

CECW

SUBJECT: Outcomes from Board on Coastal Engineering Research's 97<sup>th</sup> Meeting, Vicksburg, MS

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5 Oct 2020

MEMORANDUM FOR The Chief of Engineers

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1. I chaired the 97<sup>th</sup> Board on Coastal Engineering Research (CERB) meeting from 25-26 August 2020 in Vicksburg, MS. The theme of this meeting was Compound Flooding, Multiple Hazards & Increasing Risk, with the intent to identify Corps coastal research priorities within this theme. Because of the pandemic, the meeting was held in a hybrid virtual format, with in-person attendance limited to Board members and support staff; the agenda is included in Attachment A. The meeting focused on coincident coastal storm, precipitation, and riverine flooding, as well as other hazards, human activities, and coincident occurrences that compound risk in coastal regions. The Engineer Research & Development Center's Coastal and Hydraulics Laboratory (ERDC-CHL) hosted the meeting and provided on-site attendees an opportunity to tour recent innovations in physical model facilities. The following describes the meeting highlights.

2. In your previous role as President of the Board, you requested a modified format that paired district practitioners with Corps and academic researchers to discuss Corps problems and potential solutions associated with the theme of CERB meetings. This practice was successfully implemented with presentations by the New Orleans, Galveston, Jacksonville, and Mobile Districts on their real-world project challenges and the science that is needed to improve planning, engineering and operations.

3. The theme of the meeting was compound flooding, the mix of coastal storm, riverine flooding and extreme precipitation that poses increasing risk to the nation. Several excellent talks illustrated the complex nature of the problem, some of the key science issues that constrain possible solutions, and potential new tools. The success **of pre-calculated high-fidelity storm process databases** such as are used in the North and South Atlantic and the Gulf of Mexico should be extended to other regions and more data acquired to validate and better define associated uncertainties.

4. One of the paired presentations from the Mobile District discussed water resource projects with historical and cultural heritages that have value to society but do not meet economic benefit criteria. Selma, AL has historic and national significance and is impacted by compounding storm events but lacks national economic benefits to justify a project. Similarly, Mexico Beach, FL, was devastated by Hurricane Michael in 2018 but lacks the tax base to justify federal investment. Flood risk management research is underway to develop tools and methods to account for Other Social Effects (OSE) benefits in the planning phase of projects. The Board recognized the **need to move beyond National Economic Development benefits** alone as an important non-technical challenge for the Corps.

5. There was continued discussion led by the civilian members of the Board to emphasize the need for, and impact of, fundamental (basic) research in Civil Works (CW)

R&D, previously noted in our Sep 2019 CERB Outcomes Memo. The discussion was renewed after one of the paired presentations from ERDC-CHL and the Jacksonville District highlighted R&D that is being transitioned into practice to streamline coastal monitoring via the mini-Argus remote camera system. The Board noted that the Argus technology has slowly evolved over decades of basic research. **Investment in fundamental research and collaborations with non-USACE researchers** is needed to facilitate innovation in the Corps. One presenter also discussed disincentives within the USACE reward system for taking innovation risk.

6. We discussed that effective communication and connection within and outside the enterprise is an ongoing need. Other federal agencies, academics, and stakeholders can be partners in providing data and ideas towards solutions. We saw several brief videos highlighting the History of the CERB, the ERDC-CHL physical laboratory facilities, the Field Research Facility (FRF) in Duck, NC, and the U.S. Coastal Research Program (USCRP), one of the CERB's initiatives, that were extremely successful communication mechanisms<sup>1</sup>. These videos can be used to relay USACE's R&D impacts and value to the nation. Meeting discussions are related to USACE 2020 Campaign Plan Goal 2 *Modernize USACE*, Goal 3 *Advance Partnerships and Strengthen Relationships*, and Goal 4 *Revolutionize Program and Project Delivery*.

7. **CERB Strategic Initiatives (CSIs)**. The Board discussed the need for focus on topics to advance during their tenure (2-3 years) and use these as themes to frame future meetings. In past CERBs, civilian members of the Board identified several strategic initiatives:

- i. Motivating a larger investment in CW coastal R&D;
- ii. Motivating CW R&D research that is organized with funding streams spanning fundamental (basic), intermediate, applied, transitional to practice, and strategic;
- iii. Focusing USACE priorities in sediment transport research; and
- iv. Providing a robust Verification, Validation, and Uncertainty Quantification (VVUQ) process by establishing standards and benchmark datasets such as the Coastal Model Test Bed (CMTB).

8. In addition, the Board discussed the need for far-reaching "Moon Shot" ideas, and recommended future discussion at the next Executive session. The Board requested more regular discussions on progress and plans towards these initiatives and future meetings. Action Item 2020-Full-1 is to request the Board's input, revisions, and concurrence on CSI and "Moon Shot" topics. Action Item 2020-Full-2 is to provide the Board monthly to bi-monthly updates on progress and plans.

9. The next CERB Executive Session will be held 17-18 March 2021 at the ERDC-CHL's Field Research Facility in Duck, NC with the intent to discuss the CSIs and plan to address these. We are planning to convene the 98<sup>th</sup> Full CERB meeting with the Mississippi River Commission (MRC) to continue discussing needs within CERB and

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<sup>1</sup> History of the CERB (<https://vimeo.com/453357797>); CHL facilities and capabilities (Physical Model Facilities at ERDC-CHL, Vicksburg, MS (<https://vimeo.com/453360333>); Field Research Facility at ERDC-CHL, Duck, NC (<https://vimeo.com/453359560>); USCRP (<https://uscoastalresearch.org/>)

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MRC priorities such as sediment transport and compound flooding. I invite you to attend both of our 2021 CERB meetings and consider giving the CERB a Charge to address a coastal topic and provide recommendations. I have several ideas we can discuss at your convenience.

10. For questions about topics discussed herein, please contact the Designated Federal Officer for the CERB, Dr. Julie Rosati, [Julie.D.Rosati@usace.army.mil](mailto:Julie.D.Rosati@usace.army.mil).

WILLIAM "BUTCH" GRAHAM  
Major General, US Army  
President, Board on Coastal Engineering Research

Attachment A: Agenda

Attachment B: Action Items

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Attachment A: Agenda for the 97<sup>th</sup> Coastal Engineering Research Board Full Meeting, Vicksburg, MS, 25-26 Aug 2020

**97<sup>th</sup> COASTAL ENGINEERING RESEARCH BOARD MEETING**

**Coastal & Hydraulics Laboratory  
Engineer Research & Development Center, Vicksburg, MS  
25-26 August 2020**

**Participant Connection:**  
**Dial-in: 888-251-2949 or 215-861-0694**  
**Access Number: 9767951#**  
**Webinar: <https://ems8.intellor.com/login/830002>**

**AGENDA**

**THEME:** Compound Flooding, Multiple Hazards & Increasing Risk

*2020 CERB Concept: (1) Virtual CERB (with in-person attendance limited to board members and support staff). (2) Pair practitioners (District problems) with researchers (solutions). (3) Utilize a mix of live/pre-recorded briefs, videos, on-site reports, and virtual interactions to facilitate engagement and sharing with participants.*

**Meeting Concept:** *To identify Corps coastal research priorities related to present and future compound flooding and multiple, coincident hazards that increase coastal risk*

**(All Central Time Zone)**

**Tuesday, 25 August 2020**

**Meeting Attire: Military-ASU'B; Civilian-Business- Mask required for all in person attendees**

- 0900** Registration (Coastal and Hydraulics Laboratory Atrium)
- 0930** **Call to Order**  
Dr. Julie Rosati, Designated Federal Officer (DFO)
- 0930 – 1000** **Welcome and Opening Remarks**  
MG William H. "Butch" Graham, Jr. Deputy Commanding General for Civil and Emergency Operations, Headquarters (HQ), U.S. Army Corps of Engineers (USACE)  
  
Welcome to USACE Engineering Research and Development Center (ERDC), Dr. David Pittman, Director, ERDC  
  
Dr. Julie Rosati, CHL, Meeting logistics
- 1000 – 1030** Purpose and History of the CERB - Video/ Presentation  
Dr. Ty V. Wamsley, SES, Director, Coastal and Hydraulics Laboratory (CHL), ERDC

- 1030 – 1100 "Orientation to CERB Theme and Research Focus"  
Dr. Jane Smith, ERDC/CHL, Army Senior Research Scientist,  
Hydrodynamic Phenomenon
- 1100 – 1400 Panel Session #1 / Compound Flooding/ Threats**
- Moderator:* Dr. Katherine Brutsche, ERDC/CHL
- 1100 – 1130 "Numerical Advancements, Levee Overtopping, and Compound Flooding"  
Dr. Gaurav Savant, ERDC/CHL, and Mr. Max Agnew, USACE/ Mississippi  
Valley Division (MVN)
- 1130 – 1200 "Compound Flooding: State of Practice, Current Issues and Advancements, with  
Examples from Galveston District"  
Dr. Chris Massey, ERDC/CHL, and Dr. Shubhra Misra, USACE Galveston  
District (SWG)
- 1200 – 1300 LUNCH BREAK**
- 1300 – 1330 "HQ Perspective on Compound Events,"  
Dr. Kathleen White, USACE/Headquarters (HQ), and Mr. Will Veatch  
USACE/MVN
- 1330 – 1400 "Compounding Cultural and Social Issues within a Flood/Storm Decision-  
Framework"  
Ms. Elissa Yeates, ERDC/CHL and Mr. Jeremy LaDart, USACE/Mobile  
District (SAM)
- 1400 – 1430 "Delivering Engineering Solutions in a Multi-Hazard World"  
Dr. Todd Bridges, ERDC/Environmental Laboratory (EL), Army Senior  
Research Scientist, Environmental Science
- 1430 – 1500 Break**
- 1500 – 1700 Panel Session #2 / Physical and Field Facilities Addressing Compound  
Phenomenon**
- Moderator:* Dr. Brandon Boyd, ERDC/CHL
- 1500 – 1530 "River loading to coastal zone and Low Sill Model" *on site at Low Sill Model  
(livestream)*  
Mr. Jeremy Sharp, ERDC/CHL
- 1530 – 1600 "Current Status and Future of Coastal Physical Modeling at CHL,"  
Dr. Duncan Bryant, ERDC/CHL
- 1600 - 1630 "Virtual Tour of CHL Physical/Field Facilities – *Videos*,"  
Ms. Leigh Provost, ERDC/CHL; and Dr. Jeff Waters, ERDC CHL-Field  
Research Facility (FRF)

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1630 – 1700 Discussion

1700 Adjourn

**Wednesday, 26 August 2020**

**0800-0900 Optional Local Onsite Tour of Physical Model Facilities**

**0930 Call to Order**  
Dr. Julie Rosati, DFO

**0930 – 1000 Welcome Day 2**  
MG William H. "Butch" Graham, Deputy Commanding General for Civil and  
Emergency Operations, HQ, USACE

Welcome to ERDC: COL Teresa Schlosser, ERDC Commander

**1000 – 1130 Panel Session #3 / Delivering Technology to the Field**

*Moderator:* Ms. Mary Cialone, ERDC/CHL

1000 – 1030 "CHL's Technology Transfer Plan,"  
Dr. Tanya Beck ERDC/CHL and Ms. Mary Bryant, ERDC/CHL

1030 – 1100 "Research to Tech Transfer: Unmanned Aerial Systems and Mini-Argus,"  
Dr. Brittany Bruder, ERDC/CHL; and Mr. Kevin Hodgens, USACE  
Jacksonville District (SAJ)

1100 – 1130 "US Coastal Research Program,"  
Ms. Mary Cialone, ERDC/CHL

**1130 – 1230 BREAK**

**1230 – 1430 Panel Session #4 Future Research Needs in Compounding Risks**

*Moderator:* Dr. Julie Rosati, ERDC/CHL

1230 – 1300 "Compound Flooding: Examples, Methods, and Challenges"  
Dr. Thomas Wahl, University of Central Florida

1300 – 1330 "Research Needs in Probability Science to Estimate Compound Risk"  
Dr. Norberto Nadal-Caraballo, ERDC/CHL, and Mr. Rob Thomas,  
USACE/SWG

1330 – 1400 "Strategic Focus Area in Compound Flooding and Research to Advance State of  
Science"  
Dr. Jane Smith, ERDC/CHL, Army Senior Research Scientist,  
Hydrodynamic Phenomenon

**1400 – 1430 Break**

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1430- 1500    **Public Comment**

1500 – 1530   **Closing Remarks**

1530            **Adjourn 97<sup>th</sup> CERB**

1600 - 1700   **Executive Session**

**97<sup>th</sup> COASTAL ENGINEERING RESEARCH BOARD MEETING  
Executive Session**

**Purpose:** *Review Action Items from 97<sup>th</sup> CERB, Update Board on any older Action Items  
needing briefs, plan for 2021 Exec Session and 98<sup>th</sup> CERB*

1600 – 1630   **Review Action Items**

1630 – 1700   **Plan for 2021 Exec Session and 98<sup>th</sup> CERB**

1700            **Adjourn**

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Attachment B: Action Items from 97<sup>th</sup> Coastal Engineering Research Board Full Meeting, Vicksburg, MS, Aug 2020

<b>NUMBER</b>	<b>ACTION ITEM</b>	<b>DUE</b>
2020-Full-1	Define Topics for CERB's Strategic Initiatives (CSIs)	Oct 2020
2020-Full-2	Provide CERB Board members monthly to bi-monthly updates	Sep 2020; Ongoing