Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Navy										DATE: February 2010	
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*				R-1 ITEM NOMENCLATURE PE 0603721N: *Environmental Protection*							
COST ($ in Millions)	**FY 2009 Actual**	**FY 2010 Estimate**	**FY 2011 Base Estimate**	**FY 2011 OCO Estimate**	**FY 2011 Total Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
Total Program Element	20.557	21.372	20.207	0.000	20.207	22.790	22.967	23.588	24.081	Continuing	Continuing
0401: *Shipboard Waste Mgmt*	6.238	6.025	5.911	0.000	5.911	6.681	6.572	6.822	6.970	Continuing	Continuing
0817: *Environmental Sustainability Development (NESDI)*	7.879	5.737	5.995	0.000	5.995	6.661	6.772	6.926	7.070	Continuing	Continuing
9204: *Marine Mammal Research*	5.242	8.813	8.301	0.000	8.301	9.448	9.623	9.840	10.041	Continuing	Continuing
9999: *Congressional Adds*	1.198	0.797	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	14.376

A. Mission Description and Budget Item Justification

Many environmental laws, regulations, and policies impose restrictions on Navy 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. This program develops and evaluates processes, hardware, systems, and operational procedures 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. The projects for this program element 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 (MARPOL 73/78), (d) DoD 4715.6 R1, Regulations on Vessels Owned or Operated by the
Department of Defense, (e) OPNAVINST 5090.1B (CH-4), Environmental and Natural Resources Program Manual, (f) 40 CFR Part 9 and Chapter VII (Uniform National Discharge Standards [UNDS] Phase I Standard), (g) Executive Order (EO) 13148, Greening the Government Through Leadership in Environmental Management, (h) Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, (i) National Invasive Species Act of 1996, (j) 33 CFR 151 Subpart D-Ballast Water Management for Control of Nonindigenous Species in Waters of the United States, (k) Clean Air Act, (l) Federal Insecticide, Fungicide, and Rodenticide Act, (m) Executive Order (EO) 13423 Strengthening Federal Environmental, Energy, and Transportation Management of 24 January, 2007, (n) NAVSEANOTE 5400, NAVSEA Warranted Technical Authorities, (o) NAVSEAINST 5400.97B, Virtual SYSCOM Engineering and Technical Authority Policy, (p) NSWCCD-63-TM-2005/9, Clean Ballast Engineering Analysis Phase II, (q) Northwest Environmental Advocates v. EPA, No. 03-05760, Order Granting Plaintiffs' Motion for Permanent Injunctive Relief at 18 (N.D. Cal. Sept. 18, 2006), (r) Environmental Requirements and Goals for Navy Systems Acquisition, CNO (N4) Memorandum 5090 Ser N4/5U890259 of 20 April 2005, (s) International Convention for the Control and Management of Ships' Ballast Water and Sediments, 31 Feb 2004. References (a) through (m) establish Level I environmental protection requirements for Navy shipboard systems, operations, and discharges in the areas of liquid wastes, hazardous materials, solid

wastes, and other significant afloat environmental concerns. References (n) and (o) establish NAVSEA Technical Authority responsibilities for Ship Environmental Engineering. Project 0401 supports RDT&E 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. A FY10 new start, Ballast Water Exchange Improvements, will provide engineering solutions for managing ballast water discharges to mitigate the transport and release of non-indigenous species. Project 0817 supports RDT&E to develop and validate technologies to enable Navy facilities to comply with environmental laws, regulations, and policies in a cost-effective manner. Project 9204 supports RDT&E to develop planning and monitoring tools for minimizing Fleet contacts with and potential harassment (physiological and behavior) of marine animals including threatened and endangered species in response to Federal laws and regulations and public scrutiny.

B. Program Change Summary ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	20.740	20.661	0.000	0.000	0.000
Current President's Budget	20.557	21.372	20.207	0.000	20.207
Total Adjustments	-0.183	0.711	20.207	0.000	20.207
• Congressional General Reductions		-0.089			
• Congressional Directed Reductions		0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		0.800			
• Congressional Directed Transfers		0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.182	0.000			
• Program Adjustments	0.000	0.000	20.207	0.000	20.207
• Rate/Misc Adjustments	-0.001	0.000	0.000	0.000	0.000

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2009	FY 2010
Project: 9999: *Congressional Adds*		
Congressional Add: *Compliance Tools Development for Metals in Antifouling Paints*	0.000	0.797
Congressional Add: *PUGET SOUND ANOXIA RESEARCH*	1.198	0.000
Congressional Add Subtotals for Project: 9999	1.198	0.797
Congressional Add Totals for all Projects	1.198	0.797

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Navy	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603721N: *Environmental Protection*

Change Summary Explanation

Technical: Not applicable.
Schedule: Not applicable.

FY11 from previous President's Budget is shown as zero because no FY11-15 data was presented in President's Budget 2010.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603721N: *Environmental Protection*	PROJECT 0401: *Shipboard Waste Mgmt*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
0401: *Shipboard Waste Mgmt*	6.238	6.025	5.911	0.000	5.911	6.681	6.572	6.822	6.970	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

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. The Shipboard Waste Management RDT&E project 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 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.,hull anti-fouling and access to environmental data for planning Fleet operations and exercises. The Department Head of NAVSEA s Shipboard Environmental Protection Department (SEA 05P25) is the designated Technical Warrant Holder for Ship Environmental Engineering, with responsibility

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603721N: *Environmental Protection*	**PROJECT** 0401: *Shipboard Waste Mgmt*

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 Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Technical Authority	2.376	1.992	2.029	0.000	2.029
FY 2009 Accomplishments: Continue developing environmental equipment/system requirements documentation, design criteria and guidance, specifications and standards, and certification protocols, and perform test and evaluation, to facilitate execution of technical authority for legacy and new-design ship and submarine environmental capabilities. *FY 2010 Plans:* Develop environmental equipment/system requirements documentation, design criteria and guidance, specifications and standards, and certification protocols, and perform test and evaluation, to facilitate execution of technical authority for legacy and new-design ship and submarine environmental capabilities. *FY 2011 Base Plans:* Continue developing environmental equipment/system requirements documentation, design criteria and guidance, specifications and standards, and certification protocols, and perform test and evaluation, to facilitate execution of technical authority for legacy and new-design ship and submarine environmental capabilities.					
Integrated Liquid Wastes	2.650	2.988	2.762	0.000	2.762

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: Continue support rule making process in development of UNDS. Continue development of Marine Pollution Control Devices (MPCD) treatment systems, technologies and procedures, and evaluation of commercial off-the-shelf (COTS) waste water systems. *FY 2010 Plans:* Continue support rule making process in development of UNDS. Continue development of MPCD treatment systems, technologies and procedures, and evaluation of COTS waste water systems. *FY 2011 Base Plans:* Continue support rule making process in development of UNDS. Continue development of MPCD treatment systems, technologies and procedures, and evaluation of COTS waste water systems.					
Hazardous and Other Major Ship Wastes *FY 2009 Accomplishments:* Continue shipboard hazardous materials substitution and elimination process, and continue test and evaluation of pollution-prevention equipment aboard surface ships and submarines. Continue development and testing of new low/no-copper underwater hull antifouling coatings. *FY 2010 Plans:* Continue shipboard hazardous materials substitution and elimination process, and continue test and evaluation of pollution-prevention equipment aboard surface ships and submarines. Continue development and testing of new low/no-copper underwater hull antifouling coatings. *FY 2011 Base Plans:* Continue shipboard hazardous materials substitution and elimination process, and continue test and evaluation of pollution-prevention equipment aboard surface ships and submarines. Complete development and testing of new low/no-copper underwater hull antifouling coatings.	1.212	0.647	0.748	0.000	0.748

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603721N: *Environmental Protection*	PROJECT 0401: *Shipboard Waste Mgmt*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Ballast Water Exchange	0.000	0.398	0.372	0.000	0.372
FY 2010 Plans: Conduct surveys of Amphibious Warfare Ships to explore feasible engineering enhancements reduce the time and/or and manpower involved in executing ballast water double exchange. Develop and document double exchange procedures and guidance procedures and prepare documentation and training materials for the new ballast water management guidance. Investigate ballasting data logging options. *FY 2011 Base Plans:* Continue ballast water double exchange surveys and procedural product development.					
Accomplishments/Planned Programs Subtotals	6.238	6.025	5.911	0.000	5.911

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• RDTEN/0601153N: *Defense Research Sciences*	405.561	429.107	429.767	0.000	429.767	443.593	466.118	480.310	503.304	0.000	3,157.760

D. Acquisition Strategy

RDT&E Contracts are Competitive Procurements.

E. Performance Metrics

Quarterly Program Reviews

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603721N: *Environmental Protection*	PROJECT 0401: *Shipboard Waste Mgmt*	

Product Development ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Ancillary Hardware Development	C/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	

Remarks

Support ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	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	

Remarks

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603721N: *Environmental Protection*	PROJECT 0401: *Shipboard Waste Mgmt*

Test and Evaluation ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWCCD, Bethesda, MD Bethesda, MD	165.262	4.790	Nov 2009	4.684	Nov 2010	0.000		4.684	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NRL,Wash,DC Wash,DC	30.230	0.199	Dec 2009	0.232	Dec 2010	0.000		0.232	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	SPAWARSYSCEN SD,CA	11.731	0.110	Nov 2009	0.111	Nov 2010	0.000		0.111	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	Misc. Govt Labs TBD	22.878	0.050	Nov 2009	0.047	Nov 2010	0.000		0.047	Continuing	Continuing	Continuing
Developmental Test & Evaluation	C/CPFF	SAIC San Diego, CA	15.570	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Developmental Test & Evaluation	C/CPFF	Misc. Contracts TBD	12.814	0.149	Feb 2010	0.140	Feb 2011	0.000		0.140	Continuing	Continuing	Continuing
Process Control Engineering	C/CPFF	M. Rosenblatt & Sons Arlington, VA	5.830	0.717	Feb 2010	0.687	Feb 2011	0.000		0.687	0.000	7.234	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	267.355	6.015		5.901		0.000		5.901			

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603721N: *Environmental Protection*	PROJECT 0401: *Shipboard Waste Mgmt*	

Test and Evaluation ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Management Services ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	Allot	NAVSEA HQ Washington, DC	0.290	0.010	Nov 2009	0.010	Nov 2010	0.000		0.010	0.000	0.310	Continuing
SBIR Assessment	C/TBD	Not Specified Not Specified	0.078	0.000		0.000		0.000		0.000	0.000	0.078	Continuing
		Subtotal	0.368	0.010		0.010		0.000		0.010	0.000	0.388	

Remarks

	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	303.197	6.025		5.911		0.000		5.911			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Navy			**DATE:** February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603721N: *Environmental Protection*	**PROJECT** 0401: *Shipboard Waste Mgmt*	

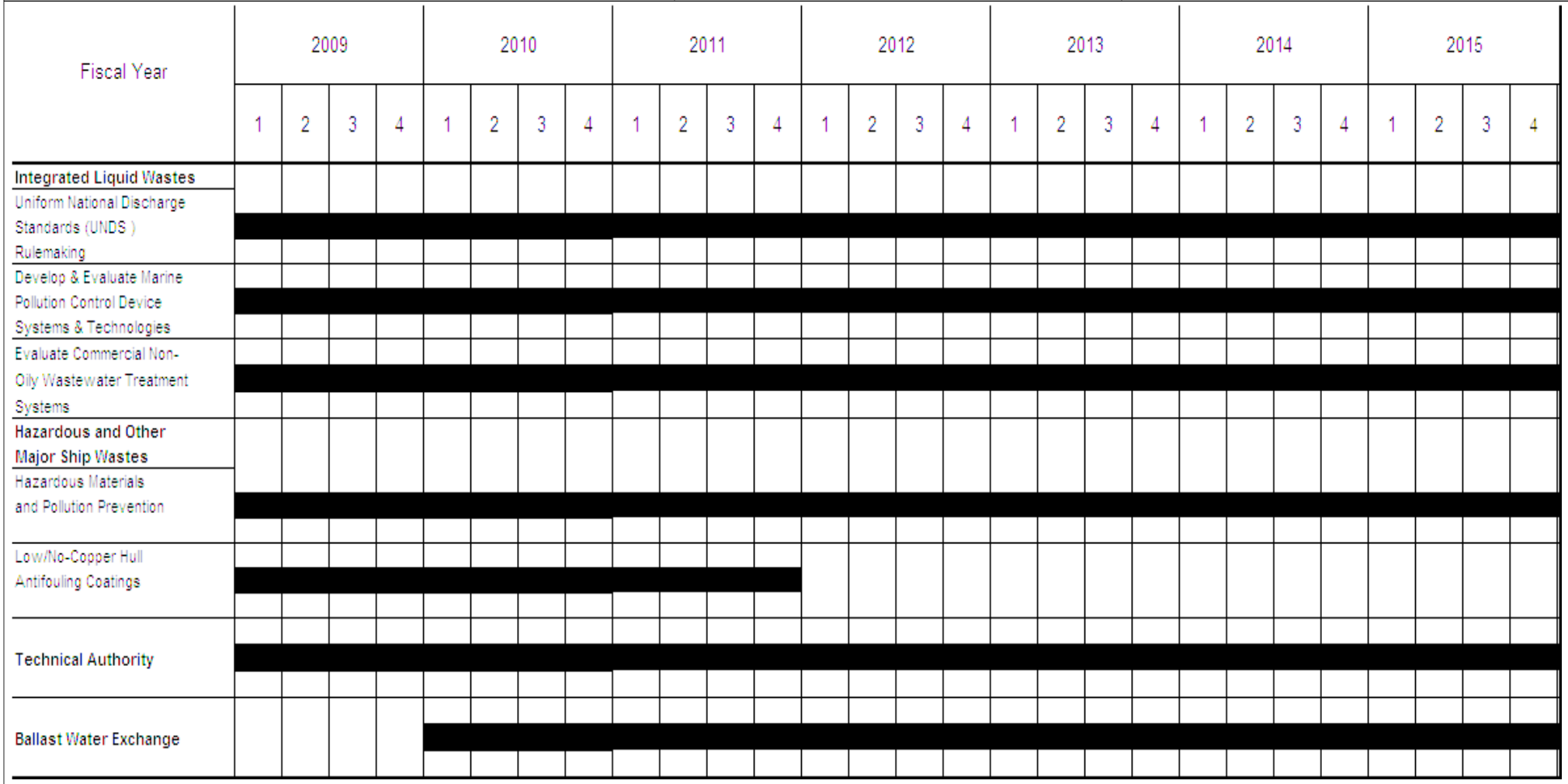

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603721N: *Environmental Protection*	**PROJECT** 0401: *Shipboard Waste Mgmt*

Schedule Details

	Start		End	
Event	**Quarter**	**Year**	**Quarter**	**Year**
Uniform National Discharge Standards (UNDS) Rulemaking	1	2009	4	2015
Develop & Evaluate Marine Pollution Control Device Systems & Technologies	1	2009	4	2015
Evaluate Commercial Wastewater Treatment Systems	1	2009	4	2015
Hazardous Materials and Pollution Prevention	1	2009	4	2015
Low/No-Copper Hull Antifouling Coatings	1	2009	4	2011
Technical Authority	1	2009	4	2015
Ballast Water Exchange	1	2010	4	2015

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603721N: *Environmental Protection*	PROJECT 0817: *Environmental Sustainability Development (NESDI)*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
0817: *Environmental Sustainability Development (NESDI)*	7.879	5.737	5.995	0.000	5.995	6.661	6.772	6.926	7.070	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

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, 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 project and sustain our forces at home and abroad.

This program identifies pervasive Navy shoreside 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. Program investments supports 4 of 5 Environmental Enabling Capabilities (EEC-2 though 5) that are required to meet the objectives of Sea Power 21 as detailed in the POM08 Integrated Navy Environmental Readiness Capability Assessment for Science and Technology (S&T) and Development, test and Evaluation (DT&E).

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

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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underwater UXO, the evaluation and prioritization 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.

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, process, 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, and 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 and 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.

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), and volatile organic compounds (VOCs), and the associated reporting requirements, reduced hazardous waste and disposal costs, and improved storm water management.

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.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Maximize Training & Testing Requirements Within Environmental Constraints	2.115	2.081	2.171	0.000	2.171

FY 2009 Accomplishments:

FY09: Continue providing validated knowledge, models, and processes to mitigate environmental impacts, restrictions, and costs at Navy training and test range to maximize the availability and utilization of the ranges. Continued the analysis of the long term disposition of seafloor cables which will identify cable impacts to the marine environments aiding the sustainment and management of Navy underwater ranges and support new underwater surveillance systems that require the laying of seafloor hardware and cables. Continued the Seafloor Cable Baseline Assessment to establish a baseline condition from which any adverse effects associated with seafloor ranges, in particular, seafloor communication cables can be determined. Continued effort to assess environmental risk associated with abandoned equipment in underwater ranges. Sound Energy Model Assessment on underwater marine environment. Developed a Checklist for Blow-In-Place (BIP) Scenarios.

FY 2010 Plans:

FY10: Continue providing validated knowledge, models, and processes to mitigate environmental impacts, restrictions, and costs at Navy training and test range to maximize the availability and utilization of the ranges. Continued effort to assess environmental risk associated with abandoned equipment in underwater ranges. Continue the assessment of sound energy models on underwater marine environment. Conclusion of efforts on the Seafloor Cable Baseline Assessment will allow decision makers to determine a long term monitoring strategy for the underwater range. Seafloor cable laying strategies and decision tool. Determining the Phototoxic Properties of Energetic Contaminants in Aquatic Environments.

FY 2011 Base Plans:

FY11: Continue providing validated knowledge, models, and processes to mitigate environmental impacts, restrictions, and costs at Navy training and test range to maximize the availability and utilization of the ranges. Continue the assessment of sound energy models on underwater marine

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
environment. Continue seafloor cable laying strategy and decision tool. Conclusion of the risk assessment associated with abandoned equipment in underwater ranges. Background Perchlorate Source Characterization at Navy Facilities and Ranges. Long-Term Monitoring Capabilities to Support Natural Resource Management on Navy and Marine Corps Installations and Ranges.					
Maintenance *FY 2009 Accomplishments:* FY09: Continue providing new systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting from the repair and maintenance of ships, submarines, and aircraft. Completed aircraft sustainment related projects. Developed dry dock best management practices and decision selection tool assisting naval shipyards, stations and bases in meeting the copper discharge standards will conclude. Alternative solvents demonstrations for ship maintenance operations and identification of alternatives for NAVSEA targeted chemicals continued. The development of hazardous material allocation information for ship maintenance continued. Completed acid waste treatment project for cleaning shipboard heat exchangers. Demonstrated a hull bio-fouling cleaning/removal approach. Evaluated the Solvent Extraction Methodologies for the Extraction of Polychlorinated Biphenyls (PCBs) in Shipboard Materials. *FY 2010 Plans:* FY10: Divest investments in EEC3 related to aircraft sustainment. Continue development of dry dock cleaning alternatives. Evaluation of Solvent Extraction Methodologies for the Extraction of Polychlorinated Biphenyls in Shipboard Materials Continue hull bio-fouling cleaning and removal technology. Tools/mitigation measures for coating operations on vessel freeboard areas. Elimination of Overspray in Shipbuilding and Facilities Maintenance Operations.	2.104	0.787	0.848	0.000	0.848

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 Base Plans: FY11: Complete all aviation sustainment related projects. Continue development of dry dock cleaning alternatives. Complete hull bio-fouling cleaning and removal technology. Continue evaluation of solvent extraction methodologies for the extraction of PCBs in shipboard materials. Continue hull bio-fouling cleaning and removal technology. Continue the elimination of overspray in shipbuilding and facilities maintenance operations. Initiate effort to develop tools/ mitigation measures for coating operations on vessel freeboard areas.					
Support Shore Readiness within Environmental Constraints	2.896	2.475	2.473	0.000	2.473
FY 2009 Accomplishments: FY09: Continue providing new systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting specifically from waterfront support, aviation support, and other base operations. Continued selected demonstrations of alternative solvents for industrial operations. Continued the development of a wastewater treatment system to collect and treat the waste stream for vertical launch missile tubes. Continued investigating improved biofouling control and preventative maintenance planning for permanent oil containment boom systems. Continued Shoreside Ballast Water Treatment effort. Dry dock best management practices tool will assist naval shipyards, naval stations, and submarine bases in meeting the copper discharge standards for NPDES and Stormwater discharges. *FY 2010 Plans:* FY10: Integrating effort related to Shipboard Acid Waste Treatment Technology. This pier-side reclamation system separates heavy metal and marine fouling sludge to allow ship waste water to meet local sanitary sewer discharge limits. Validate a Shipboard Mobile Surface Cleaning Technology. Validation of a mobile surface cleaning technology for critical cleaning of shipboard non-skid and shoreside surfaces to remove contaminants, mitigate pollution from weather deck and stormwater runoff and reduce associated manpower and waste					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
management burden. Continue providing new systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting specifically from waterfront support, and other base operations. Realign the program to focus on addressing the fleets high priority needs and investment in processes related to waterfront support to address risks associated with sea level rise and more frequent and intense storm events. Reduced Generation of Shoreside Managed Waste from Pierside Supported Underwater Ship Husbandry Operations. *FY 2011 Base Plans:* FY11: Continue providing new systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting specifically from waterfront support and aviation support operations. Water front mitigation strategies to address sea level rise and more frequent and intense storms. Making Man-made Structures and Altered Habitats in Urban Areas of Navy Harbors More Habitable by Native Species without Compromising Structural Integrity. Shoreside Treatment of Ballast Water.					
Cost-Effective Management of Environmental Regulatory Requirements *FY 2009 Accomplishments:* FY09: Continued providing validated knowledge, models, processes and systems to improve environmental monitoring and reporting, and reduce the cost of compliance with regulations applicable to coastal contamination and contaminated sediments. Abiotic In Situ Treatment of 1,2,3-Trichloropropane to Protect Drinking Water Resources. *FY 2010 Plans:* FY10: The Potable Water Quality Management Guidance Document which provides Navy drinking water program managers with the direction and information for meeting compliance goals contained in the new disinfection byproducts rules. Continue providing validated knowledge, models, processes and system to improve environmental monitoring and reporting, and to reduce the cost of compliance with regulations applicable to coastal contamination and contaminated sediments. Continue effort	0.723	0.394	0.503	0.000	0.503

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
to establish guidelines Continue to establish guidelines and limitations for the Use of Biodiesel with Ground Tactical Vehicles. Maximize the use of biodiesel fuels in tactical vehicles and equipment. Demonstrate the practical application of Compound Specific Isotope Analysis (CSIA) associated with Monitored Natural Attenuation (MNA) to provide practical guidelines associated with its use and interpretation. Initiate efforts related to the regulatory requirements associated with climate change and associated emissions and reporting. *FY 2011 Base Plans:* FY11: Continue providing validated knowledge, models, processes and systems to improve environmental monitoring and reporting, and to reduce the cost of compliance with regulations applicable to coastal contamination and contaminated sediments. Reduce Contaminant Transport Associated with Stormwater Runoff. Continue efforts related to Navy contribution to climate change and regulatory requirements.					
DAWDF *FY 2009 Accomplishments:* DAWDF Realignment	0.041	0.000	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals	7.879	5.737	5.995	0.000	5.995

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

This project is categorized as Non-ACAT (Non Acquisition). 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 costing over $100K are often procured centrally through the Navy Pollution Prevention Equipment Program (PPEP) or directly through the base operating budget. Equipment products for Shipyards and other Navy Working Capital Fund (NWCF) activities costing over $100K are procured through their Capital Purchases Program (CPP). For both types of activities, equipment products costing less than $100K, and process changes not requiring the purchase of new equipment such as consumable material or product

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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 (MCON) 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.

E. Performance Metrics

Quarterly Budget Reviews

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
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Product Development ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
EEC 2	Various/ Various	NFESC PT HUENEME, CA	0.532	0.710	Apr 2010	0.750	Aug 2011	0.000		0.750	0.000	1.992	Continuing
EEC 2	Various/ Various	SSC SAN DIEGO, CA	0.261	1.360	Jun 2010	1.315	Mar 2011	0.000		1.315	0.000	2.936	Continuing
EEC 3	Various/ Various	NSWC SAN DIEGO, CA	1.466	0.420	Aug 2010	0.420	Feb 2011	0.000		0.420	0.000	2.306	Continuing
EEC 3a	Various/ Various	NSWC SAN DIEGO, CA	0.769	0.250	Jun 2010	0.435	Jun 2011	0.000		0.435	0.000	1.454	Continuing
EEC 3	Various/ Various	NAWC PATUXENT RIVER, MD	0.395	0.124	Apr 2010	0.000		0.000		0.000	0.000	0.519	Continuing
EEC 4	Various/ Various	NFESC PT HUENEME, CA	2.187	1.624	Jul 2010	1.256	Nov 2011	0.000		1.256	0.000	5.067	Continuing
EEC 4	Various/ Various	NSWC SAN DIEGO, CA	0.100	0.488	Jul 2010	0.662	Feb 2011	0.000		0.662	0.000	1.250	Continuing
EEC 4a	Various/ Various	SSC SAN DIEGO, CA	0.520	0.340	Jan 2010	0.280	Jan 2011	0.000		0.280	0.000	1.140	Continuing
EEC 5	Various/ Various	NFESC PT HUENEME, CA	0.448	0.183	Jan 2010	0.297	Jan 2011	0.000		0.297	0.000	0.928	Continuing
EEC 5	Various/ Various	NSWC SAN DIEGO, CA	0.215	0.000		0.000		0.000		0.000	0.000	0.215	Continuing
EEC 5	Various/ Various	NAWC	0.223	0.000		0.000		0.000		0.000	0.000	0.223	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2010 Cost	FY 2010 Award Date	FY 2011 Base Cost	FY 2011 Base Award Date	FY 2011 OCO Cost	FY 2011 OCO Award Date	FY 2011 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		PATUXENT RIVER, MD											
EEC 5	Various/ Various	SSC SAN DIEGO, CA	0.467	0.238	Nov 2010	0.580	Jan 2011	0.000		0.580	0.000	1.285	Continuing
EEC2	Various/ Various	NSWCH HI	0.296	0.000		0.000		0.000		0.000	0.000	0.296	Continuing
		Subtotal	7.879	5.737		5.995		0.000		5.995	0.000	19.611	

Remarks

	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	7.879	5.737		5.995		0.000		5.995	0.000	19.611	

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Navy		DATE: February 2010
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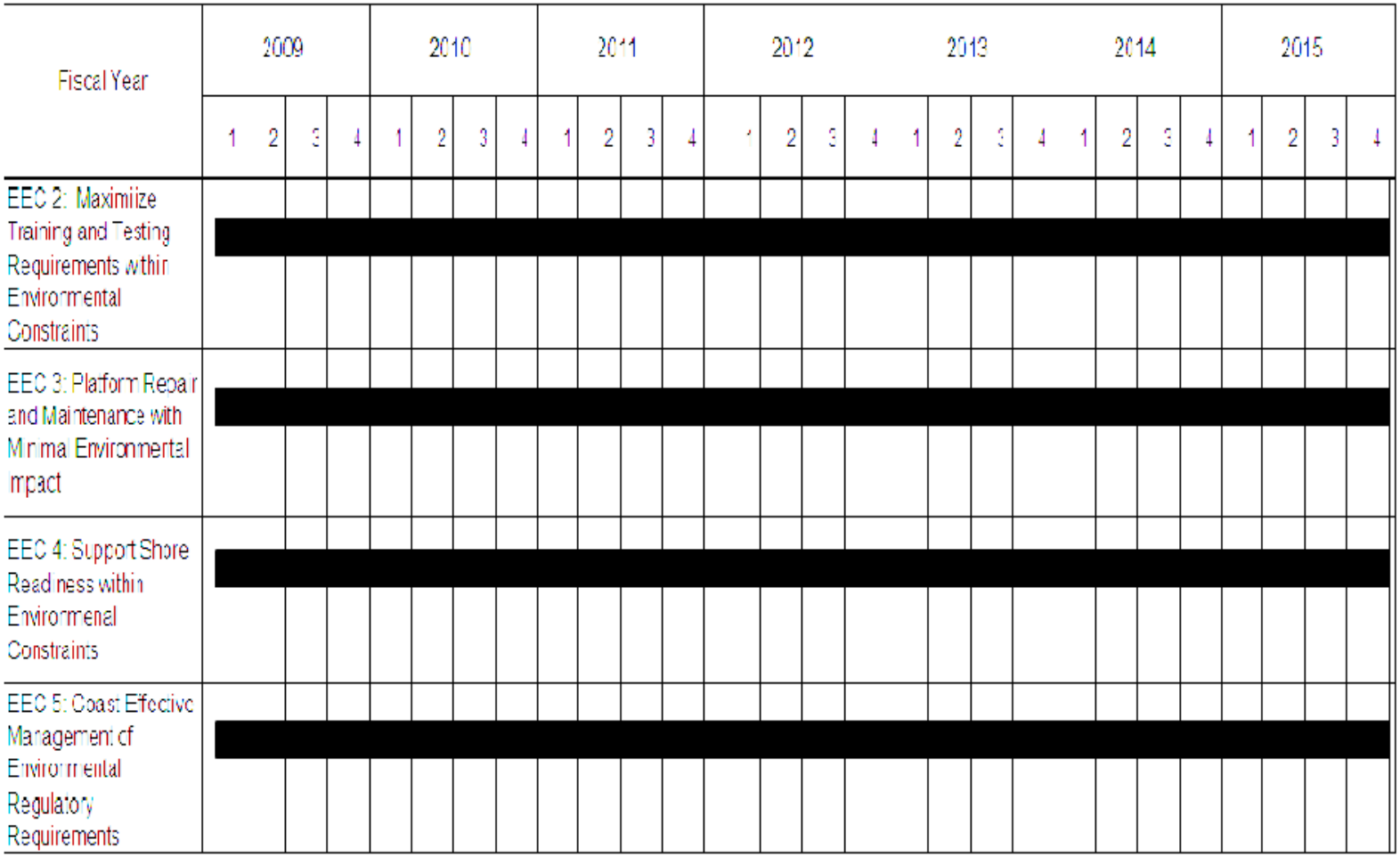

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy		DATE: February 2010
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Schedule Details

	Start		End	
Event	**Quarter**	**Year**	**Quarter**	**Year**
EEC 2	1	2009	4	2015
EEC 3	1	2009	4	2015
EEC 4	1	2009	4	2015
EEC 5	1	2009	4	2015

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COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
9204: *Marine Mammal Research*	5.242	8.813	8.301	0.000	8.301	9.448	9.623	9.840	10.041	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

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 and killing of marine animals by the use of intense underwater sound. Since Fleet operation and training areas coincide with known or probable marine mammal habitats, migration routes, or breeding areas, 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).

These areas are (1) Mammal Demographics - Determine the likelihood of the presence of marine mammal species during observed and forecast oceanographic conditions by developing habitat and ecological models. Refine marine mammal survey techniques to optimize the accuracy of abundance estimates in small ocean regions of Navy interest.

Conduct analysis of long range, low frequency marine mammal vocalizations to determine natural variations in population estimates, residency, and migration routes over large ocean regions; (2) Criteria, Thresholds, and Mitigation - Establish criteria and thresholds from which to measure potential impact on marine mammals 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) Passive Acoustic Monitoring - Conduct Passive Acoustic Monitoring of Marine Mammals, particularly on Navy undersea ranges. Several feasibility demonstrations reveal the

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potential of passive acoustic monitoring as a unique form of mitigation and a special tool to obtain critical information about normal marine mammal behavior. Any impact of Navy operations on marine mammals, particularly behavior modification, will be derived after normal variations in marine mammal behavior resulting from natural factors are
determined. Several remaining unknowns must be addressed before passive acoustic monitoring techniques are developed as an institutionalized system available to the Fleet.
Accurate and timely monitoring and predicting the movement of whales and other protected marine animals plus an enhanced knowledge of how marine animals may react to Fleet activities (e.g., physiological and behavioral effects) will reduce Navy interaction with these animals; minimize the risk that legally-imposed monitoring and avoidance
measures will adversely affect Fleet operations and exercises; minimize the substantial costs associated with operations, exercises, and tests that have to be modified or curtailed as a result of concerns about protected marine animals; and will reduce the likelihood of litigation related to actual or anticipated compliance problems with protected animals.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Marine Mammal Location, Abundance and Movement	1.462	1.231	1.120	0.000	1.120
FY 2009 Accomplishments: Continued investigations in marine mammal location, abundance, and movement through habitat investigations; predictive models; marine mammal database; and data analysis, protocols and surveys. *FY 2010 Plans:* Continue investigations in marine mammal location, abundance, and movement through habitat investigations; predictive models; marine mammal database; and data analysis, protocols and surveys. *FY 2011 Base Plans:* Continue investigations in marine mammal location, abundance, and movement through habitat investigations; predictive models; marine mammal database; and data analysis, protocols and surveys.					
Criteria and Thresholds, Physiology and Behavior, and Effects of Sound	1.501	2.785	2.678	0.000	2.678

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: Continued investigations in criteria and thresholds, physiology and behavior, and effects of sound through hearing sensitivity; temporary threshold shift (TTS)/Sub-TTS; physical injury models; cumulative effects of sound and/or multiple events; effects of sound on the marine mammal habitat; and workshops. *FY 2010 Plans:* Continue investigations in criteria and thresholds, physiology and behavior, and effects of sound through hearing sensitivity; temporary threshold shift (TTS)/Sub-TTS; physical injury models; cumulative effects of sound and/or multiple events; effects of sound on the marine mammal habitat; and workshops. *FY 2011 Base Plans:* Continue investigations in criteria and thresholds, physiology and behavior, and effects of sound through hearing sensitivity; temporary threshold shift (TTS)/Sub-TTS; physical injury models; cumulative effects of sound and/or multiple events; effects of sound on the marine mammal habitat; and workshops.					
Mitigation Methodologies: Monitoring, New Technology, and Risk Assess *FY 2009 Accomplishments:* Continued mitigation methodologies for monitoring, new technology and risk assessment through passive acoustic monitoring; active acoustic monitoring; improved tag development; alternative monitoring; defining risk assessment variables; model risk assessment and determine mitigation effectiveness. *FY 2010 Plans:* Continue mitigation methodologies for monitoring, new technology and risk assessment through passive acoustic monitoring; active acoustic monitoring; improved tag development; alternative	2.206	2.238	2.067	0.000	2.067

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
monitoring; defining risk assessment variables; model risk assessment and determine mitigation effectiveness. *FY 2011 Base Plans:* Continue mitigation methodologies for monitoring, new technology and risk assessment through passive acoustic monitoring; active acoustic monitoring; improved tag development; alternative monitoring; defining risk assessment variables; model risk assessment and determine mitigation effectiveness.					
Acoustic Source Propagation *FY 2009 Accomplishments:* Continued investigation of acoustic source propagation through 3-D modeling of multiple acoustic sources. *FY 2010 Plans:* Continue investigation of acoustic source propagation through 3-D modeling of multiple acoustic sources. *FY 2011 Base Plans:* Continue investigation of acoustic source propagation through 3-D modeling of multiple acoustic sources.	0.073	0.070	0.074	0.000	0.074
Living Marine Mammal Resources Research Center (LMRRC) *FY 2010 Plans:* The Living Marine Mammal Resources Research Center (LMRRC) will establish, maintain, and manage a cooperative research program comprised of science and technology (S&T) and research, development, testing, and evaluation (RDT&E) projects; product development; technology transfer; and alliances with academia and the commercial sector to foster the advancement in understanding	0.000	2.489	2.362	0.000	2.362

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
and conserving living marine resources. This program will help preserve and protect current and future undersea warfighting capabilities. *FY 2011 Base Plans:* The LMRRC will continue to maintain, and manage a cooperative research program comprised of science and technology (S&T) and research, development, testing, and evaluation (RDT&E) projects; product development; technology transfer; and alliances with academia and the commercial sector to foster the advancement in understanding and conserving living marine resources. This program will help preserve and protect current and future undersea warfighting capabilities.					
Accomplishments/Planned Programs Subtotals	5.242	8.813	8.301	0.000	8.301

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• RDTEN/0601153N: *Defense Research Sciences*	405.561	429.107	429.767	0.000	429.767	443.593	466.118	480.310	503.304	0.000	3,157.760
• RDTEN/0602435N: *Ocean Warfighting Environment Applied Research*	51.855	53.727	49.491	0.000	49.491	51.279	52.052	53.703	54.989	0.000	367.096
• RDTEN/0602782N: *Mine & Expeditionary Warfare Applied Research*	53.055	43.897	36.833	0.000	36.833	37.836	44.589	51.474	59.179	0.000	326.863
• RDTEN/0603235N: *Common Picture Advanced Technology*	86.583	104.531	96.720	0.000	96.720	55.951	47.983	49.036	40.404	0.000	481.208

D. Acquisition Strategy

(U) RDT&E Contracts are Competitive Procurements.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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E. Performance Metrics

Quarterly Program Reviews

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy			DATE: February 2010
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Test and Evaluation ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NUWC Newport, RI	3.352	0.000		0.000		0.000		0.000	0.000	3.352	Continuing
Developmental Test & Evaluation	SS/CPFF	University of Maryland Michigan	0.680	0.000		0.000		0.000		0.000	0.000	0.680	Continuing
Developmental Test & Evaluation	WR	NPGS Monterey, CA	1.930	0.000		0.000		0.000		0.000	0.000	1.930	Continuing
Developmental Test & Evaluation	MIPR	NOAA Fish Science Center	1.230	0.000		0.000		0.000		0.000	0.000	1.230	Continuing
Developmental Test & Evaluation	C/CPFF	Misc Contracts TBD	0.533	0.000		0.000		0.000		0.000	0.000	0.533	Continuing
Developmental Test & Evaluation	SS/CPFF	Scripps Institute California	5.683	0.000		0.000		0.000		0.000	0.000	5.683	Continuing
Developmental Test & Evaluation	SS/CPFF	U of Wash, APL Washington	0.650	0.000		0.000		0.000		0.000	0.000	0.650	Continuing
Developmental Test & Evaluation	SS/CPFF	Duke Univ. North Carolina	0.425	0.000		0.000		0.000		0.000	0.000	0.425	Continuing
Developmental Test & Evaluation	SS/CPFF	Oregon State Univ. Oregon	0.865	0.000		0.000		0.000		0.000	0.000	0.865	Continuing
Developmental Test & Evaluation	SS/CPFF	Woods Hole Oceanographic Inst Florida	1.301	0.000		0.000		0.000		0.000	0.000	1.301	Continuing
	WR	SPAWAR	1.332	0.000		0.000		0.000		0.000	0.000	1.332	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603721N: *Environmental Protection*	PROJECT 9204: *Marine Mammal Research*

Test and Evaluation ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation		San Diego, CA											
Developmental Test & Evaluation	WR	NSWCCD Bethesda, MD	0.290	0.000		0.000		0.000		0.000	0.000	0.290	Continuing
Developmental Test & Evaluation	WR	NRL Washington, DC	0.140	0.000		0.000		0.000		0.000	0.000	0.140	Continuing
Developmental Test & Evaluation	WR	NATO URC New York	0.485	0.000		0.000		0.000		0.000	0.000	0.485	Continuing
Developmental Test & Evaluation	C/CPFF	Marine Acoustics, Inc. FLorida	1.000	0.000		0.000		0.000		0.000	0.000	1.000	Continuing
Developmental Test & Evaluation	SS/CPFF	San Diego State Univ San Diego, CA	0.771	0.000		0.000		0.000		0.000	0.000	0.771	Continuing
Developmental Test & Evaluation	C/CPFF	ONR Arlington, VA	0.030	0.000		0.000		0.000		0.000	0.000	0.030	Continuing
Developmental Test & Evaluation	WR	NMSA Arlington, VA	1.240	0.000		0.000		0.000		0.000	0.000	1.240	Continuing
Developmental Test & Evaluation	C/CPFF	SPAWARSYSCEN San Diego, CA	0.000	8.813	Dec 2009	8.301	Dec 2010	0.000		8.301	0.000	17.114	Continuing
		Subtotal	21.937	8.813		8.301		0.000		8.301	0.000	39.051	

Remarks

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603721N: *Environmental Protection*	PROJECT 9204: *Marine Mammal Research*	

	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	21.937	8.813		8.301		0.000		8.301	0.000	39.051	

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Navy		**DATE:** February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603721N: *Environmental Protection*	**PROJECT** 9204: *Marine Mammal Research*

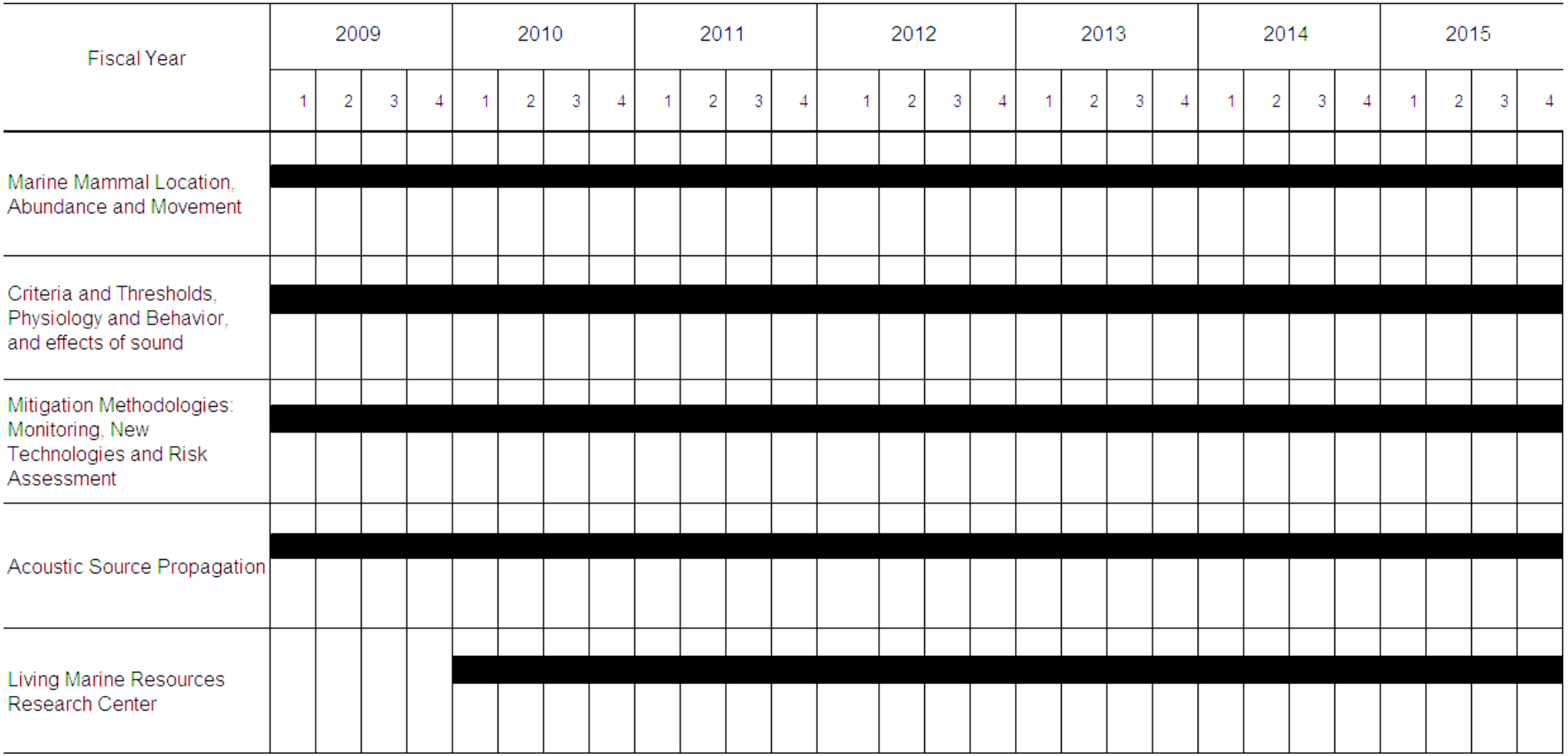

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603721N: *Environmental Protection*	**PROJECT** 9204: *Marine Mammal Research*

Schedule Details

	Start		End	
Event	**Quarter**	**Year**	**Quarter**	**Year**
Marine Mammal Location, Abundance, and Movement	1	2009	4	2015
Criteria and Thresholds, Physiology and Behavior, and Effects of Sound	1	2009	4	2015
Mitigation Methodologies: Monitoring, New Technology, and Risk Assessment	1	2009	4	2015
Acoustic Source Propagation	1	2009	4	2015
Living Marine Resources Research Center	1	2010	4	2015

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603721N: *Environmental Protection*	PROJECT 9999: *Congressional Adds*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
9999: *Congressional Adds*	1.198	0.797	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	14.376
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

Congressional Add

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010
Congressional Add: Compliance Tools Development for Metals in Antifouling Paints *FY 2010 Plans:* Develop a bioavailability model for copper in estuarine and marine waters, and potential alternative bioavailability-based sediment cleanup targets for metal contaminants, to support environmentally protective use of copper-based antifouling coatings on seagoing ships, and develop more site-specific, and thus cost-effective and achievable sediment cleanup targets for metals at Navy and other DoD sites.	0.000	0.797
Congressional Add: PUGET SOUND ANOXIA RESEARCH *FY 2009 Accomplishments:* This Congressional Add is a continuation of Congressional Add Project 9536. This effort will involve the monitoring of the oxygen content of the water in Hood Canal and streams throughout the watershed and will increase understanding of the long-term effects of low-oxygen levels on sealife. The monitoring information will be used to develop a mathematical model of Hood Canal. The model	1.198	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603721N: *Environmental Protection*	PROJECT 9999: *Congressional Adds*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010
will be used to evaluate the effect of different potential sources of input to Hood Canal that might account for an existing anoxic condition.		
Congressional Adds Subtotals	1.198	0.797

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Congressional Add