



FALL 2020

NESDI News

Highlights & Happenings

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WHO WE ARE

The NESDI program is the Navy’s environmental research and development, demonstration and validation (6.4) program, sponsored by the Chief of Naval Operations Energy and Environmental Readiness Division (OPNAV N45) and managed by the Naval Facilities Engineering Command (NAVFAC) from the Engineering and Expeditionary Warfare Center (EXWC) in Port Hueneme, CA. The mission of the program is to provide solutions by demonstrating, validating and integrating innovative technologies, processes and materials and by filling knowledge gaps to minimize operational environmental risks, constraints and costs while ensuring Navy readiness and lethality.



**The NESDI Program:
Integrating Green Technologies Into the Fleet**



FALL 2020

From the Program Manager's Desk



Ken Kaempffe

Welcome to the fall 2020 issue of *NESDI News: Highlights & Happenings*—part of our ongoing effort to keep you informed about the Navy Environmental Sustainability Development to Integration (NESDI) program. We hope you will find these insights useful and that they encourage you to participate (or increase your involvement) in the program over the coming months.

I've got some good news to share with you. The NESDI program met all of its FY19 and FY20 obligation and expenditure benchmarks. Thanks to all NESDI investigators for their efforts throughout the year.

Our formal needs collection process for FY21 is now complete. Overall, 55 needs were submitted by personnel from across the Navy and Marine Corps. Through the program's annual needs solicitation, screening and ranking process, the program's management committee (the Technology Development Working Group (TDWG)), advanced 29 needs (about half of the total received) to the program's resource sponsor (Chief of Naval Operations Energy and Environmental Readiness Division (OPNAV N45)) so that their subject matter experts (SME) could review and then approve (or reject) the TDWG's recommendations and/or rankings. While we wait for the validation of one outstanding need, all of the other needs were ultimately validated by OPNAV N45 SMEs who also made some suggestions and adjusted some of the original TDWG rankings. These needs will be incorporated into the program's solicitation period

for pre-proposals due on 15 December of this year. A final listing of program's priority needs for FY21 is included later in this issue of *NESDI News*.

Due to the travel restrictions put in place to mitigate the spread of the coronavirus, we held the program's three 2020 In-Progress Reviews (IPR) "virtually" in lieu of face-to-face meetings. Nearly seven dozen personnel from across the country participated in these IPRs that highlighted progress being made by Principal Investigators from NAVFAC EXWC in Port Hueneme, CA, the Fleet Readiness Center Southeast in Jacksonville, FL, the Naval Air Warfare Center—Aircraft Division (NAWC-AD) Patuxent River, MD, NAWC-AD Lakehurst, NJ, the Naval Information Warfare Center (NIWC) Pacific in San Diego, CA and elsewhere.

A proposed schedule for our FY21 IPRs is included in this issue of *NESDI News*.

We also launched our FY21 "new start" projects highlighted in the section on the following page.

Ken Kaempffe, ken.kaempffe@navy.mil



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“New Start” Projects Launched

Subject matter experts (SME) from the program’s resource sponsor organization—the Chief of Naval Operations Energy and Environmental Readiness Division (OPNAV N45)—approved the following fourteen proposals as our “new start” projects for FY21.

No.	ID	Submitter	Command	Title
1.	583	James Pilkington	NAVFAC EXWC	Low-Profile Integrated Porous Pretreatment Swale (LIPPS) For Metals Treatment in Industrial Areas
2.	584	Autumn Resto	NAVFAC EXWC	Real-Time Multi-Contaminant Detection System (RMDS)
3.	585	Brandon Swope	NIWC Pacific	High Efficiency Media for Metals Removal in NPDES Discharges
4.	586	Erick Iezzi	NRL	Single-Component (1K) and Fast Curing Metal-Rich Polysiloxane Primer
5.	587	Itzel Godinez	NAVFAC EXWC	Detection Methodology and Treatment Train Technology for PFAS Removal in Bilge and Oily Wastewater (BOW)
6.	588	Iryna Dzieciuch	NIWC Pacific	Effluent Copper Quantification by Flow-Through Optical Detection
7.	589	John Frew	NIWC Pacific	Rapid Pathogen Detection in Drinking and Surface Waters
8.	590	Kami Carter	NAVAIR	Dry Ice Paint Removal and Cleaning
9.	591	Joey Trotsky	NAVFAC EXWC	Locating and Quantifying Groundwater Surface Water Connections Using Distributed Temperature Sensing
10.	592	Joey Trotsky	NAVFAC EXWC	Demonstration of the Robust Caisson Structure to Reduce Blast Effects from Underwater Blow-In-Place
11.	593	Jovan Popovic	NAVFAC EXWC	Evaluating Potential Effects to Marine Biota from Small-Scale, Legacy Radioactive Objects
12.	594	Gunther Rosen	NIWC Pacific	Demonstration and Application of Amendments Targeting Comingled Organics and Metals in Sediments
13.	595	Marianne (Molly) Colvin	NIWC Pacific	Demonstration of a Signal Activated Bottom Lander Trap
14.	596	Tony Danko	NAVFAC EXWC	Integrated Analytical Approach to Transition from Active to Passive Treatments at Munitions Sites

The first three projects listed in the above table are highlighted on the next page.



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“New Start” Projects Launched *(continued)*

Low-Profile Integrated Porous Pretreatment Swale (LIPPS) for Metals Treatment in Industrial Areas [project no. 583]

PRINCIPAL INVESTIGATOR:
James Pilkington
(NAVFAC EXWC)

The discharge of metals-laden stormwater into Navy harbors presents an environmental compliance challenge. The Navy faces potential fines, regulatory actions and operational impacts due to National Pollutant Discharge Elimination System (NPDES) and industrial stormwater permit exceedances.

There is a need to efficiently remove metals from stormwater discharges so that Navy facilities can continue to operate and minimize future setbacks.

The objective of this effort is to provide a low profile and innovative stormwater best management practice (LIPPS) for installations to use to meet strict NPDES permit effluent limits. This technology allows users to target specific pollutants of concern and is modular to accommodate different flowrates, allowing it to operate in multiple platforms across the Navy and private industry.

Real-Time Multi-Contaminant Detection System (RMDS) [project no. 584]

PRINCIPAL INVESTIGATOR:
Autumn Resto (NAVFAC EXWC)

Environmental program managers need real-time monitoring of high priority constituents such as nutrients, copper and other heavy metals in

drydocks to adequately implement required mitigating actions or sample collection and permit compliance. Current infrastructure and monitoring equipment are either lacking or obsolete and represent a notable risk to continued operations. Current methods for metal sensing involve grab samples sent to laboratories with long turnaround times and results of any violations are often sent too late for immediate compliance. A more efficient approach is needed to utilize standard protocols and updated infrastructure to enable a near real-time solution.

This project proposes to develop an integrative and innovative approach that will allow, as near as possible, a system for real-time constituents monitoring and detection that will provide the necessary and timely detection, notification, analytics and data visualization of sensor data from drydocks and other effluent-generating operations.

High Efficiency Media for Metals Removal in NPDES Discharges [project no. 585]

PRINCIPAL INVESTIGATOR:
Brandon Swope (NIWC Pacific)

There is a longstanding issue in meeting NPDES permit requirements for metals from various discharges and sources, including shipyard activities and stormwater runoff. The need exists for technologies to remove metals from these discharge streams down to permit compliance levels.

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“New Start” Projects Launched *(continued)*

This project’s four technical objectives are as follows:

- 1) **EVALUATE** the metal removal capacity of the media over longer exposure durations (several minutes) and with larger volumes (greater than 50 gallons) to assess potential scalability of the technology compared to initial laboratory scale testing. Metals concentrations for this testing will be environmentally relevant and higher than permit compliance levels. The system will be evaluated on whether or not concentrations fall below the compliance benchmarks or regulatory limits.
- 2) **IDENTIFY** a shipyard or other naval facility with a regular discharge stream that has legacy issues meeting NPDES permit limits for metals initially targeting Process Water Treatment Systems, such as those found at Puget Sound Naval Shipyard, where portion of the discharge water can be conveyed to a holding tank for a period of time prior to subsequent discharge. Additional stormwater treatment systems will be identified that have traditionally performed poorly, in which a one-to-one replacement with a filtration medium (in this case MetalZorb) would be evaluated and deployed.
- 3) **DEVELOP** site specific deployment strategies based on initial evaluation to include media volume required and optimal media contact times.
- 4) **CONDUCT** field demonstration of the MetalZorb filtration media which includes the collection and analysis of influent (pretreatment) and effluent (posttreatment) samples to determine if concentrations meet regulatory criteria.



The MetalZorb filtration media.
(Photo Credit: Brandon Swope)

The remaining 11 “new starts” in the table will be highlighted in future issues of NESDI News.



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Needs Ranking & Validation Completed

Our formal needs collection process for FY21, which ran from 1 June until 3 August of this year, is now complete. Twenty-nine needs were ultimately validated by OPNAV N45 SMEs who also made some suggestions and modified some of the original TDWG rankings. These needs listed in the table below will be incorporated into the program’s solicitation period for pre-proposals due on 15 December of this year.

No.	Need	Title	Submitter	Priority
1.	N-1338-21	Environmentally Acceptable, Oxsol-Free, Low-VOC Topside Coatings for Surface Ships	Mark Ingle (NAVSEA)	MEDIUM
2.	N-1339-21	Rapid, Sensitive Screening Method for PFAS in Soil	Malcolm Gander (NAVFAC)	HIGH
3.	N-1340-21	Optimizing Oil-Change Intervals of DoD Emergency Reciprocating Internal Combustion Engines (RICE)	Kimberly Hammer (NAVSEA)	MEDIUM
4.	N-1342-21	Minimizing Hazardous Waste from Expired Paints/Associated Solvents from Ships Supply by Developing Approved Method for Shelf Life Extensions at Field Activities	Jessica Klinkert (NAVSEA)	HIGH
5.	N-1344-21	Evaluation of Regional Airfield Vegetation Regimes to Reduce Wildlife Strikes by Aircraft at Naval Airfields	Laura Muhs (NAVFAC)	MEDIUM
6.	N-1345-21	Determination of Infrastructure Needs for Shoreside Collection and Treatment of Clean Ballast and Compensated Fuel Ballast (CFB) from Navy Vessels	Rachel Jacobs (NAVSEA)	HIGH
7.	N-1347-21	Subsurface Fate and Transport of Petroleum-Based Contaminants in Naval Facilities	John Muraoka (NAVFAC)	MEDIUM
8.	N-1353-21	Predictive Modeling for PFAS Fate and Transport Modeling	Malcolm Gander (NAVFAC)	HIGH
9.	N-1354-21	Environmental Impacts from Navy Vessel Hull Paints	Tom McCue (NAVSEA)	HIGH
10.	N-1360-21	Better Techniques to Evaluate Potential Remedial Options at Sediment Sites	Len Sinfield (NAVFAC)	MEDIUM
11.	N-1361-21	Brush Electroplating Repair of Zinc-Nickel and Anodize	Jack Benfer (NAVAIR)	MEDIUM
12.	N-1365-21	Electromagnetic Interference Shielding Tape (EMIST)	Peter Sheridan for Jacob Deeb (NAVAIR)	HIGH
13.	N-1366-21	Conservation Efforts Adverse Impact on Drinking Water Quality	Patricia Greek (CNIC)	HIGH

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Needs Ranking & Validation Completed *(continued)*

No.	Need	Title	Submitter	Priority
14.	N-1367-21	Rapidly Curable Sealants	Peter Sheridan for Jacob Deeb (NAVAIR)	MEDIUM
15.	N-1368-21	Hexavalent Chromium-Free Conversion Coating for Anodize Coating Repairs and Touch-up Conversion Coating Application	Peter Sheridan for Jacob Deeb (NAVAIR)	MEDIUM
16.	N-1369-21	Novel Low-Cost Groundwater Arsenic Removal Emerging Technology	Michael Bizon (NAVFAC)	LOW
17.	N-1370-21	Fill PFAS Marine Ecotoxicity Data Gaps	Jason Speicher (NAVFAC)	HIGH
18.	N-1371-21	New Emerging Fats, Oil and Grease Removal Technology	Melvin Kutaka (Marine Corps)	LOW
19.	N-1372-21	Port/Ship Deployed, Remotely Operated Skimmers for Oil Spill Response	Kyle Lawrence for Stuart Morgan (NAVFAC)	MEDIUM
20.	N-1374-21	Mathematical Modeling of Vapor Intrusion Mitigation Systems	Carlotta Cellucci (NAVFAC)	LOW
21.	N-1381-21	Unifying the Approach to Estimate Risk and Calculate Cleanup Goals for Radionuclides in Media for Environmental Restoration Program	Alex Scott (NAVFAC)	MEDIUM
22.	N-1382-21	Navy Installation Solid Waste Diversion Technology, Process Knowledge & Capability	Rachelle Knight (CNIC)	LOW
23.	N-1384-21	Cost-Effective, Low Waste Depainting of Weapons	Barry Olson (NAVAIR)	LOW
24.	N-1385-21	Excluding Endangered Waterbirds from the Joint Base Pearl Harbor-Hickam West Loch Oxidation Pond	Ashley Noel Dunn (NAVFAC)	LOW
25.	N-1386-21	Pierside Recycling System for Flight Deck Cleaning Operations	Kenny Ross (NAVSEA)	HIGH
26.	N-1390-21	Debris Control for Stormwater and Drydock Drainage Systems	William Arkfeld (NAVSEA)	LOW
27.	N-1392-21	Addressing Aluminum and Iron Pollution in Stormwater from Loading Operations on Wharves at Naval Weapons Stations*	Kyle Lawrence (NAVFAC)	LOW
28.	N-1393-21	Artificial Intelligence Computing to Improve Navy Risk Posture and Regulatory Compliance	Lisa Rotty (NAVFAC)	MEDIUM
29.	N-1397-21	Treatment of PFAS in Various Waste Streams	Various	HIGH

* Waiting for final approval from N45 SME.

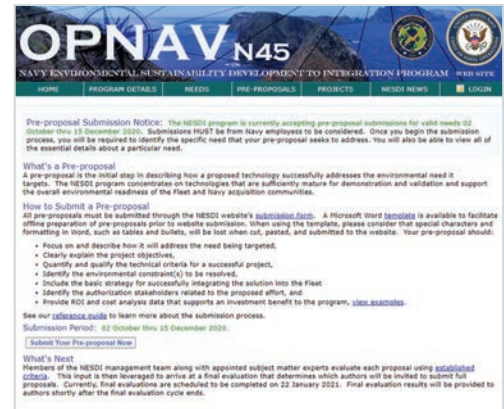


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How to Submit a Pre-proposal

Now that the vast majority of our priority needs for FY21 have been validated by OPNAV N45's SMEs, we will turn our attention to the collection of pre-proposals to address those needs. The purpose of the pre-proposal is to ensure that the proposed project adequately addresses the requirements outlined in the need. We concentrate on technologies that are sufficiently mature for demonstration and validation and support the overall mission readiness of the Navy. Pre-proposals should address the following requirements:

- Be approximately two pages in length.
- Clearly explain the proposed project (objectives and how they will address the need and environmental constraint(s) to be resolved.
- Quantify and qualify the technical criteria for a successful project.
- Include the basic strategy for successfully integrating the solution into Navy operations.
- Identify the authorization stakeholders related to the proposed effort.
- Accurately describe the technical maturity level or Technology Readiness Level of the proposed technology.
- Describe the expected cost savings and benefit for the Navy.



All pre-proposals are collected through the program's website. A Common Access Card (CAC) is required to access the site and submissions must come from Navy personnel. The website's pre-proposal page (<https://epl.navfac.navy.mil/NESDI/PreProposals.aspx>) provides guidance for the submission process including links to:

- A reference guide
- The evaluation criteria used
- The elements of a pre-proposal
- The submission form

Once you have completed all of the entries on the website's submission page, hit "Submit" at the bottom of the page. Your pre-proposal will then be sent to the program's management team (the TDWG) for further consideration.

You will have until 15 December 2020 to submit your pre-proposal.

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You will have until 15 December 2020 to submit your pre-proposal.



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How to Submit a Pre-proposal *(continued)*

Any other questions you may have about submitting a pre-proposal should be directed to your TDWG representative or the NESDI program manager, Ken Kaempffe, at ken.kaempffe@navy.mil. If your question pertains to the function of our website, contact our webmaster Eric Rasmussen at eric.rasmussen@navy.mil.

Once all pre-proposals have been collected, we will review and rank them using established criteria including how the proposed effort addresses the need, how executable the project is, if the proposed effort is ready for demonstration and validation and how feasible it will be to integrate the solution into ongoing Fleet operations. This is followed by a final evaluation that determines which pre-proposals will proceed to full proposal development.

Full proposals are requested for those pre-proposals that do the best job of meeting the evaluation criteria and addressing the explicit requirements as stated in the targeted need.

The call for full proposals will run from 18 January until 11 March 2021. (Full proposals are solicited by invitation only.) Successful proposals will result in new projects beginning in FY22 and beyond.

Schedule for FY21 Virtual In-Progress Reviews Announced

At this point, the program is planning to hold three “virtual” IPRs over the course of FY21 following the schedule below. Principal Investigators and TDWG members are encouraged to mark their calendars accordingly.

What	When	Investigators Presenting
First “Virtual” IPR	22-26 March 2021	NAVFAC EXWC
Second “Virtual” IPR	3-7 May 2021	FRC Southeast, NAWC-AD Patuxent River & elsewhere
Third “Virtual” IPR	7-11 June 2021	NIWC Pacific & elsewhere

Updated information about our plans for our FY21 IPRs will be provided in future issues of *NESDI News*. An entire program schedule for the next year is provided later in this issue of the program’s newsletter.



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|| NESDI Pilot Project Snags EPA Partnership Award for NAVSUP

Based on a recent NESDI pilot project led by Principal Investigator Todd Heintzelman, the Naval Supply Systems Command Weapons Systems Support (NAVSUP WSS) was designated as a Safer Choice Partner of the Year by the U.S. Environmental Protection Agency (EPA). Under Heintzelman's guidance, this effort (NESDI project no. 556: Enterprise-wide Hazardous Material Standardization and Minimization of General Use Consumables) is developing a process to standardize the procurement of consumable general use hazardous materials, create tools to guide end users of hazardous materials (HAZMAT) to procure less hazardous products, and ultimately advance the use of chemicals that meet Safer Choice criteria.

The Hazardous Material Control and Management (HMC&M) and Pollution Prevention (P2) Department of NAVSUP WSS maintains regulatory compliance for HAZMAT located at more than 70 Navy installations worldwide and promotes P2 supply initiatives through the reuse, reduction and substitution of HAZMAT across the Navy. In 2019 via a NESDI pilot project, NAVSUP WSS more than tripled the number of Safer Choice-certified products available for purchase which resulted in the pilot sites substantially increasing the number of Safer Choice-certified products they purchased (from zero to 14). Project investigators also conducted on-site communication programs educating users about the meaning of Safer

Choice certification. Safer Choice commends NAVSUP WSS for the success of the pilot program which introduced Safer Choice to up to 34,000 military, DoD civilians, contractors and family members.



The EPA's Safer Choice program was developed in 1997 and draws upon chemical and environmental expertise from across EPA. Safer Choice uses the technical tools and expertise of EPA's New Chemicals Program to evaluate the environmental and human health impacts of every chemical ingredient in a product, allowing only the safest ingredients in certified products. As a voluntary partnership program, Safer Choice brings all interested parties together to advance sustainability in chemical products. Safer Choice currently certifies about 2,000 products. Safer Choice-certified products help consumers and commercial buyers identify products that meet performance standards and are made with safer ingredients. For more information about the Safer Choice program, visit www.epa.gov/saferchoice. You can find EPA's Safer Choice Partner of the Year website at <https://www.epa.gov/saferchoice/safer-choice-partner-year-awards>.

Congratulations to Todd Heintzelman and his team on this well-deserved award!



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Program Schedule

Throughout the fall and into the winter, the NESDI program will concentrate its efforts on soliciting pre- and full proposals to address priority needs from Navy investigators.

A complete program schedule for the next year is provided below.

No.	What	When
1.	Request Pre-proposals	2 November 2020
2.	Pre-proposals DUE	15 December 2020
3.	Make Pre-proposals Assignments to FWGs	23 December 2020
4.	TDWG & FWG Comments on Pre-proposals DUE	8 January 2021
5.	Evaluate Pre-proposals	11–15 January 2021
6.	Request Full Proposals	18 January 2021
7.	Conduct OPNAV N45 Virtual Programmatic Review	19–21 January 2021
8.	Full Proposals DUE	11 March 2021
9.	Conduct First FY22 Virtual In-Progress Review	22–26 March 2021
10.	Screen Full Proposals	29 March – 2 April 2021
11.	Conduct Second FY22 Virtual In-Progress Review	3–7 May 2021
12.	FWG & TDWG Comments on Full Proposals DUE	17 May 2021
13.	Principal Investigator Answers to Full Proposal Screening Questions DUE	30 April 2021
14.	Announce FY22 Needs Solicitation	1 June 2021
15.	Conduct Third FY22 Virtual In-Progress Review	7–11 June 2021
16.	Complete Evaluation of Full Proposals	21 May 2021
17.	Obtain Sponsor Review & Approval of Full Proposals	31 May – 13 August 2021
18.	Announce FY22 New Starts	30 July 2021
19.	Close FY22 Needs Solicitation	2 August 2021
20.	Screen FY22 Needs	9-13 August 2021
21.	Evaluate & Rank Needs	13–17 September 2021
22.	Obtain Sponsor Review & Approval of Needs	20 September – 22 October 2021
23.	Quarterly Status Reports Due	4 January 2021 5 April 2021 5 July 2021 4 October 2021

Check out our website at <https://epl.navfac.navy.mil/nesdi/Schedule.aspx> for the latest version of our program schedule.



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GETTING ON OUR MAILING LIST

If you're not already on our mailing list and want to subscribe to *NESDI News*, please send your email address to Lorraine Wass at ljwass@outlook.com.

CONTACT YOUR TDWG MEMBER

For more information about the operation of the NESDI program, contact Ken Kaempffe, the NESDI program manager, or members of the TDWG.

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IN THE NEXT ISSUE OF *NESDI News*

There is a lot more information coming your way in the next issue of *NESDI News: Highlights & Happenings*.

In our winter 2021 issue, we will provide you with updates on our efforts to solicit from Navy investigators pre- and full proposals to address already-identified priority needs.