

NC COASTAL RESOURCES COMMISSION (CRC)

April 24-25, 2024

Dare County Government Center, Manteo

Present CRC Members

Renee Cahoon, Chair
Neal Andrew, Vice-chair
Larry Baldwin
D.R. Bryan
Bob Emory
Jordan Hennessy
Robert High
Sheila Holman, 2nd Vice-chair
Steve King
Lauren Salter
Steve Shuttleworth
Earl Smith
James "Robbie" Yates

Present CRAC Members

Bobby Outten, Chair	David Hewett
Kyle Breuer	Spencer Rogers
Sandy Cross	Debbie Smith
Ryan Davenport	David Szerlag
Webb Fuller	Dave Weaver

Present from the Office of the Attorney General

Phillip Reynolds

Present from the Department of Environmental Quality, Office of the General Counsel

Christine Goebel

CALL TO ORDER/ROLL CALL

CRC Chair Renee Cahoon called the meeting to order at 3:00 p.m. on April 24, 2024, reminding the Commissioners of the need to state any conflicts due to Executive Order Number 34 and the State Government Ethics Act. The State Government Ethics Act mandates that at the beginning of each meeting the Chair remind all members of their duty to avoid conflicts of interest and inquire as to whether any member knows of a conflict of interest or potential conflict with respect to matters to come before the Commission. The Chair requested that if any member knows of a conflict of interest or a potential conflict of interest, they state when the roll is called. No conflicts were reported, and based upon this roll call Chair Cahoon declared a quorum.

CHAIR'S COMMENTS

Chair Cahoon thanked Dare County for hosting this meeting and allowing the Commission to use the facilities and technology. She thanked Deputy Secretary Bill Lane for attending and Phillip Reynolds for standing in for Mary Lucasse as Commission Counsel. Chair Cahoon thanked Dr.

Moore and the entire Science Panel for their work on the sea level rise update and stated that Dr. Laura Moore, CRC Science Panel Chair, recommended that the Commission appoint Dr. Reide Corbett to the Science Panel. His resume was emailed to the CRC for review and consideration.

Neal Andrew made a motion to appoint David Reide Corbett to the CRC's Science Panel. Sheila Holman seconded the motion. The motion passed unanimously (Andrew, Baldwin, Bryan, Cahoon, Emory, Hennessy, High, Holman, King, Salter, Shuttleworth, Smith, Yates).

MINUTES

Neal Andrew made a motion to approve the minutes of the February 2024 Coastal Resources Commission meeting as amended. Sheila Holman seconded the motion. The motion passed unanimously (Andrew, Baldwin, Bryan, Cahoon, Emory, Hennessy, High, Holman, King, Salter, Shuttleworth, Smith, Yates).

Larry Baldwin made a motion to approve the minutes of the March 13, 2024, specially called Coastal Resources Commission meeting. Neal Andrew seconded the motion. The motion passed unanimously (Andrew, Baldwin, Bryan, Cahoon, Emory, Hennessy, High, Holman, King, Salter, Shuttleworth, Smith, Yates).

CRAC REPORT

CRAC Chair Bobby Outten stated at the CRAC meeting we continued discussions about CAMA Land Use Planning requirements. Mike Christenbury gave us a history of the plans and took us through the proposed changes the Division is considering. The Division has received input from the CRAC and local government planners and conducted a survey. Rachel Love-Adrick walked us through the survey responses. The CRAC will be provided with proposed rules based on feedback for discussion and will provide the CRC with an update on that progress and provide some recommendations. The Division is looking at a 2025 timeframe. The next discussion was regarding straw bale rule development. Heather Coats provided a background presentation. Straw bales were first used in 2015 and have been used since that time in various locations. A minor permit is required for straw bale use. There have been mixed results depending on where they are placed. The presentation focused on the available science and potential concerns with permitting the bales. The CRAC would like to ask the CRC to move forward with rule development to allow the use of straw bales instead of traditional sand fencing. Once these rules are in place it gives beachfront communities another option. There was concern from the CRAC that the current rules are limited to local governments and homeowner's associations, but private property owners could not use straw bales for their properties. There was also some concern about installation windows when straw bales are less intrusive than sand fencing. Another concern is that the way the rules are currently drafted, there are review requirements from US Fish and Wildlife and Wildlife Resources Commission which could result in permit denials. There are also requirements to remove the ties around the bales and that staking of the bales would not be permitted. Why must the ties be removed if we allow wire on the traditional sand fencing and without stakes how are the bales able to be stacked up to three feet high if there is nothing to hold them in place? The last question was why are we limiting this use to wheat bales? Where these will be used are in areas where not much grows. The CRAC recommends that the rules move forward with the understanding that there may need to be modifications. The

last discussion of the CRAC was regarding thin layer placement. Thin layer placement is the process of putting borrowed sand in the marsh to restore a degrading marsh. In many areas places are struggling to find an area to deposit spoil from the channels that we dredge throughout the State. Many of our marshes are degrading so there is an opportunity to use that sand to restore those marshes. There are some guidelines in place and staff are unsure about the science and what the ramifications of doing it on a wide-scale might be. Moving forward will be a slow process. This could already be happening in other states, and this may be an opportunity to ask staff to look at where this has been done, look at the science that has been done, and have a better idea for streamlining rules. There is a good cross section of coastal communities on the CRAC, and we are here to help. This group doesn't mind sharing their views and going out in their communities to find out what things are working and how things can be improved.

Chair Cahoon stated the Commission will take the CRAC's recommendations into consideration during the hay bale agenda item. She directed staff to find any available information on thin layer placement and provide the full Commission with a presentation on this strategy.

EXECUTIVE SECRETARY'S REPORT

DCM Director Tancred Miller gave the following report:

First of all, thank you to our hosts at the Dare County Government Center for making this space available to us once again. As always, we appreciate your hospitality. At the request of Commissioner Hennessy in February, this is our first attempt to stream a commission meeting. Welcome to those joining us online. Thanks to our PIO Christy Simmons and the team that worked quickly to make it happen. We will also be having Dr. William Sweet from NOAA join us virtually to present during the sea level rise session this afternoon.

Agenda Review

This afternoon your Science Panel Chair, Dr. Laura Moore, will lead a session to deliver your sea level rise update. She will be joined by partners from NOAA, NC State University, NC Sea Grant, and Southeast Coastal Ocean Observing Regional Association (SECOORA). The Panel has worked extremely hard on this update, while also working on the Inlet Hazard Area (IHA) update. Their dedication to voluntary state service is truly remarkable. As we continue to recognize the 50th Anniversary of CAMA we will continue to highlight aspects of the coastal program that serve the people and environment of coastal North Carolina. Tomorrow morning after variances we will highlight the Resilient Coastal Communities Program with a staff update and reports from two program participants Lynn Davis from the Town of Belhaven and Meg Perry from SWCA Consultants. As you are all aware, rulemaking continues to be a priority following the Rules Review Commission's return of 30 rules to us in October. Tomorrow afternoon will be dedicated to rulemaking discussions including a closed session to review the RRC's objection to 16 temporary rules and an open session to review draft rules that staff is proposing for permanent rulemaking.

Regulatory

Since the February meeting, DCM issued a permit to the Wanchese Marine Industrial Park to upgrade the O'Neal's Seafood property. This authorization included replacing the existing bulkhead, upgrading the offloading ramp to the docks, and other infrastructure upgrades. We also

issued a permit on March 4 to the Coastal Reserves and Carteret County to construct an approximately 1,500 linear foot living shoreline around the Carrot Island end of the Rachel Carson Reserve in Beaufort. The living shoreline consists of a wave attenuator, an inner oyster sill and coastal wetland plantings, and will be completed in May. Funding for the project is provided by grants from the National Fish and Wildlife Foundation and NC Land and Water Fund. Staff have been working on preparing the permitting white paper that was requested at your February meeting which will be ready for the next commission meeting. We will be prepared to discuss the timeline for agency comments on permit applications if the commission wants to do that during tomorrow's rulemaking session.

Policy & Planning

In November of last year DCM planning staff presented proposed land use planning rule changes to the CRAC. To further this conversation DCM hosted a workshop on March 14 for local government planning staff with 83 participants (76 percent from local governments). Staff submitted a pre-proposal to the National Fish & Wildlife Foundation's National Coastal Resilience Fund requesting \$2 million to support planning grants to local governments. The grants would provide an opportunity to leverage the planning work that local governments completed through the Resilient Coastal Communities Program (RCCP), incorporating resiliency into CAMA Land Use Plans for communities that wish to do so. There were no land use plans certified or amended since your February meeting.

Resilience

The application period for Phases 3 and 4 grants is open. Phase 3 of the RCCP will fund the engineering and design of a prioritized project. Phase 4 will fund the construction and implementation of a shovel-ready project. We expect to award approximately \$6,000,000 in engineering and construction grants this summer, with engineering awards ranging from \$25,000 to \$500,000, and construction awards ranging from \$50,000 to \$750,000. There is no cash or in-kind match requirement for these grants. Applications for both Phase 3 and 4 funding are due May 31. Staff hosted a webinar last Friday to review the application process and answer questions from local governments and contractors. We are anticipating a decision soon on the grant proposal we submitted on February 9 to NOAA's Climate Resilience Regional Challenge in partnership with the NC Coastal Federation. The proposal, titled "Coastal North Carolina Resilient Communities: Strengthening Nature and People Together", includes \$25 million for RCCP and NCORR's RISE implementation projects that focus on nature-based solutions within socially vulnerable communities.

Coastal Reserve

The Coastal Reserve is hosting its spring local advisory committee meetings this month. Meeting information is available on its website. Spring student field trips to the Rachel Carson Reserve and Masonboro Island Reserve via the Island Explorer Program are underway, and summer camps at the Rachel Carson Reserve will start in June in partnership with the NC Maritime Museum. The Coastal Reserve and NC Wildlife Resources Commission are gearing up for the 10th annual 2024 Terrapin Tally to help better understand the overall population status and condition of the diamondback terrapin within the state. This citizen science project takes a snapshot of the diamondback terrapin population numbers in a given area by conducting kayak surveys at specified times and prescribed routes. Terrapin Tally paddling routes are available at

11 protected areas along the central and southern coast, including reserve sites and data collection will occur April through June. The reserve is hosting a Research Symposium May 8-9, 2024, to highlight work conducted across reserve sites with posters and presentations from researchers including students, faculty, partner agencies, and staff. This is also an opportunity for the research community to network and provide input on future research priorities. The reserve plans to host its third stop on the “Discover the NC Coastal Reserve” tour at the Rachel Carson Reserve in May, rescheduled from April due to weather. The tour is a multi-year campaign to connect target audiences with the program and its places. Discovery events were hosted at the Currituck Banks Reserve and Bird Island Reserve last year. CRC and CRAC members are invited to attend the events. The reserve and regulatory staff are hosting a “Living on a Barrier Island” virtual workshop for outer banks real estate professionals on May 21. Real estate professionals will earn four elective CE credits from the N.C. Real Estate Commission for participation. The workshop will cover how barrier islands are unique from an ecological and geological perspective; the rules and policies that govern development on barrier islands; updates to the National Flood Insurance Program; and native plantings for the coastal landscape. To learn more, contact Whitney Jenkins, our Coastal Training Program Coordinator.

Staff News

DOT field representative for Region 1, Greg Daisy, will be leaving DCM on May 3, after almost 10 years with the division. Greg has taken a position as an LPO with the Town of Nags Head, so our loss is their gain, and we'll continue to be able to work with him on CAMA permitting. Stephen Lane, our other DOT field representative, will be temporarily taking over all 20 CAMA counties until we fill Greg's position. Phil D'Angelis has joined DCM as a field representative in our Wilmington Regional Office, covering southwestern Brunswick County. Cameron Luck moved into the Assistant Major Permit Coordinator for Infrastructure in March, taking on Infrastructure projects for all 20 CAMA counties. Cam's move left a vacancy in the major permitting staff which we anticipate filling very soon. Several interns and seasonal staff will be working with the reserve in Manteo, Beaufort, and Wilmington this summer on a range of stewardship and education projects. Our thanks go out to Friends of the Reserve, the N.C. Internship Program, and UNCW for their support and partnership for the internships. In more good news, we are in the process of implementing, partially for now, the salary increases indicated under the department's salary administration plan, bringing 32 more of our staff up to market competitive compensation levels. We hope this will help with employee satisfaction and retention. We have six more staff members who are due for salary adjustments and we're working to get those completed as soon as possible. Lastly, I would like to thank the Division's administrative staff on this Administrative Professional's Day.

SEA LEVEL RISE

DCM Director Tancred Miller reviewed the Charge to the Science Panel from the CRC. This Charge was different than what the Panel had previously done. DCM recommended limiting the work that the panel did since there are so many other agencies, both federal and state, working on sea level rise updates globally, nationally, and regionally. The CRC asked the Science Panel to review what has been done and come back to the Commission annually with any information that is pertinent and relevant to North Carolina. DCM Director Miller introduced the Panel which has representation from academia, federal agencies, Sea Grant, and includes the State's experts in coastal processes, engineering and geology. Dr. Moore will begin followed by Dr. William

Sweet. On the federal level, he is the go-to person on sea level rise. Dr. Katherine Anarde will present alongside Dr. Miyuki Hino regarding sunny day flooding and their monitoring findings across multiple locations along the coast. Sunny day flooding is a separate but related aspect of sea level rise that people tend to see more in on a day-to-day basis. Finally, you will hear from Jennifer Dorton of SECOORA. She has been working on expanding the ocean observing system with flood monitoring in North Carolina.

Sea Level Rise Context, Impacts, and Panel Overview

Dr. Laura Moore, Chair CRC Science Panel

Laura Moore stated it is a pleasure to represent the Science Panel and present a summary of our sea level rise update. When considering sea level rise it is important to distinguish between global mean sea level and relative sea level. Global sea level, also called static sea level, is driven by changes in the amount of ice stored on land and the temperature and salinity of the ocean water itself which affects its density and volume. Warmer water simply takes up more space. In addition to these changes, the sea level in any one location, which we call relative sea level or local sea level, varies because of other factors that are different from place to place. These include dynamic factors such as ocean currents and factors that affect the vertical motion of the land such as isostatic adjustments, tectonics, and the withdrawal of ground water or other resources. When we talk about sea level rise in North Carolina we are referring to relative sea level rise. It is important to keep in mind that sea level is both what the ocean is doing and what the land is doing. Our coast is especially vulnerable to sea level rise because much of the eastern portion of the State is made up of estuaries, marshes, and barrier islands. These environments form at sea level and are maintained by processes that occur at the boundary between land and sea. Marsh grasses are adapted to the salty conditions in the inner tidal zone, and they grow by capturing sediment from ocean water. Barrier islands form and are maintained by the action of waves and storms. Where there is sand there has been water and there is likely to be water again. The upward growth of marshes and barrier islands, where this is allowed, makes coastal systems resilient to sea level rise. Although it is natural for us to think short term, on a scale of a few years or a decade, when we talk about sea level rise, it is important to keep in mind that sea level is never constant, and it has changed significantly over time. About 20,000 years ago, since the time of the last glaciation, sea level was about 120 meters or 400 feet lower and the shoreline was about 45 miles to the east of where Nags Head sits today. Although we aren't expecting changes that are as dramatic as these distant times in the past, current and future sea level rise will shift the boundary between land and sea with significant impacts on our ability to maintain coastal living as we know it. What does the latest sea level rise science say about the future of sea level rise in North Carolina? For our 2024 sea level rise update, the Panel turned to the authoritative and comprehensive analysis published in 2022 undertaken by a multi-agency team led by NOAA's Dr. William Sweet. The report projects 1 to 1.4 feet of sea level rise by 2050 for the southeast region which includes North Carolina. It is worth noting that the tide gauge observations now show an acceleration in sea level rise. There is agreement between the tide gauge observations and model scenarios that lends confidence to this estimate that we'll see at least a foot of sea level rise by 2050. Thinking a little longer term, we are on track for a sea level rise of two to seven feet by 2100. These projections are less certain because they rely heavily on the amount of ice lost from Greenland and Antarctica and that is directly related to emissions. Since emissions are unclear, the degree of ice loss is not yet clear. We are fortunate to have Dr. Sweet here today and he can go into more detail about this. Relative sea level rise varies from

place to place and within North Carolina, the rates of sea level rise are higher in the northern part of the coast relative to the south. Switching gears, I will provide a general overview of some of the different types of impacts that sea level rise is having and will have on the North Carolina coast. Many of the effects are already happening as you will see in Drs. Anardi and Hino's presentation. We can expect the effects to become more challenging to address in the future and for these impacts to worsen over time. Because our communities and roads are built at fixed elevations, sea level rise will initially be felt as increases in the frequency and extent of flooding. This includes high tide flooding and storm flooding as well as increases in shoreline erosion rates, rising water table, and saltwater intrusion. High tide flooding (called sunny day flooding or nuisance flooding) will increase in frequency and extent as tides propagate on higher and higher water levels. About 70 years ago, there was a lower sea level, and it required a storm surge to reach the same water level that we now reach today during high tide. Today we simply need the occurrence of high tides to get the same water level rise that storms were required to produce 50 years ago, and this is leading to the water overtopping roadways and coming up through storm drains. We are seeing a reversal of flow and water from the ocean coming into communities through the drain system that is intended to carry water in the other direction. You will hear from Dr. Sweet his analysis of what we can expect in terms of the frequency of high tide flooding. Drs. Anardi and Hino will provide an overview of their work measuring high tide flooding throughout the coast of North Carolina. Jennifer Dorton will talk about a monitoring network that's monitoring flood changes. In addition to increases in high tide flooding, storm flooding will also increase in frequency and extent. Just as high tides are propagating on higher water levels, storm surges are propagating on higher water levels. The USGS has recently put out a report that is available online and they have provided an analysis of storm flooding for the southeast United States, by location under different future sea levels. NOAA has a sea level rise viewer which is a coastal flooding tool which looks at storm flooding with differing levels of sea level rise. As higher background water levels bring stormwater levels to higher elevations, this also shifts the zone of wave impact landward. This means that we can expect increases in beach and dune erosion and more impacts to homes and roads as we go forward in time. We are all familiar with images and first-hand experiences of the types of damage that occur during storms. When we're thinking about the types of damage that occurs during storms and mitigation and adaptation, we need to remember that the same storm of today will be much more impactful in ten years, twenty years, and especially forty or fifty years from now because it will be taking place on a higher water level. We can also expect to see increases in background, long-term shoreline erosion rates. As sea level rises, the rate of sand that's lost due to the rise will increase. This leads to faster shoreline erosion rates in addition to what we experience during storms. Another effect we need to keep in mind is that as sea level rises, the groundwater table also rises. So, where the land surface is low, the water table will start to be higher and higher than the level of the land resulting in inland flooding. This leads to the backing up of storm drains and ponding of water on roads and sometimes into homes and in combination with high tide flooding and precipitation this can also lead to the failure of septic systems. This occurs as the amount of unsaturated soil under the septic system becomes limited and the septic system becomes exposed leading to loss of function and pollution. Also related to water in the subsurface as sea level rises, we see a landward shift in the boundary between salty ground water on the ocean side and fresh ground water on the landward side. This shift is exacerbated by the pumping of coastal aquifers which pulls that boundary between salty and fresh groundwater landward. A ghost forest is a visible sign of saltwater intrusion. Forests require access to fresh groundwater and as the

ground water becomes saltier, the forest trees die and marsh grasses that are adapted to living in salty conditions take their place. Saltwater intrusion is also affecting agriculture as salty groundwater leads to soil becoming salty. This can prevent crops from growing and reduces the productivity of working lands in North Carolina and elsewhere. Distinguishing between what global sea level rise is doing and what local sea level is doing is really important. We have a very large swath of inherently low-lying landscape in North Carolina, and we need to remember that sea level has been much lower and much higher in the past than that boundary that we see today. Observations and modeling are consistent in showing and projecting at least one foot of sea level rise, maybe as much as one and a half feet by 2050. In North Carolina we are seeing that rise occur faster in the north relative to the south and impacts are already being felt and will worsen. Although there are many big challenges before us, sea level rise projections are becoming clearer and clearer, giving us a better understanding of what to work toward and providing the information we need to make the most of opportunities to undertake and consider measures that will allow us to mitigate and adapt to the changes that are already starting to occur and will continue to occur in the future.

NC Sea Level Rise and High Tide Flooding Projections

William Sweet, NOAA

Dr. William Sweet stated there are areas on the east and gulf coasts where you can see the ocean component is rising at four, five, or six millimeters per year. That is about an inch of rise every five to six years over the last three decades. If it were a recipe, it would be two parts ocean mass which is the melting of the glaciers and ice sheets from Antarctica and Greenland and mountain glaciers and one part thermal expansion. When ocean water warms, it expands and takes more volume. In the contiguous United States, what we show based upon about 150 tide gauges that when we do spatially weighted averages, we see that relative sea levels which include vertical air motion have increased about a foot in 100 years. From 1920 until 2020 we see about a foot of rise. We know the rate has been increasing in the last fifty years at a noticeable acceleration at both the global and national levels. The interagency sea level rise task force has been writing reports about every four years. This Task Force is comprised of federal agencies, NOAA, NALA, USGS, DOD, and some academic partners. This provides a collective understanding of what sea level is doing and where we think it's headed based upon the latest science. The main questions we attempted to answer in the latest report were how much sea level rise we should expect in the next 30 years and what does that mean in terms of a risk of flooding or the probability of flooding reaching new elevations and how are they likely to change by 2050 with the trajectory that we are on. The rate could be as low as 0.3 meters by the end of the century, but that looks quite unlikely. The high end of the projected water rise would be about 2 meters. That's a little over six feet by the end of the century. This too is pretty unlikely, but it is considered feasible. The assessments gathered the data and to reach the low values there would need to be low emissions and low warming. To reach the high end of the values there would be contributions from rapid ice sheet loss, high emissions, and high warming. Emissions matter. Physical processes affect the United States coast differently. Higher levels are projected for the east and gulf coasts versus the west coast. Regionally U.S. sea level rise will be different. NOAA and NASA have tools that host data that is no longer force fitting linear trends. This data shows how the rise trajectory has been occurring over the past 50 years and you get a rough sense of where your location could be heading. In terms of flooding, sea level rise is causing an increased frequency of minor flooding which has been caused nuisance flooding or high tide

flooding. Minor flooding occurs more often when there aren't any major storms. There are also occurrences of moderate and major flooding with about a foot of water separating these flood regimes. NOAA has an inundation dashboard that allows you to look at various flood stages for specific locations. This allows you to know what would be exposed at specific water heights. Moderate high tide flooding is associated with a significant threat to property. If storms and tides stay the same and sea level changes, the frequency of water levels that are causing issues is going to increase. Unless we take action, by 2050 we are headed for a flood regime shift and moderate flooding will occur more frequently than minor flooding. Sea level rise is here, and its impacts are already being felt. We have a trajectory, and these impacts aren't likely to change unless we change. Collectively, we are probably not changing emissions just by what North Carolina is doing, but we can have North Carolina prepared for what is on the horizon.

Sunny Day Flood Monitoring

Katherine Anarde, NCSU/Miyuki Hino, NC Sea Grant

Coastal flooding is occurring in the absence of extreme events due to sea level rise. Tide gauge data is what we use as scientists to estimate flood frequency and tide gauges are located over marine and water bodies. The gauge senses the water level and marine water body. When water levels are high it can over top the outlet for a local storm water network and water unabated can go up through the stormwater network and onto roadways. Tide gauges are not intended to capture all sources of flooding. They do not capture sources from rainfall, from high ground water, or from faulty infrastructure. Tide gauges are also sparse. Our groups have been trying to fill in the data gaps and figure out how often it is flooding on land where people live and what are the impacts to individuals and communities. What is the true burden of sea level rise in terms of impacts? These floods can be hyper local and can last a couple of minutes to several hours. These are not just high tide floods. They combine the tides with rainfall, groundwater, and stormwater networks not behaving properly. We came up with a new way of sensing floods. We developed what we call sunny day flood sensors. These sensors are placed in stormwater networks so they can measure water levels coming up through drains. They transfer the data in real time, which can help coastal managers try to identify what is going on within the stormwater system. These sensors capture marine based floods and land-based sources. Five sensors have been deployed in five coastal communities since 2021. For the period between April 7, 2023, and April 8, 2024, we identified several instances on the roads in Beaufort, Carolina Beach, and Sea Level in Down East Carteret County. An instance of flooding is any amount of water on the road outside of an extreme event. We chose any amount of water because if it is salt water then it can impact cars and infrastructure. In Beaufort we observed 28 instances of water on the road, which totaled 22 days of flooding. It is possible to have multiple floods in one day due to a combination of different factors. In Carolina Beach we observed 60 days of flooding, and in Sea Level there were 144 instances of flooding for a total of 124 days of flooding on the roads. We have ongoing work with the Towns to try to understand the experiences of the residents and explore potential strategies for mitigating flooding moving forward. The citizen responses to our surveys indicated that their level of preference was low for removing infrastructure, houses, and roads versus a high support for installing stormwater pumps that move the water elsewhere. We are working to formulate different potential flood mitigation strategies and help them prioritize what could be done in the future. We have talked about how often it is flooding in coastal North Carolina. Business revenues, traffic delays, and water quality are all impacted. There has been very limited work on water quality and most of it has been focused on the receiving water body. We have

been working with NC State to try to understand the water quality impacts that may be associated with these floods. Because so many sewer pipes are decades old, some are under water. Tidal flood waters can also have poor water quality and can present health risks. This is an area of ongoing study, and we are working with the local Health Departments. The most flood prone part of the State is Carteret County. The Town of Sea Level is not too far from Beaufort. The tide gauge does a really good job in Beaufort, but not at measuring flooding in Sea Level. The patterns of flooding are very different in these two locations and that is in part because of the sounds. We have wind contributions that differ Down East from Beaufort, rains are different, and tidal creeks play a role. Surveys conducted in Down East communities indicated that about 40% of respondents indicate that their property floods outside of hurricanes. About 20% of those respondents say that these floods disrupt their ability for their children to get to school. 40% of respondents say these floods disrupt their ability to get to work and 40% say these floods disrupt errands and social activities. These floods are happening now across North Carolina at a frequency higher than our tide gauges suggest and they are impacting daily life. Coastal residents are already feeling the burden of flooding from sea level rise. We need measurements of floods on land to truly understand how frequently they are happening and what ingredients are causing flooding. The flooding that is happening is due in large part to wind and rain. We have known about the wind tide for a long time, but now we are just getting data to supplement what we already know from NOAA. Our data is available online and can be downloaded for your region.

SECOORA Water Level Monitoring in the Southeast

Jennifer Dorton, SECOORA

Jennifer Dorton works with the Southeast Coastal Ocean Observing Regional Association (SECOORA). She stated, we are funded through NOAA, under the National Ocean Service, the Integrated Ocean Observing System. SECOORA covers North Carolina, South Carolina, Georgia, and Florida. We support universities, state agencies, and private partners who install equipment in the water so that we can better understand what is happening offshore. This equipment includes buoys, high frequency radar to map surface currents, and underwater gliders that help us determine whether hurricanes have enough heat content to help generate the storm. In 2021 we had four project teams that applied for support funding to look at the installation of low-cost water level sensors. The coast of Georgia has one NOAA tide gauge. North Carolina has four. All four teams looked at how to get hyper local across the southeast. ASBPA worked with their partners to get Georgia Tech to work on coastal Georgia. Coastal Carolina and Florida Atlantic University are working together in Florida and South Carolina, and Florida International University is working strategically in the Miami area. We hit pause when we realized each team had four different ways they were operating. They were using the exact same sensors, but they had them set up differently and used different sampling rates. We contacted our partners at NOAA and had them develop standard operating procedures and siting standards. We then worked with our partners at Sea Grant to identify communities where we needed to install the sensors. We started off with network goals to provide hyper local water level data. These sensors are less expensive than NOAA sensors but can provide local communities with the information that they need. We are working with underserved communities to fill geographic data gaps. We use ultrasonic water level sensors. Most of our folks are integrating solar panels that help charge the batteries and keep the sensors going all the time. An ultrasonic sensor is emitting a sound which pulses down and hits the water. The rate of return to the sensor lets it know where the water level is in relation to the sensor. Once we start surveying the sensors, we survey the land

and elevation. Then we can start looking at the water level data compared to the surrounding land. We can set up flood thresholds. At this moment we have 98 sensors installed across four states, with about 18 in North Carolina and are looking to put in more. In North Carolina we work very closely with NCFIMAN. The team has done the survey work at the stations in Belhaven and Chocowinity. This will pull these stations into the FIMAN network and allow Emergency Management to pull them into the emergency management planning. SECOORA will manage the NC stations in underserved communities. We will take on the responsibility of the long-term operational maintenance of these stations as these communities do not have large budgets. This will allow the identification of community flood thresholds and track the number of repeat flooding instances annually. The next steps include working with Sea Grant in all four states to find out how communities want to access water level data. A website is being developed based upon the input received and where possible will provide other types of data as well such as wind speed or local cameras.

VARIANCES

Andrus – (CRC-VR-24-01), Kitty Hawk, Pier Length

Yvonne Carver, DCM & Christy Goebel, Esq./Paul Andrus, Pro Se

Yvonne Carver reviewed the site location of the proposed development. Christine Goebel represented staff and stated Petitioner, Paul Andrus, is present and will represent himself. Petitioner owns property at 4140 Thick Ridge Road in Kitty Hawk, Dare County which is developed with an existing docking facility. That docking facility is non-conforming in that it extends more than one-quarter the width of the waterbody. It appears this is due to the landward movement of the high water and disappearance of coastal wetlands. The petitioner proposed to add a boatlift and an additional platform to the existing docking facility without adding length to the existing pier. In accordance with the Commission's rules at 15A NCAC 07H .0208(b)(6)(G) and (a)(2)(G), DCM denied Petitioner's CAMA Major Permit application on October 31, 2023. Ms. Goebel reviewed the stipulated facts of the variance request and stated staff and petitioner agree on all four statutory criteria. However, staff notes that placement of the boat lift where proposed would significantly impact navigation, petitioner has created a hardship through his choice of design, and a reasonable balance could be reached if the CRC allowed the proposed lift but denied the additional platform. Mr. Andrus stated the facts support the granting of the variance. He noted that the proposed location of the lift is the only place where it will work due to wind. He would agree to no additional platform if the CRC would approve the boatlift in its proposed location.

Neal Andrew made a motion that petitioner has shown that strict application of the applicable development rules, standards, or order issued by the Commission cause the petitioner an unnecessary hardship. Jordan Hennessy seconded the motion. The motion passed unanimously. (Hennessy, Holman, Emory, High, Smith, Baldwin, Andrew, Cahoon, Salter, Bryan, Shuttleworth, Yates, King).

Neal Andrew made a motion that petitioner has shown that hardships result from conditions peculiar to the petitioner's property. Jordan Hennessy seconded the motion. The motion passed unanimously. (Hennessy, Holman, Emory, High, Smith, Baldwin, Andrew, Cahoon, Salter, Bryan, Shuttleworth, Yates, King).

Neal Andrew made a motion that petitioner has shown that hardships do not result from actions taken by the petitioner. Sheila Holman seconded the motion. The motion passed unanimously. (Hennessy, Holman, Emory, High, Smith, Baldwin, Andrew, Cahoon, Salter, Bryan, Shuttleworth, Yates, King).

Neal Andrew made a motion that petitioner has shown that the variance request will be consistent with the spirit, purpose and intent of the rules, standards or orders issued by the Commission; will secure the public safety and welfare; and preserve substantial justice. Jordan Hennessy seconded the motion. The motion passed with 12 votes in favor (Hennessy, Holman, Emory, High, Smith, Baldwin, Andrew, Cahoon, Bryan, Shuttleworth, Yates, King) and one opposed (Salter).

This variance request was granted.

RESILIENT COASTAL COMMUNITIES PROGRAM (RCCP)

Program Updates (CRC 24-03)

Mackenzie Todd

Mackenzie Todd thanked the Commission for the opportunity to present today and stated the foundation of the RCCP was laid out in 2016 through the pilot program RENA (Resilience Evaluation and Needs Assessment) to work with five communities to look at community assets, social and physical vulnerabilities, and mitigation options for their hazards. In 2018, Governor Cooper issued Executive Order 80 which called for the State's Climate and Risk Assessment Plan. DCM met with local governments to identify their barriers to coastal resilience at the local level. The RCCP is funded through the General Assembly and a National Fish and Wildlife Foundation grant. Our program scope includes the local governments and communities within the 20 CAMA counties. The RCCP is designed to address barriers to coastal resilience at the local level. We assist communities with risk and vulnerability assessments and help communities develop a portfolio of well-planned and prioritized projects. We assist communities with advancing those projects to shovel-ready status meaning that they are engineered and ready for permitting and construction. We then link communities to funding streams outside our RCCP funding for implementation of those projects. This program runs in four phases. Phases one and two run concurrently and these are our planning phases where communities conduct a risk and vulnerability assessment. They do community engagement and identify a portfolio of prioritized projects. What is unique about these two phases is we take applications from consulting firms that provide technical assistance to the communities. At the State level, we contract directly with those third-party service providers and then we match them with the communities. This has been beneficial, as it takes the procurement burden off the local governments. In phase three, which is the engineering and design for a project from the portfolio, the community can apply for phase four funding. This is the construction and implementation of a project. To date, we have received approximately 12.5 million dollars from the General Assembly (10 in the most recent budget). We also received 4.6 million from the National Fish and Wildlife Service, \$60,000 from NOAA and \$500,000 from HUD. We are currently in the second round of phases one and two. We have completed one round of phase three where we awarded 20 projects that are now complete with engineering and design plans. We are currently in phase four with five communities that were awarded construction funds. There are 41 communities that have or are participating in the RCCP (including 11 counties and 30 municipalities throughout the coast). The City of

Washington is currently in phase four and has received approximately \$263,000 to improve Jacks Creek flood plain and greenway. Pine Knoll Shores has received \$300,000 to install bio swales along five of their townhome streets to improve the stormwater flooding. The Town of Belhaven has received \$263,000 to improve some overland flooding. The Town of Vandemere has received approximately \$250,000 to improve their culvert crossings and their drainage ditches throughout the Town. Finally, the City of New Bern received \$175,000 to do some basin enhancement that includes some constructed wetland features to provide treatment to the stormwater prior to discharge in Jacks Creek. New Bern's project is a small part of the Duffy Field Community Resilience Improvement. We have applied for NOAA's Climate Resilience Regional Challenge in partnership with NC Coastal Federation for \$25 million for implementation funds. We have submitted a pre-proposal with National Fish and Wildlife's National Coastal Resilience Fund for \$2 million and have released our request for applications for phases three and four which are due May 31.

Today, we have Meg Perry with us who is the lead environmental planner with SWCA Environmental Consultants. She has participated in RCCP since the very beginning and has provided technical assistance to a handful of communities. She has worked with Bertie County, Hertford County, Washing County, the Town of Hertford, Town of Windsor, and the Town on Creswell. Also with us today is Lynn Davis who is the Town Manager for the Town of Belhaven. Belhaven was one of the five communities that started from phase one in 2021 and have made it to phase four for construction.

Contractor Role & Technical Assistance

Meg Perry, SWCA Environmental Consultants

Meg Perry stated I want to share with you some examples of technical assistance that we provide as RCCP contractors. As the Commission saw in the sea level rise presentations, mapping provides towns and counties with great data along with current modeling to see what areas might be at risk. We also provide maps. In some cases, it is the first-time county planning staff have seen a detailed map of the sea level rise risk for their county. This helps inform decision making for these communities. We also conduct vulnerability assessments. Through this process, we look at what community assets are most vulnerable to coastal hazards and incorporate different types of information. We pull together the best available data and current models on things like sea level rise, storm surge risk, riverine flooding, and past flooding from storms. But we know that these models and data don't always reflect the local level and the realities that people see on the ground. We do ground truthing of the data by talking to local experts and engaging with community members to understand what they are seeing and whether that matches with the models and data or are there additional things that we might need to note as we are trying to understand what places are the most vulnerable. For example, in Washington County we spent a fair amount of time talking with the local soil and water conservation staff about the areas where they know there are drainage issues that may be impacting community assets. Another big role we play as contractors is to help advance the projects that are identified through this process toward implementation. We don't want plans to sit on the shelf, so we try to design both what is in the plan at the end of phases one and two and stay engaged with communities heading into phases three and beyond to make sure that they bridge that gap from finishing their plan to actually getting funding to do the engineering, design, and implementation. The Town of Hertford identified a stream right near downtown called Jennies Gut. They identified some

drainage improvements as a high priority project in phases one and two of this program. They were then able to receive phase three funding to do a feasibility study which we worked with them on. The study recommended a culvert replacement as a best value project to help improve drainage and flood risk in that area. We just found out that they have won Golden Leaf Foundation funds to implement that culvert replacement. These are examples of how communities are moving from the planning phase to getting implementation funding either from RCCP or other sources. Not every county or town can hire a resilience specialist and this program provides access to critical capacity and expertise for local governments especially those with limited staff. As an RCCP contractor, we really are working collaboratively with communities to help them understand their coastal hazard risks and identify projects that they can do proactively to help reduce those risks. We are excited to see communities participating and benefiting from this program and we are honored to serve as partners.

Town of Belhaven Coastal Resiliency Efforts

Lynn Davis, Town Manager

The Town of Belhaven is located on the Intracoastal Waterway in Northeastern Beaufort County. We are a small economically disadvantaged rural community with limited staff and resources. We have a small budget of \$6.5 million and a population of 1,400 people. The Town is in a flood plain and our entire town is in a special flood hazard area. That means that water in the Town is going to affect every one of our citizens. I started in this position as town manager three weeks before Hurricane Florence brought three feet of water throughout the town. I was immediately faced with challenges that could likely be annual occurrences. After Florence, there was a lot of funding coming our way from FEMA and State agencies for resiliency. The RCCP program provided funding, but it also talked about coastal resiliency. Without engineers and planners on staff, this program seemed to be a perfect fit for what we needed in the Town. We were one of the few programs that have been from phase one to phase four and believe we are one of the showcases of success to show how this program has worked for small rural communities. Phase one was compiling a community action team. We gauged the interest of our citizens and got their input and feedback. Phase two consisted of planning and project identification. Our citizens know what the problems are, but how do we prep, collect information, and put it into a package that is going to create fundable solutions and create successful outcomes for our community. After phase two, we had a living, breathing strategy. One of the Town's main problems stems from an area called Wynne's Gut. This Gut intersects our town and created a lot of issues. That was one of the areas that was identified in this resilience strategy. We have sunny day flooding. If there is a storm system on the coast, then it comes up the Intracoastal Waterway and into our community. Even on sunny days with no wind, there was water on Main Street. This is happening frequently, and the resilient strategy helped us look at this challenge. Sea level rise, king tides, and low-lying communities all contribute to this problem, and we need to respond and adjust. The strategy has several goals and objectives all centered around economic, environmental, or social goals. The primary goal is reducing flooding. It's easy to talk about that in meetings, but how are we going to do it? We have addressed the idea of flood mitigation projects that include nature based and sustainable solutions and reduce flooding from coastal storms, tidal flooding, and nuisance flooding from normal wind and rain events. For our community, all these issues can be addressed by looking at the area of Wynne's Gut. In phases three and four that is where the resources of the RCCP along with our engineers come into play to help identify solutions. We were able to identify a hybrid solution of a nature-based solution

to address some of the Wynne's Gut flooding, but also could reduce the sunny day flooding by building a pumping gate system. We used the \$84,000 grant to create plans for a new wetland to increase the watershed area from Wynne's Gut and implement the pumping gate system as a fundable project. With that plan we were able to apply for FEMA money and this round of flood mitigation assistance funding. Without the RCCP a small, economically disadvantaged community like ours would never have been able to achieve these successes. We are grateful to have been selected to be a part of the Program and for the relationships with RCCP staff, the Division of Coastal Management, and our engineering firm to be able to prioritize and implement solutions for the long-term benefit of our community and citizens.

PUBLIC INPUT AND COMMENT

Kathryn Fagan asked questions regarding meeting notifications, conflicts of interest for the CRC, required education requirements of the Commission, and information available on the website regarding the Commissioner's bios and appointing authorities.

Miriam and Mike Rollin, permanent residents of the Outer Banks, spoke in favor of the AEC designation for Jockey's Ridge State Park.

Ben Cahoon, mayor of Nags Head, spoke against the recent actions of the Rules Review Commission and spoke in support of the CRC's efforts to reinstate protections for Jockey's Ridge by re-designating it an Area of Environmental Concern.

Justin Whiteside, Ocean Isle Beach Town Administrator, spoke in favor of the Commission's rulemaking on allowing the use of straw bales as sand fencing, but voiced the Town's concerns about the language that requires consultation with US Fish and Wildlife and the Wildlife Resources Commission.

Bob Muller, former Mayor and Board of Commissioners member for the Town of Nags Head, spoke in favor of CAMA's rules and regulations and balancing both development and conservation interests. Speaking as a member of the Friends of Jockey's Ridge, Mr. Muller spoke in favor of comments the CRC will hear from the President, Craig Honeycutt.

Craig Honeycutt, Chairman of the Board of the Friends of Jockey's Ridge, spoke in favor of the CRC's efforts to return the protections for Jockey's Ridge State Park by its designation as an Area of Environmental Concern. Mr. Honeycutt spoke against the recent action of the RRC to object to the temporary rules adopted by the CRC.

Megan Lambert, Nags Head resident, spoke in favor of the CRC's efforts to reinstate the protections for Jockey's Ridge State Park by designating it as an Area of Environmental Concern.

Sam Simons, resident of Kill Devil Hills, spoke in favor of protections for Jockey's Ridge.

Kirsten Morris, resident of Duck, spoke in favor of protections for Jockey's Ridge to prevent development and sand removal from the park. If these protections are not reinstated, we will see the natural landmark diminish over time.

Carolista Ann Cabell Baum, daughter of Carolista Baum, spoke of her mother who in 1973 stood in front of a bulldozer that was attempting to remove sand from Jockey's Ridge. This action and the 50-years of protection that have been provided were intended to preserve and protect a significant geological feature forever. Ms. Baum stated the AEC must be in place.

Nathan Beane, resident of Nags Head, spoke in favor of protections for Jockey's Ridge.

Hannah Bun West, Dare County resident, asked the Commission to save the sand dunes and reinstate the protections for Jockey's Ridge that were fought for in the 1970s to protect the area and turn it into a state park.

Katie Morgan, Dare County resident, spoke in favor of permanent rules for the protection of Jockey's Ridge.

Tony Weaver, Dare County resident, spoke in favor of the Jockey's Ridge AEC designation and against any development at Jockey's Ridge.

Shelly Brackstone, Nags Head resident, stated she submitted letters of support for the AEC designation for Jockeys' Ridge. She spoke against the recent actions of the RRC and spoke against any possibility of development on or near Jockey's Ridge.

Taylor Connors, spoke in favor of protections for Jockey's Ridge and the uniqueness of the site. She further spoke against any development being allowed at Jockey's Ridge.

TEMPORARY RULEMAKING UPDATE

Objection from Rules Review Commission (CRC 24-04)

Phillip Reynolds

Neal Andrew made a motion that the Commission go into closed session pursuant to North Carolina General Statute Section 143-318.11(a)(3) to consult with its attorney regarding CRC v. RRC (File No. 23CV031533-910). Sheila Holman seconded the motion. The motion passed unanimously (Hennessy, Holman, Emory, High, Smith, Baldwin, Andrew, Cahoon, Salter, Bryan, Shuttleworth, Yates, King).

Bob Emory made a motion that the counsel file additional findings of need on behalf of the CRC addressing temporary rules related to Jockey's Ridge (7H .0507, 7H .0508) to include the state geologist's declaration that Jockey's Ridge is a unique geological formation and move forward with permanent rulemaking. Lauren Salter seconded the motion. The motion passed unanimously (Hennessy, Holman, Emory, High, Smith, Baldwin, Andrew, Cahoon, Salter, Bryan, Shuttleworth, Yates, King).

PERMANENT RULEMAKING

Recommendations for Permanent Rulemaking (CRC 24-05)

Jonathan Howell

Jonathan Howell stated CAMA charges the CRC with protecting and identifying coastal resources. This has been accomplished over all these years by working with other agencies because the Commission's rules take into consideration archeological resources, wetland protection, fisheries, and water quality. A CAMA application is an umbrella process in which the Division of Coastal Management coordinates with other resource agencies which is a time and cost savings for the public. We circulate applications to the Corps of Engineers, Marine Fisheries, Wildlife Resources Commission, State Property Office, Natural and Cultural Resources, Sedimentation and Erosion Control, Department of Transportation, public health, and the local government. This is a great resource for the citizens of North Carolina.

15A NCAC 07M .0703 Mitigation Projects

This rule talks about mitigation candidacy. The CRC may approve the development project for mitigation candidacy if four criteria are met. If an applicant cannot meet the criteria but there is a public benefit, the applicant can request the CRC grant its mitigation request. The public benefit can outweigh the environmental effects. If neither of these can be met, applicants may submit a request for a declaratory ruling.

Neal Andrew made a motion to approve 15A NCAC 07M .0703 for public hearing as presented. Sheila Holman seconded the motion. The motion passed unanimously (Hennessy, Holman, Emory, High, Smith, Baldwin, Andrew, Cahoon, Salter, Bryan, Shuttleworth, Yates, King).

15A NCAC 07J .0206 Public Notice Requirements

This rule is in accordance with NCGS 113A-119(b) which states the Division of Coastal Management shall issue a public notice for proposed development. This rule speaks directly to our public notice process.

Neal Andrew made a motion to approve 15A NCAC 07J .0206 for public hearing as proposed. Larry Baldwin seconded the motion. (Hennessy, Holman, Emory, High, Smith, Baldwin, Andrew, Cahoon, Salter, Bryan, Shuttleworth, Yates, King).

15A NCAC 07J .0203 Standards for Work Plats

This rule was broken out into two new rules, 07J .1301 and .1302. The Rules Review Commission objected to this rule as lacking statutory authority and asserted the rule was unclear and ambiguous and pointed to certain citations and specific words. We have addressed their objections by changing the title for clarity and specifying exactly what is required in the work plat (for example, normal high water, submerged aquatic vegetation, riparian lines, existing and proposed features, and project boundaries). The rule also requires cross sectional drawings and other specific requirements. To address statutory authority, the Division has updated the citations.

Neal Andrew made a motion to approve 15A NCAC 07J .0203 for public hearing as proposed. Sheila Holman seconded the motion. (Hennessy, Holman, Emory, High, Smith, Baldwin, Andrew, Cahoon, Salter, Bryan, Shuttleworth, Yates, King).

15A NCAC 07J .0204 Processing the Application and 15A NCAC 07J .0207 Review of Major Development and Dredge and Fill Applications

This was a large rule, and it has been broken into three rules (.1401, .1402, and .1403). These new rules incorporate the requirements previously codified in 07J .0207. These are almost complete re-writes of this former rule due to the objections from the RRC for being unclear and ambiguous. Looking at the objections, most centered around the definition of land disturbance. The re-written rules lay out the requirements for a complete CAMA or Dredge and Fill application. We are moving toward an electronic permitting process, so we included the link that takes you to the online permit application. Minor permits were broken out into a separate rule to be clearer for the regulated public. To address the definition of ground disturbance, we reached out to DEMLR who is responsible for sedimentation and erosion control. Their statute lays out a definition of ground disturbance. We point to that definition within the rule. For clarity, we included every question in the online application in the rule. The rule also lays out the requirements for the work plan, a copy of the deed, notification of adjacent riparian property owners, and permit fees. The last additions to the rule included the applicant's acknowledgement and certification of the truthfulness of the information provided. The rule authority citations have also been updated.

Commissioner Hennessy asked about the term "indication of ownership" in .0204 (now .1400) which the RRC objected to and is still in the rule. Mr. Howell stated that it has been updated to the requirement of a copy of the deed. Commissioner Baldwin asked about non-commercial, for profit development versus public, for-profit requirement. Mr. Howell stated the language could be changed to private/commercial and public/commercial.

Neal Andrew made a motion to approve 15A NCAC 07J .1400, .1401, and .1402 for public hearing with the recommended edits. Robbie Yates seconded the motion. The motion passed unanimously (Hennessy, Holman, Emory, High, Smith, Baldwin, Andrew, Cahoon, Salter, Bryan, Shuttleworth, Yates, King).

15A NCAC 07J .0208 Permit Conditions

This rule is now 7J .1403. RRC objected to this rule based on statutory authority and unclear or ambiguous language. We have inserted the word Division to clarify who is going to circulate an application and added each agency that the permit will be circulated to for review as part of the process. We also pointed to the CAMA General Statute which speaks to the ability of the Division to investigate applications to determine whether the project can be permitted.

Neal Andrew made a motion to approve 15A NCAC 07J .1403 for public hearing as presented. Sheila Holman seconded the motion. The motion passed unanimously (Hennessy, Holman, Emory, High, Smith, Baldwin, Andrew, Cahoon, Salter, Bryan, Shuttleworth, Yates, King).

15A NCAC 07H .0508 Jockey's Ridge Area of Environmental Concern

Daniel Govoni

Daniel Govoni stated the rule designating the Jockey's Ridge Area of Environmental Concern (AEC) was returned by the RRC and the Division is requesting the CRC move forward with permanent rulemaking to re-designate Jockey's Ridge as an AEC. This site is the tallest medano along the Atlantic and Gulf coasts. In 1987, the Division of Parks and Recreation became concerned that commercial mining threatened Jockey's Ridge. In June of 1987, Jockey's Ridge was nominated by the Division of Parks and Recreation as an AEC as a unique coastal geologic formation. The CRC adopted the AEC, along with use standards, and boundaries. The Commission has the legal authority to designate these Areas of Environmental Concern. Jockey's Ridge is a State Park and has been dedicated as a State Nature Preserve. It is considered a natural area and has been designated by the State Geologist as a unique geologic formation. The proposed rule will re-designate Jockey's Ridge as an AEC along with specific use standards. As we try to satisfy the RRC's objections, this rule lays out the description of the AEC, the boundary, and the use standards.

Neal Andrew made a motion to approve 15A NCAC 07H .0508 for public hearing as proposed. Steve King seconded the motion. The motion passed unanimously (Hennessy, Holman, Emory, High, Smith, Baldwin, Andrew, Cahoon, Salter, Bryan, Shuttleworth, Yates, King).

Installation and Maintenance of Wheat Straw Bales for Sand Fencing (CRC 24-07)

Heather Coats

In recent years we have heard increasing concerns expressed about the marine debris associated with derelict sand fencing, especially after storms when the fencing becomes badly damaged. Current rules require the removal of sand fencing when it damaged, non-functioning or unsecured, but enforcement can be challenging due to its widespread use across the coast and when the fencing is partially buried or surrounded by established dune vegetation. The idea of straw bales has gained a lot of traction recently as a more biodegradable way to protect dunes by trapping wind-blown sand. To clarify the terms, hay is generally defined as a whole grain material generally used for the feeding of livestock. Whereas straw has been harvested, is hollow, and lighter weight. Straw is believed to have less risk of introducing non-native or invasive species into the environment, Straw is also believed to break down or degrade more quickly than hay or pine straw. While sand fencing is commonly used along the shoreline, there is precedent for using alternatives to serve as stabilization for dune protection. Every year the Division releases guidance for the recycling of natural Christmas trees to be used as sand fencing. The recommended use of Christmas trees follows our same rule language as the exemption for sand fencing as far as placement orientation and configuration goes. The use of straw bales is not a new concept. It was introduced in 2015 by Figure Eight Homeowners Association in response to the challenge with dealing with miles of derelict sand fencing and it was determined that these projects would require review under a Minor Permit as they do not meet the specifications of the sand fencing exemption through inner-agency consultation for the Minor Permit. DCM was able to solicit input from some of our resource agencies, US Fish and Wildlife, and NC Wildlife Resources Commission. Some of the comments and conditions that they requested were that bales be free of any binding to reduce interactions with nesting shorebirds or turtles and that the orientation, size, and location of the bales reflect our current

exemption language. The Town of Ocean Isle Beach applied for a Minor Permit to install straw bales. The permit application was denied due to the concerns from the US Fish and Wildlife and Wildlife Resources Commission. This proposed project came to the CRC for a variance, which was granted in 2023. The Final Agency Decision granting the variance and the permit specified that the straw bale configuration follows the sand fencing requirements of the exemption in 15A NCAC 7K .0212. They also required that the bales be free from any binding, and included a condition that the permit did not alleviate the need to coordinate with the US Fish and Wildlife Service to ensure compliance with the Endangered Species Act. The permit also required that the Town provide information in the form of photographs and a brief narrative status update on a regular basis. In the case of displacement or if any severe weather impacted the material, the removal of the bales was required. The variance request also requested that the Town consult Dr. Zach Long with UNCW as well as US Fish and Wildlife and WRC. That meeting occurred prior to the issuance of the Minor Permit. The pictures submitted by the Town for the Charlotte Street site show the hay bale installation in May and then after a storm in December. A tropical storm affected the Town of Ocean Isle Beach and then the condition of the bales following two winter storms in December. No impacts were reported following the tropical storm, but the December storms did cause overwash and impacted the bales. Following the second December storm, the bales washed away. At the Lumberton Street site, the bales did not trap as much sand as other sites due to placement between vegetation. At the Shallotte Boulevard site, the bales were reported to have been washed out after the first December storm. The East Third Street site is the largest site with the most bales. These bales were installed in May, covered with sand by November, and were the only bales left following the second December storm. Dr. Long conducted some temperature monitoring for six weeks from September to October. Nine temperature loggers were deployed, thermo images were taken of the bales, as well as moisture levels and pH testing. While Dr. Long indicated he did not believe the bales resulted in a significant transfer of heat to nearby sand or soil moisture, these data have not been fully analyzed and provided to DCM. Dr. Long's testing monitored surface temperatures which does not necessarily translate to subsurface temperatures which could potentially impact turtle nesting. The Town has requested permission to replace the bales that have washed away, and Dr. Long is willing to do additional monitoring and adjust his monitoring to look at subsurface temperatures. Dr. Long indicated that they conducted informal vegetation surveys while on site and did not observe any introduced non-native species around the bales. Straw bales are considered to have potential to be a better material than sand fencing due to the availability, cost, less debris, less hazard, and demonstrated capability to capture and store sand. This is an easily manipulated material that can be thrown out very easily and placed in the same configurations as required for sand fencing, although it does have a larger footprint than traditional sand fencing. Although there hasn't been a lot of debris material when the bales wash out, we have only seen a limited scope and scale with two projects completed. The US Fish and Wildlife Service and Wildlife Resources Commission are concerned that buried straw bales could change sediment characteristics of turtle nests as they become buried, potentially leading to false crawls or impact from moisture from buried bales. This could impact the viability of turtle nest and how their decomposition could increase temperature and potentially skew sex ratios of hatchlings and could cause difficulties in the emergency of newly hatched sea turtles. The resource agencies have also expressed concerns regarding the timing of these projects, particularly regarding the installation during turtle nesting season. Lastly, they have expressed concerns about the Division's ability to enforce rules on the use of straw bales given the ease with which people can

install them. There are also questions about removal if there are impacts or a lot of debris that remains. We really don't know what will happen in the long-term to these bales once they become fully covered. The CRAC wishes to move forward with rulemaking language and understands that modifications to the rule language may be needed in the future. Some of the concerns expressed by the CRAC included not allowing an individual property owner to install straw bales as the current proposal only allows local governments or HOAs with more than a mile of shoreline to install the bales. There were also concerns raised about imposing installation windows and review through US Fish and Wildlife and WRC and potential permit denials. There was also discussion about removing the bindings, the prohibition on staking, and limiting the use of straw bales. The CRAC did not want to delay efforts to allow the use of straw bales and proposed the CRC review the draft rule language.

Part (a) of the rule states that straw bales shall only be installed by local governments or local homeowner's associations with more than one mile of ocean shoreline. Parts (b) and (c) follow existing rule language for sand fencing. Straw bales shall not impede public access to the beach for recreational use of the beach or impede emergency vehicle access. The bales shall not be installed in a manner that impedes or restricts established common law or statutory rights of the public's use of the beach. Straw bales shall not be installed in a manner that impedes or traps endangered sea turtles, sea turtle nests, or sea turtle hatchlings. CAMA permits for straw bales will be subject to review by the WRC and USFW to determine whether the proposed design on installation will have an adverse impact on any threatened or endangered species. Part (d) requires that the permittee remove any ties or bindings from the bales during installation. Part (e) prohibits the staking of the bales or otherwise securing them to the beach or dunes. Part (f) states that straw bales shall be placed as far landward as possible to avoid interference with the turtle nesting, public access, and recreational use of the beach. The bales cannot exceed two feet in width and three feet in height and are limited to ten foot sections installed at a 45 degree angle. No portion of the bale section shall extend more than ten feet waterward of the first line of stable and natural vegetation, the toe of the frontal or primary dune, or the erosion escarpment. A minimum of seven foot spacing shall be maintained between any section and Part (g) requires that any non-functioning or damaged straw bale sections that have moved from their authorized alignment shall be repaired or removed by the permittee.

Chair Cahoon asked that staff provide the Commission with periodic updates on the efficacy of the straw bales and provide an update on the study report from Dr. Long when it is completed.

Neal Andrew made a motion to approve 15A NCAC 07H .0313 for public hearing to allow for wheat straw bales with a maximum height of three feet to be used as sand fencing, to allow staking of the bales, require the removal of any bindings, and require removal of the staking in Section (g) when bales are damaged, covered, or gone. Bob Emory seconded the motion. The motion passed unanimously (Hennessy, Holman, Emory, High, Smith, Baldwin, Andrew, Cahoon, Salter, Bryan, Shuttleworth, Yates, King).

LEGAL UPDATES

Update on Litigation of Interest to the Commission

Phillip Reynolds

Phillip Reynolds stated since you received the legal update from Mary Lucasse, the Lowe third party petition will be closed as the time has passed for it to be challenged. The Cox third party hearing request was denied by the Chair. The Chair granted a third-party request from Golovka and petitioners indicated that they intend to file a petition for a contested case hearing which has not yet been received.

OLD/NEW BUSINESS

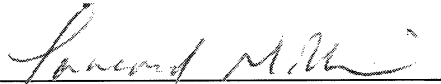
Chair Cahoon stated during the public comment session, we heard a concern about some of the language in the proposed rule to allow straw bales. Justin Whiteside was recognized and addressed the Commission to express concerns about WRC and USFW review of permit applications. This review resulted in a denial of the CAMA permit application by the Town of Ocean Isle Beach and required a variance from the CRC. The Town is concerned that identical language in the proposed rule will result in denials and variance requests. Tancred Miller stated, the way the current rule is written requires that these two agencies must be definitive on whether there will be an adverse impact, if not then there would be not have an impact on any permit decision.

Larry Baldwin stated the subcommittee on third party hearing requests has held its first meeting and an update will be provided to the full Commission following our next meeting.

The next meeting of the CRC is scheduled for August 27-28 and will be held at the Beaufort Hotel. There will be no meeting in June.

With no further business, the CRC adjourned.

Respectfully submitted,


Tancred Miller, Executive Secretary


Angela Willis, Recording Secretary