY2022 in response to needs collected from Navy personnel in FY2021. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Funding increase $0.115M supports a number of ongoing projects hitting the height of their effort (data collection and data analysis) along with some new projects expected to begin.					
Title: Criteria and Thresholds, Physiology and Behavior, and Effects of Sound	2.832	3.009	3.597	0.000	3.597
Articles:	-	-	-	-	-
FY 2021 Plans: Within the area of 'Criteria and Thresholds, Physiology and Behavior, and Effects of Sound', ongoing work covers topics such as hearing, temporary threshold shift, behavioral response studies, and effects from underwater explosions. Ongoing studies that will continue into FY2022: -Collection of auditory evoked potential hearing thresholds in minke whales (Balaenoptera acutorostrata)data on sea turtle hearing/TTS -Towards a mysticete audiogram using humpback whales' behavioral response thresholdsdata on mysticete hearing -Use of "Chirp" Stimuli for non-invasive, low-frequency measurement of marine mammal auditory evoked potentials -Temporary threshold shifts in underwater hearing sensitivity in aquatic turtles Ongoing studies that are expected to be completed by the end of FY2021: -Multi-spaced measurement of underwater sound fields from explosive sources -Hearing and estimated noise impacts in three species of Auk: Implications for the marbled murrelet -Cuvier's beaked whale and fin whale behavior during military sonar operations -Measuring the effect of range on the behavioral response of marine mammals through the use of Navy sonar and small source playbacks -The effects of underwater explosions on fish					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
In addition, studies are expected to be initiated in FY2021 in response to needs collected from Navy personnel in FY20.					
FY 2022 Base Plans: FY 2022 Base Plans: Within the area of 'Criteria and Thresholds, Physiology and Behavior, and Effects of Sound', ongoing work covers topics such as hearing, temporary threshold shift, behavioral response studies, and effects from underwater explosions. Ongoing studies that will continue into FY2023: -Collection of auditory evoked potential hearing thresholds in minke whales (Balaenoptera acutorostrata)data on sea turtle hearing/TTS -Towards a mysticete audiogram using humpback whales' behavioral response thresholds data on mysticete hearing -Temporary threshold shifts in underwater hearing sensitivity in aquatic turtles -Frequency-dependent, underwater, temporary threshold shift in California sea lions -Standardizing auditory evoked potential hearing thresholds with behavioral hearing thresholds Ongoing studies that are expected to be completed by the end of FY2022: -Multi-spaced measurement of underwater sound fields from explosive sources (this project was extended due to COVID-19) -Hearing and estimated noise impacts in three species of Auk: Implications for the marbled murrelet (this project was extended due to COVID-19) -Use of "Chirp" Stimuli for non-invasive, low-frequency measurement of marine mammal auditory evoked potentials In addition, studies are expected to be initiated in FY2022 in response to needs collected from Navy personnel in FY21.					
FY 2022 OCO Plans: N/A					
FY 2021 to FY 2022 Increase/Decrease Statement:					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Funding increase $0.588M supports a new requirement to collect data on marine mammal behavioral response from SURTASS LFA sonar.					
Title: Mitigation Methodologies: Monitoring, New Technology, and Risk Assess	1.215	1.215	1.215	0.000	1.215
Articles:	-	-	-	-	-
FY 2021 Plans: Within the area of 'Mitigation Methodologies', ongoing work covers demonstration and validation of new technologies for monitoring and mitigation. Ongoing studies that will continue into FY22: -M3R (Marine Mammal Monitoring on Navy Ranges) -Improved Tag Attachment System for Remotely-Deployed Medium-Term Cetacean Tags No studies are scheduled to be completed by the end of FY21. However, studies are expected to be initiated in FY21 in response to needs collected from Navy personnel in FY20.					
FY 2022 Base Plans: Within the area of 'Mitigation Methodologies', ongoing work covers demonstration and validation of new technologies for monitoring and mitigation. Ongoing studies that will continue into FY23: -M3R (Marine Mammal Monitoring on Navy Ranges) -Improved Tag Attachment System for Remotely-Deployed Medium-Term Cetacean Tags No studies are scheduled to be completed by the end of FY2022. Studies are expected to be initiated in FY2022 in response to needs collected from Navy personnel in FY21.					
FY 2022 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	4.947	5.243	5.946	0.000	5.946

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 9204 / *Marine Mammal Research*

C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

RDTEN Contracts are Competitive Procurements.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
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 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Mar Ecol & Pop Dynamics	Various	EXWC : Port Hueneme, CA	3.722	0.745	Oct 2019	0.871	Oct 2020	0.986	Oct 2021	-		0.986	-	-	-
Mitigation Methods	WR	SPAWAR : San Diego, CA	1.173	0.200	Oct 2019	0.200	Oct 2020	0.200	Oct 2021	-		0.200	-	-	-
Criteria & Thresholds	SS/CPFF	MARECOTEL : Seabeck, WA	1.160	0.600	Oct 2019	0.600	Oct 2020	0.600	Oct 2021	-		0.600	-	-	-
Criteria & Thresholds	Various	EXWC : Port Hueneme, CA	1.151	1.632	Jan 2020	1.802	Jan 2021	2.391	Jan 2022	-		2.391	-	-	-
Mar Ecol & Pop Dynamics	WR	NAVAIR : Lakehurst, NJ	0.582	0.075	Oct 2019	0.075	Oct 2020	0.075	Oct 2021	-		0.075	-	-	-
Mitigan Methods	Various	EXWC : Port Hueneme, CA	0.698	0.715	Jan 2020	0.715	Oct 2020	0.714	Oct 2021	-		0.714	-	-	-
Mitigation Methods	WR	NUWC : Newport, RI	11.251	0.300	Oct 2019	0.300	Oct 2020	0.300	Oct 2021	-		0.300	-	-	-
Mar Ecol & Pop Dynamics	WR	NPGS : Monterey, CA	3.639	0.030	Oct 2019	0.030	Oct 2020	0.030	Oct 2021	-		0.030	-	-	-
Mar Ecol & Pop Dynamics	MIPR	NOAA: Various : La Jolla, CA	3.561	0.050	Oct 2019	0.050	Oct 2020	0.050	Oct 2021	-		0.050	-	-	-
Criteria & Thresholds	WR	NUWC : Newport, RI	0.100	0.300	Oct 2019	0.300	Oct 2020	0.300	Oct 2021	-		0.300	-	-	-
Criteria & Thresholds	SS/CPFF	SPAWAR : San Diego, CA	4.493	0.300	Oct 2019	0.300	Oct 2020	0.300	Oct 2021	-		0.300	-	-	-
		Subtotal	31.530	4.947		5.243		5.946		-		5.946	-	-	N/A

Remarks

Individual projects are derived from field level needs and awarded competitively to performing organizations, the portfolio mix of cost category/performing organization naturally changes from fiscal year to fiscal year.

The following increases are above 2% from FY21 to FY22:
- Mar Ecol & Pop Dynamics: EXWC: Port Hueneme, CA; Increase from $0.871 to $0.986. Increase due to planned FY21/22 projects that will be awarded competitively by EXWC to performing organizations based on subject matter expertise required by Navy need.
- Criteria & Thresholds: EXWC: Port Hueneme, CA; Increase from $1.802 to $2.391. Increase due to planned FY21/22 projects that will be awarded competitively by EXWC to performing
organizations based on subject matter expertise required by Navy need in addition to the new SURTASS LFA requirement.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603721N / *Environmental Protection*	Project (Number/Name) 9204 / *Marine Mammal Research*	

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	31.530	4.947		5.243		5.946		-		5.946	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 9204 / *Marine Mammal Research*

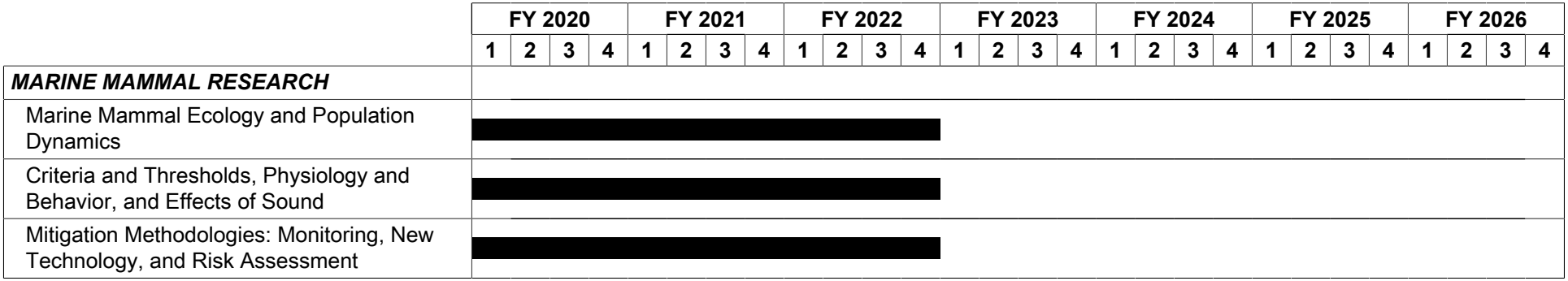

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 9204 / *Marine Mammal Research*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
MARINE MAMMAL RESEARCH				
Marine Mammal Ecology and Population Dynamics	1	2020	4	2022
Criteria and Thresholds, Physiology and Behavior, and Effects of Sound	1	2020	4	2022
Mitigation Methodologies: Monitoring, New Technology, and Risk Assessment	1	2020	4	2022

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy											Date: May 2021	
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 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
9205: *Marine Mammal Settlement*	6.000	3.000	0.000	0.000	-	0.000	-	-	-	-	-	-
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: MARINE MAMMAL SETTLEMENT	3.000	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: N/A					
FY 2022 Base Plans: N/A					
FY 2022 OCO Plans: N/A					
FY 2021 to FY 2022 Increase/Decrease Statement: FY2020 is the last year of funding.					
Accomplishments/Planned Programs Subtotals	3.000	0.000	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 9205 / *Marine Mammal Settlement*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

RDTEN Contracts are Competitive Procurements.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
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 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SURTASS	MIPR	NOAA, HQ : Silver Spring, MD	5.000	1.800	Oct 2019	0.000		0.000		-		0.000	-	-	-
SURTASS	WR	EXWC : Port Hueneme, CA	1.000	1.200	Oct 2019	0.000		0.000		-		0.000	-	-	-
		Subtotal	6.000	3.000		0.000		0.000		-		0.000	-	-	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 2019).

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	6.000	3.000		0.000		0.000		-		0.000	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603721N / *Environmental Protection*	**Project (Number/Name)** 9205 / *Marine Mammal Settlement*

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	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 2022 Navy		Date: May 2021
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	2020	4	2020