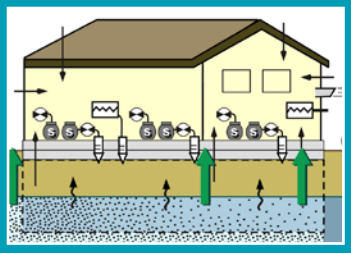
WINTER 2018

NESDI NEWS

Highlights & Happenings

INSIDE THIS ISSUE:



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 Fleet readiness.

https://epl.navfac.navy.mil/nesdi

NAVFAC Naval Facilities Engineering Command

The NESDI Program: Integrating Green Technologies Into the Fleet

From the Program Manager's Desk

Welcome to the winter 2018 issue of *NESDI News: Highlights & Happenings*—part of our ongoing effort to keep you informed about the NESDI program.

This quarterly update provides you with the latest information about program operations, significant accomplishments and future focus areas for 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.

Ken Kaempffe
Program Manager

Since our last newsletter, we have completed our needs process and our resource sponsor OPNAV N45 has approved seven needs for potential new starts. However, due to significant reductions in our fiscal year (FY) 2018 and FY19 budgets, we will not solicit for pre-proposals for these needs. One year ago, we were planning for budgets of $6.5M in FY18 and $6.6M in FY19. Currently we are expecting $4.8M in FY18 and $4.3M in FY19. Due to these reductions, we are not going to execute our normal pre-proposal and full proposal solicitation processes this year.

On a positive note, we do have 68 active projects. Principal Investigators of these active projects continue to address the Navy's most persistent and difficult environmental issues. The NESDI program continues to have a major positive impact on the Navy's environmental compliance posture, reducing costs of compliance and improving Fleet readiness. I encourage you to read on in this issue of *NESDI News* and find out more about the project entitled Study of Waste Management and Minimization for AFFF Wastewater (project no. 553). This is just one example of our many projects that address critical environmental issues.

Although we are currently facing a budget crunch, we anticipate returning to normal operations next year. With that in mind, it is never too early to start identifying and entering needs into the NESDI website at https://epl.navfac.navy.mil/nesdi/Needs.aspx (Common Access Card required). Our needs cycle closes on 1 August 2018 but needs can be entered into the website at any time.

Take a quick read through this newsletter and contact me should you have any questions or ideas about improving the program.

Ken Kaempffe
ken.kaempffe@navy.mil

FY18 Needs Approved by Program Sponsor

A total of 57 unique needs were collected via our FY18 needs solicitation process. Once our Technology Development Working Group (TDWG) completed its screening and prioritization of these needs, a ranked list was forwarded to OPNAV N45's subject matter experts (SME) for their final review and approval. Due to funding reductions, the NESDI program will not ask for pre-proposals on these needs until next year's cycle.

If you submitted a need and it is not on this list, if you want it to be reconsidered next year, you must resubmit it. New needs will also be considered if submitted to the NESDI program's website by 1 August 2018. The following seven needs were ultimately reviewed and approved by SMEs at our sponsoring organization:

No.	Title	Need No.	Submitter	Priority
1.	Electromagnetic Interference Shielding Tape	N-1220-18	Peter Sheridan (NAVAIR)	High
2.	Demonstration/Validation of Air Filtration for Indoor Air Quality	N-1187-18	Mike Singletary (NAVFAC)	High
3.	Replacement of Cadmium in Ground Support Equipment Avionics Applications	N-1234-18	Dane Hanson (NAVAIR)	Medium
4.	Under Pier Sediment Pile Assessment Tools	N-1196-18	Len Sinfield (NAVFAC)	Medium
5.	Stormwater Piping-Based Pollutant Best Management Practice	N-1194-18	Len Sinfield (NAVFAC)	Medium
6.	Improving Site Closure Decision-Making with Time-Integrated Groundwater Samples	N-1188-18	Kendra Leibman (NAVFAC)	Medium
7.	Cost Effective Main Charge Remediation of Insensitive Munitions for Range Clearance	N-1179-18	Lesley Wilhelm (NAVSEA)	Medium

New Projects Underway

With the onset of FY18, the NESDI program launched the following 14 new projects:

No.	Title
1.	Study of Waste Management and Minimization for AFFF Wastewater (project no. 553)
2.	Addressing Temporal Variability in Industrial Buildings during Vapor Intrusion Assessments (project no. 554)
3.	Demonstrating the Effectiveness of Novel Treatment Technologies for the Removal of Poly- and Perfluoroalkyl Substances from Groundwater (project no. 555)
4.	Enterprise-wide Hazardous Material Standardization and Minimization of General Use Consumables (project no. 556)
5.	Initiation Decision Report of Laser Coating Removal on Naval Aircraft Components (project no. 557)
6.	In-situ Automatic Stormwater Sampling Device for Use at Tidally Impacted Sampling Locations (project no. 558)
7.	Background Analysis and Tracer Study to Identify Metal Contaminant Source Contributions to Stormwater Runoff (project no. 559)
8.	Biochar Adsorption for Dry Dock Effluent (project no. 560)
9.	Development and Demonstration of a Portable, Temporary Barrier to Aid in Cargo and Equipment Inspections to Prevent Brown Treesnake Dispersal (project no. 561)
10.	Elimination of Hexavalent Chromium from Magnesium Conversion Coating Processes at Fleet Readiness Centers (project no. 562)
11.	Low-VOC Primers for Ground Support Equipment Application (project no. 563)
12.	Implementation of Biotic Ligand Model-Based Water Quality Standards for Copper at Navy Sites (project no. 564)
13.	Source Metal Particle Removal for Stormwater Compliance (project no. 566)
14.	Business Processes and Requirements Enabling Technology Integration (project no. 567)

New Projects Underway (continued)

In this section of *NESDI News*, we introduce you to three of our FY18 "new start" projects. We will eventually profile all 14 of these projects in other 2018 issues of *NESDI News*.

Study of Waste Management and Minimization for AFFF Wastewater (project no. 553)

The objective of this project is to develop economic costing factors, cleanout methods, treatment and disposal options in support of Navy facilities aqueous film forming foam (AFFF) system cleanout and transition away from formulations with high perfluorooctanoic acid (PFOA) and perfluorooctyl sulfonate (PFOS) concentrations.

AFFF fire suppression systems are in place Navy-wide at numerous installations. Whenever these systems are installed, upgraded or tested, large amounts of AFFF-contaminated wastewater are generated. Each test event (recommended once every two years) generates 20,000 to 80,000 gallons of wastewater. Startup testing for a new system generates 80,000 gallons of wastewater. Because this water contains PFOA and PFOS, off-site disposal by incineration is costly.

First, the team will perform a literature review of existing and emerging technologies and management procedures for handling AFFF wastewater. This will include a review of current disposal practices for AFFF wastewater (composed of approximately three percent AFFF concentrate to water) at commercial, private and government sectors. Site visits will be conducted as needed for information gathering and performance evaluation of both commercially applied and developing technologies and management methods. Technologies and methodologies will be evaluated based on performance in treatment or reduction of AFFF waste, cost efficiency for implementation, and compliance with applicable standards, regulations, and guidance documents.

Secondly, a pilot study will be conducted to test the effectiveness of triple rinsing legacy concentrates, which no longer meet the current military specifications for PFOS and PFOA content. This study will quantify rinsing efficiency and residual contamination on an aircraft rescue and firefighting vehicle and AFFF hangar system. This task would produce information and strategies for AFFF system rinsing and cleaning, research considerations associated with alternative concentrate replacement, and issues associated with potential future removal of AFFF from systems.

A pilot study will be conducted to test the effectiveness of triple rinsing legacy concentrates, which no longer meet the current military specifications for PFOS and PFOA content.

At the conclusion of the project, an Initiation Decision Report (IDR) will be produced, containing the results of the literature review, evaluation of specific treatment methods (both mechanical and chemical) and future phase-out considerations and provide potential solutions which can aid in developing guidance on overall AFFF management. The results of the pilot study on triple rinsing will also be utilized in system concentrate replacement planning and execution.

AFFF System.

New Projects Underway (continued)

Starting in February 2018, samples from existing equipment will be collected at the pilot test site. These data will be used to select a cleanout target. In addition, there is an opportunity to sample an aircraft rescue and fire fighting (ARFF) vehicle which was loaded with legacy material then emptied and filled with newer mil-spec approved concentrate. This sampling event will provide insight into residual concentrations without rinsing. A report on the sampling and the results from the re-filled equipment residual level will be completed in March. For comparison purposes, the pilot rinse out of another system will be conducted in the late spring. The final report is expected to be completed near the end of calendar year 2018 although interim reports on the sampling and rinse out results will be issued as necessary and provided to stakeholders prior to the completion of the final report.

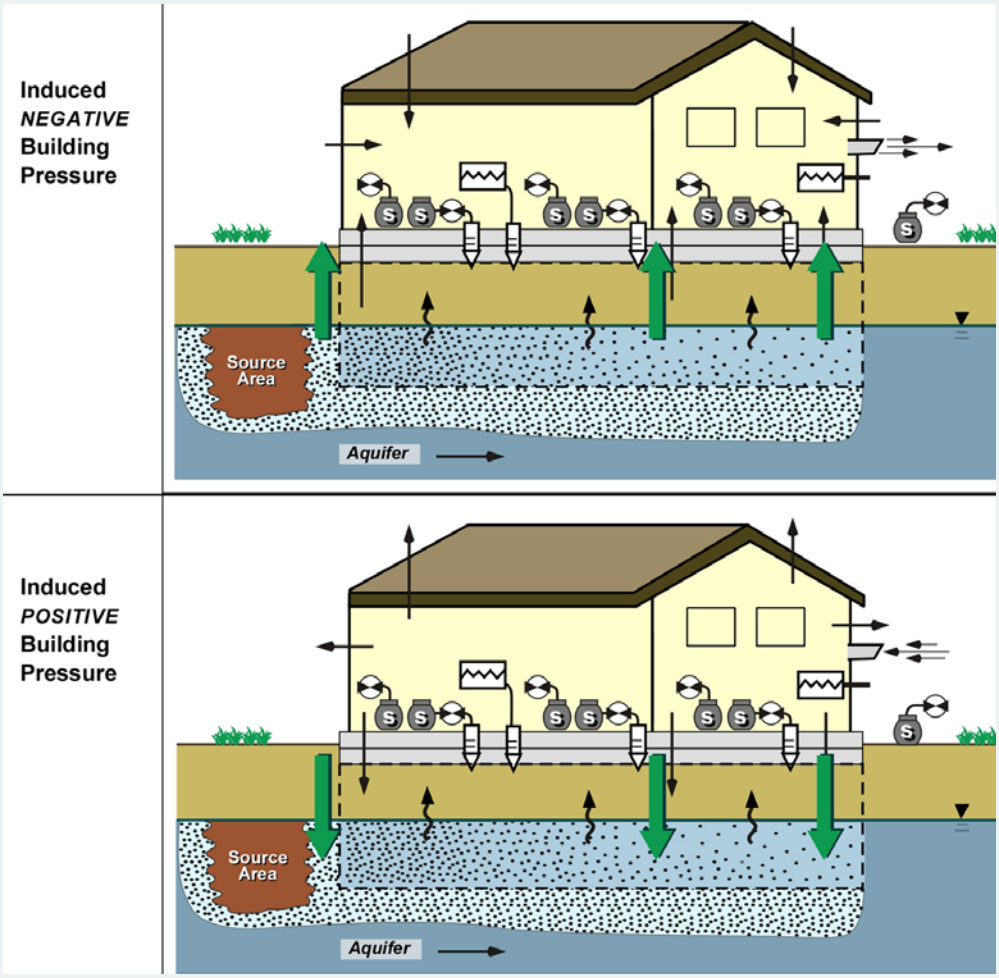
The primary customers for the IDR and pilot study report include all facilities Navy-wide that utilize AFFF for fire suppression and have similar fire suppression systems. The study will break down applicable actions for a wide range of potential stakeholders. Technology transfer methods will vary based on the scope and applicability of the evaluated methods and methodologies.

For more specific information about the project, contact Daniel Edwards (NAVFAC EXWC) at daniel.edwards@navy.mil and 805-982-3734.

Addressing Temporal Variability in Industrial Buildings during Vapor Intrusion Assessments (project no. 554)

This project aims to refine and demonstrate a vapor intrusion (VI) sampling technique that is effective and appropriate for industrial/commercial buildings, and will seek regulatory acceptance of the process.

Vapor intrusion is a form of indoor air pollution caused by the migration of chemical vapors from contaminated soil and groundwater into buildings. VI assessments are required at all Environmental Restoration sites and Base Realignment and Closure sites where subsurface volatile organic compounds (VOC) are present. This currently affects over 500 sites. Current regulatory guidance assumes that temporal variability in indoor air concentrations of VOCs at industrial/commercial buildings is similar to that of single family homes, requiring multiple sampling events at



How pressure cycling works. (Schematic compliments of GSI Environmental for NESDI project no. 424: Improved Assessment Strategies for Vapor Intrusion.)

New Projects Underway (continued)

different locations within a site. However, investigators utilizing a NESDI-sponsored VI decision framework have collected data that suggests this may not be the best approach, and that indoor air concentrations may be significantly less temporally variable at many Navy industrial buildings than previously supposed. Additionally, the data suggests that attenuation factors (ratio of indoor air to sub-slab soil gas concentrations) in these buildings are much lower than at single family residences.

Using the current regulatory guidance has led to high costs, long time frames in implementing a solution, and continued monitoring of buildings that may have very low VI potential.

The goal of the project is to validate and strengthen the VI decision framework by addressing the data gaps that still exist regarding temporal and spatial variability of VI.

The goal of the project is to validate and strengthen the VI decision framework initiated under a previous NESDI project (no. 476) by addressing the data gaps that still exist regarding temporal and spatial variability of VI.

A year-long demonstration will be conducted at a selected VI-affected site with sub-surface contamination with a chlorinated solvent. Four zones within the building will be selected based on variables such as ventilation, indoor/outdoor air differentials and the presence of VI pathways. Investigators will utilize a pressure cycling methodology that is currently being fine-tuned under the Environmental Security Technology Certification Program (ESTCP). Data from the ESTCP project will be shared on an ongoing basis. The results will be used to evaluate the hypothesis that VI potential of buildings/zones can be identified under reasonable worst-case depressurization conditions with a relatively short sampling effort.

The final report will include a summary of relevant data collected during field studies, results of data evaluation, an improved VI decision framework and a streamlined approach for conducting VI assessments at industrial buildings. Department of Defense (DoD) VI guidance documents such as the Tri-Service Vapor Intrusion Handbook will also be updated. Presentations will be given at Navy and DoD workgroups and training events.

While Navy RPMs and contractors are the first and primary target audience, regulatory acceptance of this technology is critical to success and will be aided by inclusion of U.S. Environmental Protection Agency representatives on the project team.

For more specific information about the project, contact Trish Venable (NAVFAC EXWC) at patricia.venable@navy.mil and 805-982-1411.

Source Metal Particle Removal for Stormwater Compliance (project no. 566)

This project is demonstrating a new surface cleaning vehicle capable of removing metal particulate from stormwater discharge.

Metal particles (such as copper, zinc, nickel and iron) in stormwater can lead to violations or exceedances for Navy facility stormwater discharges related to Clean Water Act and National Pollutant Discharge Elimination Program (NPDES) permits. This can be a serious issue for industrial areas such as metal processing/reworking facilities, metal storage facilities, recycling yards, and pier areas where paint stripping and sand blasting activities occur.

San Diego area Navy installations (Naval Base San Diego (NBSD), Naval Base Coronado (NBC) and Naval Base Point Loma) are having an increasingly difficult time meeting new California metal benchmarks/ Numerical Action Limits (NAL) for their stormwater discharges, which are now at 33.2 parts per billion (ppb) for copper and 260 ppb for zinc. Between 2011 and 2014, NBC had 87 copper and 221 zinc benchmark exceedances, as well as 96 exceedances for acute toxicity.

These installations employ Best Management Practices directed at reducing source metal particles from pier and metal processing areas; however these practices are ineffective in meeting the new limits.

New Projects Underway (continued)

The Municipal Cleaning Vehicle. (Courtesy of Triverus)

Recent discharge sampling data (December 2016) shows NAL exceedances for copper and zinc at all three installations. Sustained, high concentrations of these pollutants in industrial stormwater discharges are elevating acute toxicity levels beyond permit limits at an increasing rate.

San Diego metro Navy installations spend over $3 million a year on stormwater compliance monitoring and reporting, including expensive phased studies that are required under new NPDES permit requirements when discharges exceed benchmarks. In addition to these costs, exceeding benchmarks on a regular basis increases the potential for lawsuits from non-governmental agencies.

This project was formed to evaluate a new surface cleaning technology, the Municipal Cleaning Vehicle (MCV). This multi-purpose surface cleaning vehicle is based on the Mobile Cleaning, Recovery & Recycling System developed by Naval Surface Warfare Center Carderock Division (NSWCCD). This technology, the MCV 3.0, is a closed loop, surface power washing, filtration, recovery and recycling system that can recover ferrous and non-ferrous solids ranging in size from sub-micron to two inches and can clean up to 10,000 square feet of surface area per hour. The system provides total suspended solids control and a physical barrier to larger particles. It leaves no discernable solids residue, and its performance exceeds the individual cleaning capabilities of pressure washing, vacuuming, and sweeping.

After initial discussions with NBSD, NSWCCD has identified numerous high-risk outfall locations that are exceeding benchmark limits. Two outfalls at Naval Amphibious Base (NAB) Coronado will be the site for the technology demonstration. The MCV will be deployed for a period of approximately three months, during which time training of the vehicle and its systems will be conducted, along with the actual surface cleaning and sampling at the targeted outfalls.

NSWCCD has already made a site visit to the targeted hot-spot areas at NAB Coronado, and will soon be working with NAVFAC Southwest and San Diego metro installation representatives to develop a test and sampling plan that will best show the effectiveness of the MCV technology.

If the MCV 3.0 cleaning technology is shown to be effective in removing problematic metal particulate, then San Diego metro representatives can work with their in-house departments to procure MCV platform(s) as desired.

NBSD/NBC environmental offices and stormwater/surface cleaning operations personnel will be part of the testing and evaluation process as well as any technology transfer follow-up actions.

For more specific information about the project, contact Jim Howell (NSWCCD) at james.howell@navy.mil and 301-227-5178.

Our Website Has Moved!

The NESDI program has a new location on the world wide web. Visit our new home at https://epl.navfac.navy.mil/nesdi and keep track of our latest developments. A Common Access Card is required for access to our new website.

A public version of our website can still be found at http://greenfleet.dodlive.mil/environment/nesdi.

Mark Your Calendar for 2018 In-Progress Reviews

The dates have been set for the NESDI program's 2018 In-Progress Reviews (IPR). One IPR will be held in Pearl Harbor, HI on 12-16 March 2018 and a second IPR will be held in Port Hueneme, CA the week of 30 April - 4 May 2018. See future issues of *NESDI News* for more details about both of these IPRs.

Pearl Harbor, HI
12-16 March 2018

Port Hueneme, CA
30 April - 4 May 2018

Program Schedule

From the beginning of 2018 into the spring, the program will concentrate its efforts on conducting an annual review for our resource sponsor (OPNAV N45) and conducting its two IPRs for this fiscal year.

No.	What	When
1.	**Conduct OPNAV N45 Programmatic Review**	**18 January 2018**
2.	**Conduct First FY18 In-Progress Review**	**12-16 March 2018 (Pearl Harbor, HI)**
3.	**Conduct Second FY18 In-Progress Review**	**30 April - 4 May 2018 (Port Hueneme, CA)**
4.	**Announce FY19 Needs Solicitation**	**1 June 2018**
5.	**Close FY19 Needs Solicitation**	**1 August 2018**
6.	**Screen Needs**	**13-17 August 2018**
7.	Evaluate & Rank Needs	19-20 September 2018
8.	Obtain Sponsor Review & Approval of Needs	21 September - 12 October 2018
9.	Request Pre-proposals	15 October 2018
10.	Pre-proposals DUE	14 November 2018
11.	Make Pre-proposals Assignments to FWGs	30 November 2018
12.	TDWG & FWG Comments on Pre-proposals DUE	19 December 2018
13.	Evaluate Pre-proposals	7-11 January 2019
14.	Request Full Proposals	17 January 2019
15.	Quarterly Status Reports Due	2 April 2018 2 July 2018 1 October 2018 7 January 2019

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.

No.	Name	Command	Phone	Email
1.	Kaempffe, Ken (Chair)	NAVFAC	805-982-4893	ken.kaempffe@navy.mil
2.	Bixler, Christy	NAVFAC/CNIC	202-685-9313	christy.bixler@navy.mil
3.	Earley, Pat	SPAWAR	619-553-2768	patrick.earley@navy.mil
4.	Harre, Karla	NAVFAC	805-982-2636	karla.harre@navy.mil
5.	Hertel, Bill	NAVSEA	301-227-5259	william.hertel@navy.mil
6.	Kopack, David	NAVSEA	202-781-3247	david.kopack@navy.mil
7.	McCaffrey, Bruce	Consultant	773-376-6200	brucemccaffrey@sbcglobal.net
8.	Mukherjee, Sandi	NAVSUP	717-605-6854	sandi.mukherjee@navy.mil
9.	Rasmussen, Eric	NAVAIR	732-323-7481	eric.rasmussen@navy.mil
10.	Sugiyama, Barbara	NAVFAC	805-982-1668	barbara.sugiyama@navy.mil
11.	Webber, Cindy	NAVAIR	760-939-2060	cynthia.webber@navy.mil
12.	Youngers, Luzmarie	NAVAIR	904-790-6382	luzmarie.youngers@navy.mil

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 spring 2018 issue, we will provide you with insights into our programmatic review and the first of our IPRs to be held in Pearl Harbor, HI.