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CRC-19-01

February 13, 2019

**MEMORANDUM**

**TO:** Coastal Resources Commission

**FROM:** Mike Lopazanski

**SUBJECT:** Science Panel Role, Studies and Vacancies

As you will recall from the November 2018 meeting presentation on Inlet Hazard Areas, the Commission and Division often enlist the assistance of the CRC Science Panel in the understanding and application of coastal processes into management decisions. The creation of a standing scientific panel stemmed from the Commission's intent to apply scientific knowledge to problems the CRC faced as regulators. There was interest in enlisting the participation of scientists who had an understanding of the coastal management program, as well as the CRC's rules, to help apply the current state of knowledge and best available science in the development of CRC regulations. The origin of the Commission's Science Panel on Coastal Hazards can be found in the attached memo (CRC-14-08).

In assembling the Panel, the CRC created a Charge to guide their direction. In 2014, the Commission updated the Charge (attached) to formalize the appointment of members, outline a consensus-based approach to assignments, enact four-year staggered terms, and clarify officer elections. Two additional membership slots were added (for a total of 15), as well as provisions for the use of ad hoc members to fill specific study needs. Given the time since the last update, the Charge should be reviewed to ensure consistency with Commission's vision for the Science Panel. CRC Chair Renee Cahoon has also expressed an interest in expanding Panel membership to include coastal researchers and practitioners in the natural and social sciences.

Science Panel vacancies have traditionally been filled by recommendations of the Division and Panel members in consultation with, and at the discretion of, the CRC Chair. The Panel currently has nine active members (membership list attached), and more than four years have passed since the last appointments. With the upcoming 2020 Sea-Level Rise Assessment Update scheduled to begin this summer, DCM staff would like have members in place as soon as possible. CRC Chair Cahoon has contacted the current members inquiring whether they would like to be considered



for reappointment. Pending discussion of the Science Panel Charge at the upcoming meeting, Staff would like to solicit Science Panel nominations from the CRC, CRAC and the current Panel members in March to begin preparations for the Sea-Level Rise Assessment Update. I will review past projects and use of the Science Panel at our upcoming meeting in Morehead City.

## CHARGE TO THE COASTAL RESOURCES COMMISSION'S SCIENCE PANEL

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### CHARGE

The purpose of the Science Panel (Panel) is to provide the Coastal Resources Commission (CRC) scientific data and recommendations regarding coastal processes including erosion, accretion, sand transport and the interactions of wind, waves and currents with the shoreline. At the specific request of the CRC, the Panel is charged with the following: 1) reviewing the current state of knowledge of coastal processes and ecological functions of coastal North Carolina; 2) assessing the current methodologies being used by North Carolina and others to define and identify areas subject to adverse impacts of coastal processes associated with development in public trust areas of North Carolina; 3) reviewing the scientific basis of the CRC's rules as applied by the Division of Coastal Management (DCM) to development in the coastal area; and 4) developing recommendations for the CRC on topics that include the following:

1. Opportunities to incorporate current scientific information on North Carolina coastal processes in the CRC rules for Estuarine and Ocean Areas;
2. New coastal engineering technologies or methods;
3. Specific projects as assigned by the CRC or requested by the Panel. When the CRC assigns a project, it should provide the Panel with specific questions it needs answered and any necessary timelines. The Panel should maintain the flexibility to propose projects and scopes of work to the CRC for approval.

### MEMBERSHIP AND OFFICERS

The membership of the Panel should be no more than 15 individuals having professional expertise in coastal science or engineering, but additional members may be added on an ad hoc basis to expand the expertise of the Panel for specific studies if deemed necessary by the CRC Chair in consultation with the Panel. Nominations for new members and ad hoc members may be made by CRC members, current Science Panel members, DCM staff, or the Coastal Resources Advisory Council at any public meeting of the CRC. New members and ad hoc members will be appointed by the CRC Chair based on a review of the nominee's relevant expertise and credentials with respect to coastal science or engineering. New and replacement members will be appointed as needed. Panel members should serve staggered terms of four years to ensure continuity. New member terms should be for four years, with re-appointments for additional four-year terms when mutually agreed upon by the Panel member and CRC Chair. Regular attendance or participation by other means is important, and a Panel member may be asked to step down after prolonged non-participation, or at the discretion of the CRC Chair.

The officers of the Panel are the Chair and Vice-Chair. Officer terms are for two years, and the Chair and Vice-Chair should be elected biennially by the Panel. The Chair should work with staff to establish meeting agendas, preside over Panel meetings, and appoint subcommittees and subcommittee chairs as necessary to carry out the Panel's business. The Vice-Chair should preside over Panel meetings in the absence of the Chair and assume the duties of the Chair if the Chair is unable to complete their term until another Chair is selected by the Panel.

## PANEL MEETING AGENDAS

Meetings of the Panel will be open to the public and each meeting should include an opportunity for public comments for the Panel to consider. Meeting notes and other records of all Panel meetings will be kept by the Division of Coastal Management. Draft notes will be distributed to Panel members for review, and final notes will be posted on the DCM webpage.

The Chair, Vice-Chair, and DCM staff should work together to prepare meeting agendas, which will be provided to members and to the public at least seven days prior to a scheduled meeting.

## CONSENSUS BUILDING

Final Panel reports should be developed by consensus whereby (preferably) all Panel members support the general findings and recommendations, and clearly articulate any differences of opinion related to specific findings. In the absence of consensus, a minority opinion section should be included with each recommendation or report, if applicable.

The outline below is a general guideline for larger reports, but not all communications between the Panel and the CRC need to follow this format. Some recommendations, such as those pertaining to new coastal engineering technologies or methods, may be in memo form from the Panel to the CRC.

Larger Panel reports should follow a common outline so the CRC and stakeholders know what to expect in terms of format and content. The goal of Panel reports is to use the best available data to identify common ground and areas of disagreement to help set the context for CRC policy deliberations. To help reach consensus, it is essential for Panel members to participate in discussions, weigh in on draft recommendations, and review final reports. The outline should include, at a minimum, the following sections:

- General Issue
- Specific Question(s) to be Answered
- Options Explored by Panel
- Best Available Science
- Key Assumptions, Uncertainties, and/or Data Limitations Associated with Each Option
- Consensus Findings and Recommendations
- Minority Opinions and/or Specific Areas of Disagreement

## DISSEMINATION OF INFORMATION

Draft findings and recommendations for which the Commission intends to incorporate public input should only be released for public comment following preliminary review and approval by the Coastal Resources Commission. Division of Coastal Management staff will coordinate the public review process.

Final recommendations of the Panel adopted pursuant to the consensus building and public review procedures described above should be reported in writing to the Division Director and the Chair of the Coastal Resources Commission. Presentations of Panel recommendations to the CRC should be made by the Panel Chair or their designee.

## Science Panel Members

Dr. Margery Overton, Chair	Department of Civil, Construction, and Environmental Engineering N.C. State University
Stephen Benton	Division of Coastal Management (retired) Raleigh
Dr. William Cleary	Center for Marine Science University of North Carolina at Wilmington (Retired)
Tom Jarrett, P.E.	Coastal Planning & Engineering Wilmington, N.C.
Dr. Charles "Pete" Peterson	Institute of Marine Sciences University of North Carolina at Chapel Hill
Spencer Rogers	North Carolina Sea Grant Wilmington
Greg "Rudi" Rudolph	Shore Protection Office Carteret County
William Birkemeier	Field Research Facility, ERDC/CHL US Army Corps of Engineers (Retired)
Dr. Elizabeth Judge Sciaudone, PE	N.C. State University



North Carolina Department of Environment and Natural Resources  
Division of Coastal Management

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CRC-14-08

January 30, 2014

**MEMORANDUM**

**TO:** Coastal Resources Commission  
**FROM:** Mike Lopazanski  
**SUBJECT:** Science Panel Origin, Role and Composition

**Background – Hurricanes and Hazard Mitigation**

Beginning with Hurricane Opal in October 1995 and ending with Hurricane Fran in September 1996, North Carolina experienced five presidentially declared disasters within a twelve month period. As a result, Governor Hunt formed a Disaster Recovery Task Force in October 1996 to develop a comprehensive set of recommendations to facilitate the state's recovery. The recommendations included the review of the CRC's hazard mitigation rules and Ocean Hazard Areas. Specifically, the Commission was requested to evaluate the methodologies used to delineate hazard areas including an assessment of erosion rate calculations, setback requirements and accuracy of ocean, flood and inlet hazard area delineations.

The Division arranged for a panel comprised of Dr. Bill Cleary (UNCW, geologist), David Owens (UNCCH Institute of Government, lawyer), Dr. Stan Riggs (ECU, geologist), and Dr. John Wells (UNC-CH Institute of Marine Sciences, geologist) to discuss the Ocean Hazard AEC at the January 1997 CRC meeting. Dr. Cleary recommended the creation of a barrier island erosion task force to re-examine erosion rates, setbacks and associated methodologies used in their determination. Such a task force would allow scientists actively involved in related research to interact regularly and effectively with the Commission. The CRC created the task force and discussed the need for applying scientific knowledge to the problems the CRC faced as regulators. CRC Chairman Hackney stated that the Commission needed the participation of scientists who had an understanding of the coastal management program as well as the CRC's rules. The intent of such a task force would be to determine how the current state of knowledge could assist the Commission in the development of regulations - bridging the gap between science and policy. The Commission also discussed the need for a long-term, on-going task force and that there would need to be a clear charge from the Commission to ensure their direction.

The Division had already been planning to make coastal hazards an area of focus in its five-year strategic. As part of this effort, DCM was to propose rule changes to the Ocean Hazard AEC, develop an emergency response plan and hire a coastal geologist into a coastal hazards specialist position to guide the initiative. An advisory scientific task force was incorporated into the implementation of this strategy.

### CRC Science Panel on Coastal Hazards – Formation, Members and Charge

The initial science advisory task force was assembled by DCM and began meeting in May 1997. The initial panel included Dr. Bill Cleary (Geologist – UNC-W), Dr. John Fisher (NCSU - engineer), Mr. Tom Jarrett (US Army Corps of Engineers, engineer), Dr. Stan Riggs (ECU – Geologist), Mr. Spencer Rogers (NC Sea Grant - coastal engineering specialist), Dr. Margery Overton (NCSU - engineer), and Dr. John Wells (UNC- Geologist), Craig Webb (Duke Earth Sciences). Dr. Fisher volunteered to chair the panel and DCM provided staff support.

Officially named the CRC's Science Panel on Coastal Hazards, the original charge was developed by the Panel and the Commission to focus on:

1. Update and report on current state of knowledge of coastal processes of NC.
2. Review current methodologies being used by NC and others to define and identify coastal hazard areas.
3. Review current rules applied by DCM to development in coastal hazard areas.
4. Considering immediate (next 1-3 years) and long term (three or more years out) actions, and develop recommendations for the CRC in the following areas:
  - i. Studies that are needed to better describe NC coastal processes for management purposes.
  - ii. Specific changes to the methodology utilized by DCM to determine coastal hazards.
  - iii. New hazard identification methodologies that should be considered.
  - iv. Opportunities to incorporate current information on NC coastal processes.

Over the next year, a set of short- and long-term recommendations were developed by the Science Panel and presented to the CRC in May 1999 and February 2000, respectively. The short-term recommendations included suggestions for digital mapping, erosion rate computation, storm surge modeling to define OEA width, development of a structures database (e.g., piers and bulkheads along estuarine shoreline), outreach and public education, creation of a coastal coordination committee (federal and state agencies with coastal responsibilities), inlet hazard area re-delineation, building code issues, sandbags, and oceanfront setbacks. The long-term recommendations included the development of an integrated hazard classification of the ocean shoreline including physical dynamics, geologic framework, subaerial characteristics, modern inlets, sediment budget, and erosion/accretion rates. In the development of the recommendations, the Panel discussed that it would keep to the science and not make recommendations that were broader than the science and technical issues they were charged with examining.

### Science Panel Appointments

Traditionally, the Science Panel membership has been balanced with coastal engineers and coastal geologists. A marine biologist was added to assist with the sediment criteria and vacancies were filled by recommendations of the Division, Panel members and in consultation with and at the discretion of

the CRC Chair. The Panel has also asked others to provide information when particular expertise was required.

### Science Panel Activities

Over the intervening years, the Panel has been asked by the Commission and Division to develop recommendations or provide technical advice on a number of issues including:

1. Sediment Criteria Development (2002 - 2007)
2. Review Innovative Erosion Control Structures - Holmberg Stabilizer System (2002 - 2003)
3. Inlet Hazard Areas Analysis & Delineation (2007 – 2010; per HB-819 continue study in 2013)
4. Terminal Groins (Review Feasibility Study 2009)
5. Terminal Groins (Guidance on monitoring for adverse impacts 2011- 2012)
6. Sea Level Rise Assessment (2009 to Present)
7. Review results from updated Erosion Rate study (2011)
8. Mad Inlet Assessment (2013)

### Recent CRC Discussions

In late 2012, the Commission began reviewing the structure and function of the Science Panel beginning with the Charge (attached) and formalizing the appointment of members. The Charge focuses on a consensus based approach to working on assignments, four-year staggered terms, member appointment procedures as well as officer elections. The Commission also incorporated, two additional slots, the use of ad hoc members to fill specific needs, provisions for replacement due to non-participation, staggered terms and the review of a nominee's expertise and credentials. Once Panel members are formally appointed, the members will elect a Chair and Vice-Chair. The Chair and Vice-Chair serve two-year terms as officers. In order to implement staggered terms, it has been necessary for half of the existing Panel members to volunteer for two-year terms and the other half to volunteer for four-year terms which they have done. There have been two resignations due to time commitments and with the two additional slots, there are four vacancies.

### Member Qualifications

In reviewing the 2013 draft Charge, the Science Panel discussed the need for a basis for the CRC Chair to evaluate credentials of nominees, but stated that new members should not be limited to those that are published in peer-reviewed journals. For example, some practicing coastal engineers or geologists may not be published, but they may still be qualified to join the Panel. The Science Panel members recommended and the Commission agreed that new members and ad hoc members will be appointed by the CRC Chair based on a review of the nominee's relevant expertise and credentials with respect to coastal hazards processes.

In discussing the CRC's interest in expanding the Panel and possibly including an economist, the Panel members recommended that economists should be added on an ad hoc as needed basis to work on specific projects. The Science Panel has traditionally focused on oceanfront coastal hazard processes and has been balanced between coastal engineers and coastal geologists. Panel members recommended that the Commission retain that composition and focus.

### Science Panel Reports

Under the existing Charge, the CRC reviews draft Panel recommendations or reports before they are released for public comment. With regard to report format, the Panel suggested clarifying what is



expected for larger more complex reports while allowing for communication of recommendations on engineering technologies and methods in memo form. Final Panel reports are to be developed by consensus whereby (preferably) all Panel members support the general findings and recommendations, and clearly articulate any differences of opinion related to specific findings. In the absence of consensus, a minority opinion section is to be included with each recommendation or report, if applicable.

### 2013 Science Panel Nominations

In order to fill vacancies, the Commission agreed to a nominations process for two categories: Science Panel slots and “ad hoc” study slots (e.g., for the Sea Level Rise Assessment Update). For the four vacant Science Panel slots, the Division issued a call for nominations letter to CRC, CRAC and Science Panel members seeking nominations for two engineers and two geologists with the charge to the Science Panel used as guidance for qualifications. Nominees were asked to provide the CRC, CRAC or Science Panel member with a resume, CV and any other qualifying information that will be forwarded to the DCM Director. The call for nominations will also request that the potential nominee be contacted prior to submission in order to ensure their interest in serving. The nominations period was open for 30 days. A subcommittee of the CRC, including the CRC Executive Committee (CRC committee chairs, CRAC Chair and Executive Secretary) and Science Panel Chair, would then review the nominees and make a recommendation to the CRC Chair. The Chair would then make the appointments known at an upcoming CRC meeting.

For the ad hoc study members, the Science Panel could indicate that they need a certain number of members with specified expertise. The Commission or Advisory Council could also suggest a number of members with specific expertise. The call for nominations would be handled and reviewed in the same manner as above, with the specifics dictated by the needs.

### Current Status

At the July 2013, the CRC agreed to re-appoint the current members of the Science Panel at the discretion of the CRC Executive Committee. However, no action has been taken on nominations received due to the legislative changes made to the Commission. A meeting of the Science Panel is currently scheduled for February 4<sup>th</sup> at the Washington DENR Regional Office. The Panel will be reviewing a methodology for determining erosion rates in inlet areas and discussing the history of Mad Inlet, local geomorphology and other factors involved in inlet formation as was requested by the Commission at December 2013 meeting.

### Current members of the Science Panel

Chairman Dr. Margery Overton (Dept. of Civil, Construction & Environmental Engineering, NCSU)  
Mr. Steve Benton (coastal geologist, retired DCM)  
Dr. William Cleary (Center for Marine Science, UNC-W)  
Mr. Tom Jarrett P.E. (US Army Corps of Engineers, retired)  
Dr. Charles “Pete” Peterson (Institute of Marine Sciences, UNC-CH)  
Dr. Stan Riggs (Dept. of Geology, ECU)  
Mr. Spencer Rogers (NC Sea Grant)  
Dr. Antonio Rodriguez (Institute of Marine Sciences, UNC-CH)  
Mr. William Birkemeier (Field Research Facility, ERDC/CHL US Army Corps of Engineers)  
Dr. Elizabeth Sciaudone, P.E. (Dept. of Civil, Construction & Environmental Engineering, NCSU)  
Dr. Robert Young (Dept. of Geosciences, Western Carolina University).