Draft Minutes and Action Items
Coastal Science and Engineering Collaborative (CSEC) Workshop

South Padre Island, TX
3-4 NOV 2016

Purpose: Explore and establish common interests for partnering on coastal science and engineering academics, research and development, and practice, for timely infusion of innovative technical products to support lifecycle coastal infrastructure systems management decisions in practice.

Objectives:
- Strengthen and broaden collaboration among organizations in CSEC
- Identify crossover working relationships in coastal science and engineering
- Develop a partnering value proposition for achieving mutually held objectives
- Identify action items for joint organization follow up with future event planning

Minutes and Action Items:

1. Participation.

Todd Bridges/ERDC (TB)
Kelly Burks-Copes/RPEC (KBC)
LD Chen/TAMU-CC (LDC)
Jens Figlus/TAMU-G (JF)
Marcos Garcia/SWG (MG)
Paul Hamilton/SWG (PHa)
Juan Horrillo/TAMU-G (JH)
Brandon Hill/SPI (BH)
Pablo Hernandez/SWG (PHe)
Eddie Irigoyen/SWG (EI)
Bas Jonkman/TU Delft (virtual) (BJ)
Baukje Kothuis/TAMU-G (virtual) (BK)
Coraggio Maglio/SWG (CM)
Ray Newby/GLO (RN)
Bob Randall/TAMU (BR)
Edmond Russo/SWG (ER)
Joseph Sai/TAMU-K (JS)
Douglas Schnoebelen/USGS (DS)
Jane Smith/ERDC (JS)
Richard Styles/ERDC (RS)
Bert Sweetman/TAMU-G (BS)
Sharon Tirpak/SWG (ST)

2. Interaction on and solidification of meeting purpose and objectives.

ER provided an overview for shared visioning on the concepts of Sustainable and Resilient Regionally Integrated Infrastructure (SRRII). See Encl 1. These concepts link the USACE SWG mission across business lines to CSEC technical objectives for providing coastal science and engineering solutions that enable a world class future of coastal infrastructure life cycle management.

3. Overview of South Padre Island (SPI) shore management program.

a. Discussion. BH provided an overview of the South Padre Island (SPI) Shoreline Management Program overview. See Encl 2.

The SPI dune planting program has been successful and continues, with additional actions for: minimal beach grooming; response to wash-in (sargassum, fish, etc.); dune scheme experimentation (e.g., bailed sargassum for enhanced dunes); data collection (RTK); continued dune volunteer program; continued BUDM; coastal education and public education; nearshore berm placement; bay access improvements; bay street end living shorelines.

Partrec is a new partner toward island research; Tim Dellapenna is working to collect data offshore; SPI continues partnership with HDR for bathymetric data collection.

SPI is working on shoreline master plan. This information will be informative to USACE coastal Texas studies and projects, as well as the State of Texas Coastal Master Plan.

In data collection and master planning, it was suggested that ecosystem services procedures be advanced to improve value quantification. There are currently no clear and uniform guidance regarding ecosystem services, e.g., features and benefits are not easily transferrable. This has potential use in the in Coastal Texas comprehensive plan. Sue Hughes/HQUSACE is a potential contact for information, guidance, and support. There is potential that SPI could be a pilot location. Lloyd's insurance tools report was recently released, which could perhaps be leveraged toward this goal.

b. Actions.

(1) Work to integrate local shoreline plans into Coastal Texas Protection and Restoration Study comprehensive plan in coordination with state's master plan. Coordinate with BH to obtain SPI shoreline management plan for use (KBC).

(2) Consider early coordination on development of draft Coastal Texas Study Comprehensive Plan with non-federal sponsors/agencies to garner input for shaping prior to publication of the interim report (KBC).

(3) Cultivate opportunities at SPI as a potential CSEC natural laboratory for strategic research (RT/CM).

(4) Collaborate with TAMU-CC to develop a ERDC SON on ecosystem services value estimation procedure in a Gulf coast ecosystem resources tracking system, which is able to quantify and document the values in context of utility to USACE studies, in particular, to the Coastal Texas comprehensive plan (JK/KBC).

(5) Investigate the status of a SPI BUDM CAP 204 project abandoned from funding loss in 2011 for re-energizing as a cross-walk to CSEC EWN, NNBF, and EGS initiatives (EI/CM/BH).

(6) Explore CSEC partnership with Lloyds of London based on their recent funded report, in context of risk management in Texas as America's Energy Coast (ER/RT).

5. Discussion of academic collaboration initiatives.

a. Near-Term.

(1) Student Awareness of USACE Mission and Careers.

(a) Discussion. USACE is interested in raising awareness with TAMU OCEN Students if its mission with understanding of career opportunities.

(b) Action. Rob Thomas/SWG has coordinated for USACE to provide program overviews to TAMU OCEN students with expression of USACE career opportunities. USACE will also provide a PM overview at the annual TAMU OCEN Dredging Short Course.

(2) Virtual Learning Opportunities with TAMU OCEN.

(a) Discussion. ERDC Graduate Institute offers virtual coursework in association with several universities. There is interest in reengaging with TAMU toward providing courses. Old Dominion University has a coastal engineering certificate program, which USACE employees are pursuing virtually. Perhaps a first step is development of a TAMU-USACE team-taught course in a specialized/special topic such as EWN. This could involve integration of select PROSPECT course materials with TAMU coursework. There are also ERDC University (ERDC-U) opportunities for providing courses on practical knowledge to district employees, which could be integrated with these learning opportunities. Potential for USACE employees to serve as visiting/adjunct faculty. An opportunity may be to cultivate course virtual learning opportunities for members of the USACE Communities of Practice (CoP).

(b) Action. Identify/shape potential to open academic learning opportunities with Stan Woodston at ERDC GI to the cadre of CoP members USACE wide; and coordinate presenting this path forward at a USACE Quarterly Executive Governance Meeting in context of supporting technical competence of the enterprise (RT/CM/SW).

(3) Identifying adjunct faculty at ERDC to teach select TAMU OCEN courses of interest.

(a) Discussion. Encl 3 contains the 1986 TAMU Educational Partnership Agreement, which needs updating. Encl 4 contains a newer agreement as an example for updating. The TAMU Engineering Department Dean's Office is currently coordinating with the ERDC Graduate Institute (GI) regarding making this Educational Partnership Agreement (EPA) update. Stan Woodson is the Director of the ERDC GI for follow up (Stanley.C.Woodson@usace.army.mil, 601-634-3549).

The ERDC GI uses a POLYCOM system to connect with Mississippi State University. The system will likely change when the ERDC GI moves into the new ERDC HQ building later this year or early next year.

(b) Action. Coordinate between organizations for cultivating the opportunity for status update at APR 17 CSEC workshop (RT/CM/JS/BS/JF).

b. Mid- to Long-Term.

(1) Coastal EWN Course Curriculum.

(a) Discussion. TAMU and USACE will coordinate to develop a Coastal EWN course curriculum with companion book of instruction as a CSEC initiative. This has the opportunity to bring in the ecological aspects to future education efforts for infusion into traditional ocean and coatal engineering. Encl 5 contains a draft characterization of a Coastal EWN course curriculum. It is proposed that in the near term, a single Coastal EWN seminar-style course be developed and offered in Fall 2017 via virtual learning technologies by a line up of instructors comprised of TAMU and USACE SMEs. The book of instruction will remain an open item for addressing as the EWN curriculum matures.

(b) Action: Collaborate across TAMU/USACE for initially drafting and socializing an EWN course curriculum, with pursuit of offering an initial seminar-style Coastal EWN course that covers a broad array of relevant topics in Fall 2017 (ER/TB/RT/CM/JK).

(2) Watershed EWN Course Curriculum.

(a) Discussion. There is interest by the group to expand TAMU's academic program with an EWN course curriculum and companion book of instruction on river and estuarine watersheds.

(b) Action. Open item for further discussion and development. This has potential to form under a USACE-TAMU Watershed Science and Engineering Collaborative (WSEC).

c. Status of providing an IPA at USACE for TAMU professors, with potential co-develop a Coastal EWN course curriculum with companion book of instruction. Coraggio Maglio/SWG and Bert Sweetman/TAMU.

(1) Discussion. This activity has potential for furthering the understanding the mechanics of natural materials integrated in an engineering with nature framework under coastal systems forcings. Documents have been filed with TAMU for BS to go on the IPA, which could potentially take place during Fall 2017.

(2) Action. Prepare for BS going on the IPA by developing a productive plan of action to execute when the time comes (RT/CM/BS).

d. Interest in providing TAMU OCEN capstone course proposals on USACE study and project needs. Coraggio Maglio/SWG and Juan Horrilio/TAMU.

(1) Discussion. Capstone courses provide for transdisciplinary student learning opportunities with potential for the end product to inform USACE coastal S&T needs.

(2) Action. Send capstone ideas for consideration in course scoping (All). Coordinate the group to determine where data is available and what potential opportunities exist to support capstone opportunities (CM/JH).

Lunch Topic Presentation: Shoaling Analysis of Brazos Island Harbor Inlet, Monitoring Completed Navigation Projects (MCNP) Program (Encl 6).

6. Status and next steps of near-, mid-, and long-term project collaboration initiatives.

a. Galveston Bay benthic substrate (historic oyster shell mining pit capping) and ecosystem restoration.

(1) Discussion. Topic represents an opportunity for CAP Sec 1135 study to explore ecosystem restoration strategies (Encl 7). Interagency coordinated and executed practices that are well monitored and can inform best-practices for this type of work, enabled by a natural laboratory approach using hypotheses testing and experimental design.

(2) Actions. Coordinate DOTS request to characterize the holes to inform further actions (CM/TW). Considering the significant volumes of new work and maintence dredged materials associated with the Houston Ship Channel, explore the potential for cultivating a Planning Assistance to States (PAS) BUDM Master Plan for Galveston Bay (EI/CM).

b. Fate and Transport of Nearshore Berms at South Padre Island.

(1) Discussion. Interest in better understanding value for this type of indirect nourishment, e.g.: resiliency nearshore berms impart on beach and dune systems; and ecological impacts/benefits (Encl 8). Brain McFall, Katie Brutsche, folks at ERDC/CIRP should be engaged to explore, perhaps through a DOTS request. SPI is fully committed to these types of efforts. TAMUG has the capability to deploy acoustic instruments to characterize hydrodynamic and sediment transport properties; Flume/wave tank available to better understand basic conceptual problems; perhaps an opportunity to screen options and inform natural-scale experiments.

(2) Action. Develop a baseline understanding to inform future living laboratory investigations by developing topical a data repository for relevant technical data collected on coastal projects (PHa/JF/BH).

c. Developing Natural and Nature Based Features (NNBF) performance evaluation and interpretation practices on the Texas coast, LiDAR indices extraction and resiliency ranking measures.

(1) Discussion. It is proposed that Natural Infrastructure Performance Metrics be developed for NNBF, which could include Ecosystem Goods and Services (EGS) (Encl 9). There is interest by resource management agencies to cultivate these metrics. These would be strategic for enabling improved formulation, evaluation, and comparison of planning measures and alternatives. There is a need for a suite of ecosystem models to inform these practices based on LiDAR/GIS utilities. JABLTCX parameter extraction is ongoing using 2009 and 2016 LiDAR data collection. GLO has funded BEG to perform their shoreline change work and there are many LiDAR data sets along the Texas coast beyond this for potential exploitation in this direction.

(2) Action. Build a team to develop proposals that feed into Coastal Texas comprehensive plan and the ERDC R&D Statement of Need (SoN) process to pursue this type of evaluation/quantification (KBC/CM/PHa/JK).

d. Establishment of Novel Texas Gulf Coast Beach Erosion Management Best Practices.

(1) Discussion. A feeder beach concept was discussed as a RSM measure for consideration (Encl 10). This may fit into an update to the sand management plan. There was interest in a pilot project using a streamside sediment collector for sand management. An update to the GenCade model was summarized for potential use in siting of offshore breakwaters. Potential R&D opportunities with TAMU exist to instrument near bedload collectors.

(2) Actions. CM will coordinate with regional shoreline managers and TAMU on identifying opportunities discussed for joint pursuit.

e. Texas Gulf Coast Engineered Dune Performance Evaluation.

(1) Discussion. It was proposed that engineered dunes of different volumes on the beach in front of the seawall would be valuable as test sections for monitoring under applicable programs (Encl 11). The new knowledge for acquisition could result in a better understanding of how these type of dunes react to aerodynamics, hydrodynamics, etc. It may also address some fundamental questions about what makes a resilient beach and dune system. There may be an opportunity to produce sargassum-cored dunes in the test sections. Potential exists to address additional research questions through CSEC, e.g., are we over/underdesigning our nourishment. Potential for partnering with restaurants to use spent oyster shells as raw materials for supporting NNBF structures.

(2) Actions. CM will coordinate with JF on identifying opportunities discussed for joint pursuit.

f. Houston Ship Channel Deferred Environmental Restoration Features Performance Evaluation.

(1) Discussion. The project creates marsh in upper Galveston Bay from expanded placement areas (Encl 12). Ongoing work and coordination to monitor the constructed berms. Measurements to begin in March, construction in Summer.

(2) Actions. TW will continue updating the group on progress.

g. Gulf of Mexico (GoM) Coastal Bio-Physical Processes Observation System.

(1) Discussion. There is interest in conceptualizing a coastal and ocean physical process instrument data collection platform that could be deployed using a self-propelled jack-up rig, usable throughout the Gulf coast (Encl 13). There is a need to gather feedback regarding needs for Gulf measurement from the science community of interest in terms of data collection, mobile measuring systems, data repositories. ERDC has a field-research site that they are demonstrating. Gulf One and the NSF Center may be viable data sources.

(2) Actions. BS will coordinate identification of a research mission of such a platform needs with specificity linked to identified knowledge gaps, i.e., what data needs to be collected will drive the type of observation system.

h. Dredging Industry Partnership to Advance Innovative Dredging Technologies.

(1) Discussion. More openness is sought to collaborate on research with dredging companies. Perhaps specific engagement areas, e.g., specific topics rather than the more broad “coastal” could garner a company-by-company buy-in since they are competitors with often restrictive IP stances. There may be potential for having early dredging contractor involvement meetings with potential funders of projects to discuss research ideas and methods of data collection. This could then be done by working the data collection into the contract requirements. The data collection technical

bona-fides could be verified via a pre-qualification process wherein the dredging companies enunciate the data collection processes. An idea for consideration is R&D for improving efficiency, effectiveness, and productivity of dredged slurry pipeline transport, via: (a) polymers injected to reduce slurry viscosity; (b) pipe interior surface treatment technologies for improving laminar flow regime formation along the periphery; and (c) vibration technologies for use in slurry quaking that potentially enables increased slurry density.

(2) Actions. Marc Perlin will coordinate with TB on potential for identifying a pilot project per the idea above.

7. Discussion of CSEC communications strategy.

(1) Discussion. Under development.

(2) Action. ER will work with the group on development and implementation.

8. Field trip to partnered beach nourishment project on SPI.

(a) Discussion. Was an informative trip for the group on SPI shoreline management, which was being performed in conjunction with channel maintenance at Brazos Island Harbor.

(b) Action. None required.

9. National and international collaboration initiatives.

a. Lessons learned, best practices, and remaining knowledge gaps from: SWG-RMC summer 2016 inspection of Netherlands coastal storm risk management systems; and associated fall 2016 Coastal Texas engineering and design workshop.

(1) Discussion. CM presented a summary of the Netherlands trip (Encl 14). Filling the data gaps offers a value proposition for those protected by potential infrastructure solutions, e.g., refineries and chemical plants along HSC and Texas City. Based on lessons learned from this trip, and considering similar situations and needs in Galveston Bay, a potential CSEC opportunity was discussed for investigating the merits of an innovative, highly-conductive, gate/barrier structure for Coastal Texas, perhaps shaped like a chevron in Bolivar Roads to allow for greater cross sectional area than a straight structure across Bolivar Roads. Innovative designs for increased constructability and O&M might include large sector gates that are slotted and articulated for telescopic expansion and collapse in use.

(2) Action. Inform minutes item 9.b.

b. Ideas for potential collaboration and involvement of TU Delft with CSEC.

(1) Discussion. TU Delft is highly involved in coastal engineering work and have an active association with TAMU-G. There is potential international association between TU Delft and TAMU-G for capstone projects, with opportunity to tackle major, internationally relevant problems. There are potentially more complicated problems beyond sandy coastas in muddier systems, which both exist in Texas and The Netherlands.

(2) Actions. Follow up with TAMU international R&D director about making formal connections that support collaborative activities integrating coastal engineers, structural engineers, ecologists for interdisciplinary student teams. Explore applicability of NSF PIRE grant in place to help foster international exchange between TAMU-G and TU Delft. JF and CM will coordinate with TU Delft for advancing this proposition at the next CSEC workshop. JF and his students will be in The Netherlands in June 2017. There may be another opportunity for collaboration via conversation between Deltares and TB. BK and BJ will reach out to Deltares regarding a potential workshop. The group will follow this up as it develops.

c. Recap/status of RESTORE Act Proposals.

(1) Discussion. Potential mode to capture funding from NOAA. Proposals submitted, and in review. Both proposals are potentially relevant to the comprehensive costal Texas plan.

(a) A Resource Manager's Gateway to the Coastal Zone: A Toolbox for Integrated Sediment and Ecosystem Management. Good chance of moving forward - $650K in funding.

(b) Living Coastal and Other Marine-Based Ecosystem Services that Establish the Suitability, Productivity, and Connectivity of NNBF with Adjacent Restoration Sites and Other Coastal Habitats. ERDC/SWG/TAMU-G/GLO/MIT - >$2M in funding.

(2) Action. TB to follow and inform group on status as it becomes known.

d. Potential collaboration with National Ocean Service's (NOS's) National Centers for Coastal Ocean Science (NCCOS) on Sustainable and Resilient Regionally Integrated Infrastructure (SRRII).

(1) Discussion. ERDC/NOAA workshop on NNBF features is scheduled for 23 FEB 17 at SWG.

(2) Action. Jeff King and Coraggio are coordinating.

e. Development of international guidelines on NNBF: ERDC initiated international collaboration to develop guidelines on planning, design, construction and maintenance of NNBF.

(1) Discussion. Recent workshop kicking off initiative was held to develop guidance on NNBF with intent for publishing a document in the next two years. There may be some CSEC overlap with BS on IPA to USACE. Case studies from the group would be a desirable contribution to the guidance. This could be informed by ER measures evaluated through the Coastal Texas Protection and Restoration Study.

(2) CM, KBC, and JK will follow up regarding participation in this effort.

10. Discussion of FY 18 submission process for ERDC R&D SONs and cultivation of national priority initiatives to collaboratively pursue, matched to coastal Texas projects that have broad applicability in other similar coastal settings.

a. Discussion. SONs of the blended teams cover three broad areas: Flood and Coastal, Navigation, and Ecosystem Restoration. SONS are submitted through the respective USACE gateway website. The district is typically the initiating entity but it is meaningful to have partners. The SONs should present a national need. SONs are due at the end of DEC 16. More than 1, less than 5 is about the right number within each business line. Be specific and leave as little to interpretation as possible. Past SONs are available for viewing online (those online are the ones that did not get funded). When developing a SON, identify the right SMEs at ERDC such that the research ends up in the right location.

b. Actions. CSEC/SWG to generate preliminary SONs and submit by the deadline. JS and TB will discuss and consider the Center Directed Research (CDR) process as well toward funding high-risk, high return-on-investment large scale fundamental research.

11. Discussion of messaging at next TAMU OCEN Board of Industry Advisors (BIA) Meeting regarding CSEC value proposition: Preliminary Draft CSEC Program Management Plan (PgMP).

a. Discussion. ER will present the preliminary draft CSEC PgMP at this event on 11 NOV 17 for feedback toward further development.

b. Action. ER will work with the BIA feedback to evolve the PgMP for presentation and discussion of next steps at the next CSEC workshop.

12. Establishment of next meeting's purpose, objectives, date, and location – Proposal for visit to ERDC in Vicksburg, MS during Spring 2017.

a. Discussion. It was generally agreed that CSEC meet as a large group twice a year and meet as smaller groups otherwise throughout the year. CSEC will hold its next workshop in conjunction with a CSEC-related tour of ERDC. ERDC is willing to host the next workshop, which is planned for 19-21 APR 17.

b. Action. RT will lead organization of the APR 17 workshop.