

NC COASTAL RESOURCES COMMISSION (CRC)
February 23-24, 2011
NOAA/NCNERR Auditorium
Beaufort, NC

Present CRC Members

Bob Emory, Chairman
Joan Weld, Vice-Chair

Chuck Bissette	Ed Mitchell
Renee Cahoon	Lee Wynns
Charles Elam	Benjamin Simmons
David Webster	Pat Joyce
Jerry Old	James Leutze (present at 3:30 p.m. 2/23)
Bill Peele	
Melvin Shepard (absent 2/24)	

Present CRAC Members

Ray Sturza, Chair	J. Michael Moore
Bob Shupe	Harry Simmons
Charles Jones	Bert Banks
Tim Tabak	Debbie Smith
Dave Weaver	Judy Hills
Missy Baskerville (for Chris Mele)	Bryant Buck
Bill Morrison	Tracy Skrabal
Wayne Howell	Spencer Rogers
Dara Royal	Joe Lassiter
Webb Fuller	Lee Padrick
Anne Deaton	Cyndi Karoly
Phil Harris	

Present Attorney General's Office Members

Jennie Hauser
Ward Zimmerman
Christine Goebel
Mary Lucasse

CALL TO ORDER/ROLL CALL

Chairman Emory called the meeting to order and reminded Commissioners of the need to state any conflicts due to Executive Order Number One and also the State Government Ethics Act. Chairman Emory stated the State Government Ethics Act mandates that at the beginning of each meeting he remind all members of their duty to avoid conflicts of interest and inquire as to whether any member knows of any conflict of interest or potential conflict with respect to matters to come before the Commission. If any member knows of a conflict of interest or a potential conflict of interest, please state so when the roll is called.

Angela Willis called the roll. Veronica Carter was absent. Renee Cahoon stated she would recuse herself from discussion and voting on the Town of Nags Head Land Use Plan. Based upon this roll call, Chairman Emory declared a quorum.

VARIANCES

Walton O'Neal (CRC-VR 11-01) Emerald Isle, Static Line Exception
Ward Zimmerman

Ward Zimmerman of the Attorney General's Office represented Staff. Mr. Zimmerman stated the O'Neals own a vacant oceanfront lot in Emerald Isle. Mr. O'Neal is present and will speak on behalf of the Petitioners. The Petitioners propose to construct a new single-family residence and the proposed development does not meet the oceanfront erosion setback requirements set forth in 15A NCAC 07H .0306(a)(8). The Town of Emerald Isle has received an exception to the static line, however the O'Neal's proposed development is seven feet past the neighbors to the west. Mr. Zimmerman reviewed the stipulated facts of this variance request. Staff and Petitioners agree on all four statutory criteria which must be met in order to grant the variance request.

Walton O'Neal spoke on behalf of himself and his wife, Helene. Mr. O'Neal reviewed the stipulated facts which he contends support the granting of this variance request. Mr. O'Neal stated this request is to allow building 7.3 feet oceanward of where they could currently build.

Renee Cahoon made a motion that strict application of the applicable development rules, standards, or orders issued by the Commission cause the Petitioner unnecessary hardship. Chuck Bisette seconded the motion. The motion passed unanimously (Joyce, Mitchell, Webster, Simmons, Peele, Wynns, Weld, Shepard, Bisette, Cahoon, Elam, Old).

Renee Cahoon made a motion that hardships result from conditions peculiar to the Petitioner's property. Jerry Old seconded the motion. The motion passed unanimously (Joyce, Mitchell, Webster, Simmons, Wynns, Peele, Weld, Shepard, Bisette, Cahoon, Elam, Old).

Renee Cahoon made a motion that hardships do not result from actions taken by the Petitioner. Jerry Old seconded the motion. The motion passed unanimously (Joyce, Mitchell, Webster, Simmons, Wynns, Peele, Weld, Shepard, Bisette, Cahoon, Elam, Old).

Renee Cahoon made a motion that the variance request is 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 will preserve substantial justice. Jerry Old seconded the motion. The motion passed unanimously (Joyce, Mitchell, Webster, Simmons, Wynns, Peele, Weld, Shepard, Bisette, Cahoon, Elam, Old).

This variance was granted.

Wayland (CRC VR 11-02) Oak Island, Oceanfront Setback
Ward Zimmerman

Ward Zimmerman of the Attorney General's Office represented Staff. Mack Paul of K&L Gates represented Petitioners. Mr. Zimmerman stated the Petitioners own a single family residence on an oceanfront lot in Oak Island, Brunswick County. Petitioners propose to replace the residence's current 29 square foot deck with a 300 square foot deck. The Petitioner's proposed development does not meet the ocean hazard setback requirement in 15A NCAC 07H .0306(a)(2) and 07H .0309(a). Mr. Zimmerman reviewed the stipulated facts for this variance request and stated that Staff and Petitioners do not agree on any of the four statutory criteria which must be met in order to grant the variance request. Mr. Zimmerman stated the Petitioners rely on the Williams Case from the Court of Appeals which says that to show unnecessary hardship a petitioner must show that he has been denied the ability to make any reasonable and significant use of his property. Financial loss standing alone does not constitute an unnecessary hardship in itself. The Petitioners have made reasonable use of their property. This property has been rented out for the past six years so Staff contends that this hardship has not been met. Petitioners bought this piece of property with the existing deck after the static line had been established. Staff believes this is an instance where an enlargement of a deck oceanward of the static vegetation line is in conflict to the spirit, purpose and intent of the static line exception.

Mack Paul, of K&L Gates, stated the biggest issue before the CRC today is the hardship issue. Mr. Paul discussed the four statutory criteria. Mr. Paul stated that there is case law that talks about the variance criteria. We don't have to show that there is no use of the property; we have to show that there is no reasonable use. This property has gone up four times in value in tax assessments, meanwhile it is more difficult to rent because there is no deck available. This request does not run afoul of the rule because of the vegetation line but because of the static line. There are a couple of peculiar conditions here. Oak Island has a project that occurred 10 years ago yet the Town has not been able to get an exception because it has taken a number of years to go through the federal process. Other communities along the coast have been able to get their exceptions. The property owner did not see fit to build a deck like all the other properties and this is a unique circumstance to not have a deck.

Melvin Shepard made a motion that strict application of the development rules, standards or orders issued by the Commission do not cause the Petitioner unnecessary hardships. Jim Leutze seconded the motion. The motion passed unanimously (Leutze, Joyce, Mitchell, Webster, Simmons, Wynns, Peele, Weld, Shepard, Bissette, Cahoon, Elam, Old).

Joan Weld made a motion that hardships do not result from conditions peculiar to the Petitioner's property. Jerry Old seconded the motion. The motion passed unanimously (Leutze, Joyce, Mitchell, Webster, Simmons, Wynns, Peele, Weld, Shepard, Bissette, Cahoon, Elam, Old).

Melvin Shepard made a motion that the hardships result from actions taken by the Petitioner. Jerry Old seconded the motion. The motion passed unanimously (Leutze, Joyce, Mitchell, Webster, Simmons, Wynns, Peele, Weld, Shepard, Bissette, Cahoon, Elam, Old).

Jim Leutze made a motion that the variance request will not be consistent with the spirit, purpose and intent of the rules, standards or orders issued by the Commission; will not secure the public safety; and will not preserve substantial justice. Bill Peele seconded the motion. The motion passed unanimously (Leutze, Joyce, Mitchell, Webster, Simmons, Wynns, Peele, Weld, Shepard, Bissette, Cahoon, Elam, Old).

This variance was denied.

PRESENTATIONS

Sandbag Stakeholders Meeting Summary

Mike Lopazanski

Mike Lopazanski stated we held a fourth sandbag stakeholder meeting today. Chairman Emory indicated that he would like to have the group wrap up their work and develop some recommendations that the Commission could consider. These recommendations will be before the Commission during the next meeting for discussion.

The discussion today was about the status of enforcement. With the end of the moratorium the CRC directed staff to continue with enforcement action. Staff reassessed the top twenty that were originally identified for removal. Thirteen are still on the list. The others have been removed in some manner along the way. We have sent out thirty day removal notices this week. We had further discussion along the same themes as the other stakeholder meetings. We talked about the condemnation of structures, FEMA National Flood Insurance Program involvement, and the continuing existence of these structures out along the beach. We talked about a more comprehensive approach to removing structures similar to what is done in Texas and to provide funding for the relocation of structures. We talked about possible funding connected to the Beach and Inlet Management Plan. We discussed the current condition of sandbags on the beaches, most notably in South Nags Head. We had some discussion related to tax payer support as a remedy versus personal/private responsibility for these structures. We discussed again the covering of sandbags during beach nourishment projects. We also considered additional criteria that might be utilized in assessing the removal such as the time the structure has been condemned. Chairman Emory suggested that we look at the issues we have been talking about in two categories. The first is structures that are out on the beach and the second being the continuing issue of the sandbag policy and what to do about bags with expired permits.

For the structures that remain on the beach we discussed the state funding source for beach management to include the removal of structures. There was a proposal to institute a tax credit whereby the agreement to remove the structure should it become threatened by the ocean then you could receive certain credits along the way. There was an idea for cash payments to remove the structure before it falls in since it is cheaper to remove it while it is still whole. We talked about the Hazard Mitigation Program as an option for a solution. We discussed a mechanism for private entities to salvage derelict structures.

For the sandbag policy we talked about a community sandbag management plan as a way to handle the permitting and subsequent removal of sandbags. We talked about regulating size and

not worrying so much about the time limit. We discussed bonding requirements to ensure removal and some of the pitfalls involved with that. We also discussed the possibility of using escrow accounts to ensure removal of structures.

Hazard Mitigation Grant Program
Chris Crew, NCDEM

Chris Crew, Branch Chief for Hazard Mitigation with the Division of Emergency Management, stated he also serves as the State Hazard Mitigation Officer. Mitigation means to make less severe or painful. FEMA guidance says that mitigation is any sustained action to reduce or eliminate long-term risk to human life and property from natural hazards. The risk is the bottom line when it comes to what we will mitigate. We look at risk as a function of both the probability of an impact and then what is in the way of the hazard that is going to be impacted. Our mission statement says that our mission is to assist North Carolinians, communities, state agencies, local governments and businesses to become less vulnerable to the impacts of natural hazards. We strive to achieve this through the effective administrative of hazard mitigation grant programs, hazard risk assessments, wise floodplain management, and a coordinated approach to mitigation policy through state, regional and local planning activities. We mitigate to try to reduce loss of life and property, to reduce response and recovery costs, and to minimize future losses. Projects that we seek funding for are projects to prevent something from happening in the future. The line gets blurred following major disasters because there is an appearance that large property acquisitions are because of flooding or other disasters. The real reason we do it is because the same properties could receive the same damages again. We have a couple of different mitigation actions that are identified in various FEMA planning documents. We look at prevention actions and these are the highest ordered of mitigation. Prevention includes zoning and land use planning and things that local governments can undertake to keep property from getting in the wrong place to begin with. We look at property protection actions and these would be acquisitions, demolitions, retrofittings and elevations. We also do public education and awareness. We take actions to inform and remind the public about hazards in the State and that there are actions they can take to avoid losses. Mapping and outreach efforts are examples of this. We look occasionally at natural resource protection actions such as erosion, sediment control, wetland protection, or environmental restoration designed to reduce the intensity of hazard effects. Emergency services protection actions are provisions for protection of warning systems or infrastructure. There are also structural actions which are large-scale actions such as channel modification, dams, levees, flood and storm water control facilities, and sea walls that directly protect people and property at risk. The Division and the Mitigation program do not have a lot to do with large-scale structural actions because our granting sources have prohibitions on duplication of benefits. These types of activities are typically provided by the Corps of Engineers. There are project eligibility requirements for all of the funding sources we use. The applicant community must have a hazard mitigation plan. The project must have a beneficial impact. The project must conform with environmental laws (NEPA) and must be cost effective. Local hazard mitigation planning identifies community specific hazards, risks and possible impacts as well as mitigation goals and actions supported by the community that is designed to reduce risk. The plan adoption process requires the offering of public participation. The projects must have a beneficial impact. It has to independently solve problems that are repetitive or pose a significant risk to public health and safety if it is left unresolved. The plans must meet the

requirements of the NEPA. It also must conform with floodplain management and environmental considerations and not have an adverse impact on the human or natural environment. Plans must not cost more than the anticipated value of the reduction in both direct damages and subsequent negative impacts on the area if future disasters occur. For every dollar spent the result must be at least one dollar in savings over the lifetime of the project. There are five federally funded grant programs that we work with. The hazard mitigation grant program is a disaster based program and there must be a presidential declaration to secure funds. Currently the state has to experience 10.2 million dollars in uninsured losses before we are eligible. Based on the current census we believe that the disaster threshold will go up. Over the last 12 years the average disaster has cost about 12 million dollars for the HMGP. The Pre Disaster Mitigation Program is an annually funded program designed to try to get ahead of these disasters and reduce the future costs of them. This is typically funded between 60-200 million per year. The average is about 160 million per year. The Flood Mitigation Assistance Program, the Repetitive Loss Program and the Severe Repetitive Loss Programs are aimed specifically at reducing claims on the National Flood Insurance Program. The only eligible properties for these three programs are flood insured properties that have had two or more losses in the previous rolling ten year periods. The Repetitive Flood Loss Program is an attempt to identify the worst of the worst repeat offenders in the NFIP. There are approximately 60 structures on that list in North Carolina. The other use of this program is if we can identify a local government that does not have the capacity to manage one of these projects on their own and they have the eligible properties within their jurisdiction then we can apply for funds. The Severe Repetitive Loss Program is aimed specifically at repetitive loss NFIP structures. These are properties that have four or more claims in the previous ten year period or where the amount of the claim is approaching the value of the property. Traditionally the State of North Carolina has picked up the entire non-federal match. When we do an acquisition project the local government has to agree to take title to the underlying property. The structure is removed and then the local government records a deed restriction holding the property as public open space in perpetuity. All these programs are voluntary on the part of the local government and the individual participants. We do not use powers of condemnation to compel anyone to sell or elevate their property. In coastal North Carolina we do not want to encourage development in high hazard areas. Our view of high hazard areas are floodplains, coastal V-zones, and the landslide hazard areas. We do not want to duplicate other programs with benefits. We would not consider it a good investment of mitigation dollars to purchase a property that was on a lot that is unbuildable because when that property becomes substantially damaged it will be removed and not be replaced. Our vision is the vision of the local government and the citizens. The planning process at the local level determines which mitigation measures will be pursued. Our authority stems from the Stafford Act and various parts of the 44 Code of the Federal Regulations, and NCGS 1166-A. Our policies are laid out in the State Hazard Mitigation Plan and it is available on the website. Our state has a hazard mitigation plan and it is the basis for all grant activity. Just like the local plans we have to describe the process; we have to have a risk assessment, the goals and measures, maintenance process, and adoption of the plan. The single goal that the State has identified is to reduce the State's vulnerability and increase resilience to natural hazards in order to protect people, property and natural resources. There are five objectives to support this goal. The first is to support the capacity of the State to implement mitigation policies, practices and programs. The second is to boost the commitment to mitigation. Another objective is to improve communication, collaboration and integration among stakeholders. We also want to increase public awareness

and understanding of hazards and their risks as well as mitigation opportunities. The last objective is to identify and pursue mitigation activities appropriate to identified hazards. There are five strategies that are applied to each of the five objectives in the State Hazard Mitigation Plan. The first is training. This will increase awareness and knowledge of hazard mitigation principles and practice among local public officials, local planners, emergency management practitioners and North Carolina Emergency Management staff. The second strategy is staffing. This will provide direct technical assistance to local government officials. The third strategy is data to cooperate and coordinate with partners in industry, academia and at all government levels in collection and interpretation of appropriate data. Technology will coordinate with all levels of government and industry to incorporate and maximize use of technology. The last strategy is funding. This strategy is to identify and secure funding to implement mitigation planning and projects. Our standard operating guide governs how mitigation projects are administered and addresses the procurement of services, financial and grants management, application of the Uniform Relocation Act, property acquisition, property demolition, and structural elevation. North Carolina Emergency Management retains the authority to establish funding properties. Participation is voluntary for both government and property owners. Owner-occupied structures receive top priority for funding. North Carolina Emergency Management establishes the basis for market value. North Carolina Emergency Management will not generally participate in an acquisition project if the rules or policies of another agency render the property unbuildable. North Carolina Emergency Management will not participate in relocation or elevation projects in high hazard areas including floodways and coastal V-zones. Relocated structures must be sited outside of the special flood hazard area. Owners of elevated properties must record a deed restriction calling for maintenance of NFIP flood insurance in perpetuity.

MINUTES

Charles Elam made a motion to approve the November 17-18, 2010 CRC meeting minutes. Bill Peele seconded the motion. The motion passed unanimously (Weld, Leutze, Bissette, Cahoon, Elam, Old, Peele, Simmons, Wynns, Joyce) (Mitchell absent for vote) (Webster abstained).

EXECUTIVE SECRETARY'S REPORT

DCM Director Jim Gregson gave the following report.

Budget

Governor Perdue recently announced that the state's \$3.7 billion budget deficit for the next fiscal year shrunk by more than \$1 billion, to \$2.4 billion, thanks to some better-than-expected revenues and lower-than-expected costs in the current year's budget. In her budget proposal released last week, the governor highlighted her plan to combine 14 state agencies into eight Cabinet-level departments. Her budget offers an early retirement package that could potentially eliminate 1,000 positions, continues the state's current hiring freeze and salary freeze, eliminates, reduces or reorganizes 176 state programs which will eliminate more than 5,000 state positions. Combined with targeted agency cuts, state government will eliminate an estimated 10,000 positions. For DCM, the budget includes fund shifting three positions in the permitting and enforcement programs to permit receipts. In addition, one position in the Strategic Planning Program and one position in the Planning and Access Program would be shifted to grant support. This will result in the elimination of five appropriated positions within DCM. The budget proposed for DENR recommends a department-wide reduction of 224.5 appropriated positions, plus an additional 68 positions, 50% of which must be permitting positions in those divisions

where regulatory activity has declined due to the economy. The remaining reductions should focus on middle management positions. DCM was asked to eliminate one permitting position.

Rules Reform

Governor Perdue released a list of 900 rules that she and her staff had identified as “outdated, unnecessary, or vague,” and has turned the list over to the General Assembly to take action in repealing the rules. Many of these rules relate to programs or procedures that are no longer in use. No CRC rules were included on this list. DENR did submit a list of further potential rules that could also be eliminated, including 7J. 0303, Contested Case Hearing Procedures. This rule duplicates language in the Administrative Procedures Act and is no longer necessary.

Clean Marina

DCM will partner with the Division of Water Quality to hold two Clean Marina workshops for marina owners next month, in Beaufort on March 1 and in Wilmington on March 7. This workshop will provide marina owners/operators with up-to-date information about CAMA permits, DWQ permit requirements, No Discharge Zone designations, and pumpout system information.

Staff News

Dr. Bo Dame, manager of our Northern coastal reserve sites, left DCM in December for a position at Chowan College. Due in part to the hiring freeze, Claudia Jones, who has been a field representative in the Elizabeth City office, will be serving as the temporary Northern Sites Manager through June 30. Dr. Jeff Warren, DCM’s coastal hazards specialist, recently left DCM for a position as Director of Environmental and Regulatory Affairs in Senator Phil Berger’s office. Public Information Officer Michele Walker’s position has moved to the Department’s Office of Environmental Education and Public Affairs. Michele will continue to serve as DCM’s public information officer, and will also be working on department website initiatives. Morehead City compliance representative Ryan Davenport and his wife Sarah welcomed daughter Isla James on February 11.

DENR ASSISTANT SECRETARY REMARKS

Chairman Emory welcomed Robin Smith, Assistant Secretary for Environment.

Robin Smith stated we talked at the last meeting about Executive Order #70. This is the Governor’s Executive Order concerning rulemaking. This Executive Order had several different pieces to it. One of the initial pieces asked agencies to look at rules that are underway to be sure that the rules were necessary and to be sure that the rules are not unduly burdensome. There was also a piece of the Executive Order that was intended to look at existing rules. The Governor asked the Executive Branches to look at existing rules and identify any rules that we believe are unnecessary or unduly burdensome. We did identify a handful of rules that our agency felt were ready for repeal. In another part, the Governor established a website through OSBM inviting citizens to identify rules that they believe are unnecessary or unduly burdensome. That process has been ongoing. As a result of this process, the Governor has identified about 900 rules that she has recommended for repeal. DENR had about 200 of these 900 and most of them had to do with programs that no longer exist. There is an ongoing review through OSBM of much more substantive rules that have been identified by citizens. We are providing feedback to OSBM on these rules. The most recent piece of implementation information has to do with new

rulemaking. OSBM has requested that agencies provide notice to that office prior to publishing notice of the proposed rule and prior to adoption. This is new guidance for us. OSBM has asked for a monthly notice. OSBM is seeing most of our rules anyway because of the fiscal review process. If a rule triggers the need for a fiscal analysis then it is reviewed by OSBM anyway prior to publication of the notice in the NC Register.

Senate Bill 22 has passed the Senate and been sent to the House. This Bill essentially says that an agency may not adopt a rule that results in additional costs to the person subject to the rule unless the rule falls into one of several categories. The categories are that it would either address a serious and unforeseen threat to public health, safety or welfare. This is the language used to justify emergency rules and most of our Commission's rules do not fall into this category. The second alternative is that an act of the General Assembly or the United States Congress expressly requires the agency to adopt the rule. The third is a change in federal or state budgetary policy so the rule responds to the change. The next alternative is that the rule responds to a federal regulation or a court order. We have talked to members about some of the possible implications of a Bill this broad. The House does not seem to be in a great hurry to take this Bill up and there seems to be a different point of view on the House side about how broad to go with a Bill like this.

The other legislative piece is a Senate Joint Resolution (SJR17). This would create a new joint legislative regulatory reform committee. It would consist of nine members from the Senate and nine members of the House. The idea would be to have this study committee do something similar to what the Executive Order process is doing which is to go out and hold meetings across the state to get input from citizens on both the rulemaking process and rules that may be presenting a particular impediment to economic development or rules that are unduly burdensome. There is a sense of fairly strong support in both bodies for creating the legislative joint study committee.

The Governor's budget was released last week. Under the Governor's proposed budget, the Department would see a reduction of about 13%. My understanding is that across State government there were additional reductions for the next biennium ranging from 7-15%. DENR was toward the higher end of the range. The Joint Appropriations Subcommittee that deals with the Department's budget has been meeting three mornings per week for the past two weeks and it looks like they will continue on that track until one House produces its budget. The leadership of the General Assembly has put out their budget targets for each of the appropriations subcommittees. This year, more than in the past, we are getting a lot of questions along the lines of which programs in the Department are federally mandated programs versus programs that are not federally mandated. We are being asked which rules are more stringent than corresponding federal rules. There seems to be a lot of interest in the question of whether we need to do things that are beyond what is necessary to meet federal environmental mandates.

Bill Peele asked Ms. Smith about the Bill that is in the Senate that talks about terminal groins. Ms. Smith stated it was either filed late yesterday or today and it looks a lot like the CRC's recommendations in that it includes a lot of the requirements to justify terminal groin approval. There is no bonding requirement, which was a recommendation of the Commission. There seems to be a little more play in terms of the number of structures that could be authorized.

There is language in the Bill that would allow a terminal groin on each shoreline of an inlet, except that there could be one additional groin in an area located near a federal navigation channel. The groin Bill is likely to be up for its first committee hearing next week in the Senate Agriculture and Environment Committee. Ms. Smith told Commissioners that if they had comments on the draft Bill language then the comments should be sent to Jim Gregson.

CHAIRMAN'S COMMENTS

Chairman Emory stated at the CHPP Steering Committee meeting we discussed estuarine shoreline management, especially shoreline stabilization techniques. This has been an area of interest to the Commission for awhile, but while we are doing some field trials and some studies we have put it on the back burner. Dr. Fear is making progress on this and the Commission should see data by mid-year and even more by the end of the year that will allow us to take this topic up again. We heard that there has been a groin bill introduced in the Legislature. We will know the fate of this bill by the next time we meet. We will likely be discussing next steps resulting from this bill. The Commission had developed a draft sea level rise policy at our last meeting and asked Staff to begin discussing this policy with local governments. It has become obvious that we unintentionally and unnecessarily alarmed some local governments. We are going to talk about it some more today have a chance to make some changes to the draft policy in response to some of the concerns we have heard from local governments.

CRAC UPDATE

Ray Sturza, Chair of the CRAC, stated I represent Dare County on the CRAC. The CRAC discussed an area wide picture of what is going on along the coast of North Carolina as a region and how it is effecting our local governments and how the CRAC may serve as an adjunct to the Commission in terms of providing information and feedback. We also had a presentation from Cyndi Karoly. One of the issues raised at the last meeting concerned issues that have been arising in our urgency to establish a way to retain stormwater on site. We have gravitated toward the construction of on-site retention ponds. One of the ramifications that we did not recognize is that the maintenance of these ponds has become an issue. We find that they need to be maintained and folks that moved into the developments feel that it is someone else's responsibility. We are not sure what the answer is, but local governments should be prepared in advance for it. The other alternative would be the development of stormwater collection systems. The CRAC also heard from Mike Lopazanski concerning our new committee structure. We provided each member an opportunity to request an assignment to one of the two new committees that will be established.

PRESENTATIONS

CRC Offshore Energy Exploration Recommendations (CRC 11-01)

Mike Lopazanski

Mike Lopazanski stated a Bill had been introduced in the General Assembly in response to the BP Spill in the Gulf of Mexico. Senate Bill 836 addressed the liability for damages caused by the discharge of oil into state and coastal waters. The Bill added information requirements for state consistency review. It also directed the CRC to review laws and regulations related to offshore energy permitting and development. It directed the Department of Crime Control and Public Safety to review the oil spill contingency plan and directed DENR to review the

limitations on recovery of damages to public resources from oil or other hazardous substances. This was a reaction to the BP disaster. The Division of Coastal Management reviews projects associated with federal activities such as beach nourishment, dredging, as well as oil and gas activities in the Outer Continental Shelf area. It is through the federal consistency provisions of the Coastal Zone Management Act that the state gets to comment on either a federal activity or an action that requires a federal permit even when it may be outside the state's jurisdictional boundaries. The amendments to CAMA specifically spoke to the consistency review of offshore projects. The General Assembly incorporated many of the provisions that are in the CRC's 7M .0400 Coastal Energy Policies into the law. Elements from the federal requirements were also incorporated. Since the CRC met in November, there has been additional activity at the federal level. New regulations that focus on workplace safety and oversight of environmental safeguards were given a lot of attention. The federal government has also begun the process of developing a programmatic EIS for geological and geophysical studies for the Mid Atlantic and South Atlantic planning regions. The Bureau of Ocean Energy Management is continuing moving forward with the seismic studies and are seen as being critical to future development of oil and gas, wind energy, and non-energy mineral resource issues. The Mid Atlantic and South Atlantic will not be included in the 2012-2017 lease program. The BOEM's intention is to focus on areas that currently have active leases. The public comment period on the next five year lease plan ends on March 31. Other activities that have occurred since November include the further division in the Bureau of Ocean Energy Management. The Department of Interior has continued to undergo reorganization for the Bureau. The Bureau of Ocean Energy Management is going to be responsible for leasing, plan administration, environmental studies, NEPA analysis, resource evaluation, as well as the renewable energy program. The new Bureau of Safety and Environmental Enforcement will administer the safety and environmental regulation functions. The CRC has done a lot of work with regard to offshore energy. The Commission had its own ocean policy study that resulted in rule changes that addressed the wind facilities as well as the broadening of the CRC's coastal energy policies to be more inclusive of all ocean-based energy development. The Legislative Research Commission Advisory Subcommittee on offshore energy exploration recommended further study and analysis and also recommended that their work be rolled into the Governor's Advisory Panel. The Governor's Scientific Advisory Panel has planned a number of public meetings to gather public comments and input on energy development off the coast of North Carolina. The weather caused them to cancel two of them but they did hold one meeting. The big focus from the public's point of view was to seek ways of enhancing our abilities to develop alternative energy sources, primarily wind energy resources off of the coast as opposed to pushing for oil and gas development. The Governor's Advisory Panel is still in the process of drafting their report. Another offshore energy group has been formed, the N.C. Wind Energy Task Force, and is coordinated by the Minerals Management Service in order to help the state with development of offshore wind projects. We are likely to see additional changes at the federal level. These changes will have bearing on how offshore projects are permitted. Since North Carolina is no longer included in the 2012-2017 five-year lease program, Staff recommends that the CRC's recommendation to the Legislature be to allow the Governor's Scientific Advisory Committee to complete its work.

Jim Leutze made a motion that the Coastal Resources Commission recommend to the General Assembly to allow the Governor's Scientific Advisory Committee to complete its

work. Charles Elam seconded the motion. The motion passed unanimously (Leutze, Joyce, Mitchell, Webster, Simmons, Wynns, Peele, Weld, Bissette, Cahoon, Elam, Old).

Marine Spatial Planning and Efforts to Streamline OCS Wind Energy Development (CRC 11-08)
Scott Geis

Scott Geis stated this is an overview of Coastal and Marine Spatial Planning and federal activities to expedite the permitting of offshore wind facilities. Marine spatial planning is defined by the interagency ocean policy task force. The definition is a comprehensive, adaptive, integrated, ecosystem-based and transparent spatial planning process, based on sound science for analyzing current and anticipated uses of ocean, coastal and Great Lakes areas. It is a process for areas most suitable for various types or classes of activities in order to reduce conflicts among uses, reduce environmental impacts, facilitate compatible uses, and preserve critical ecosystem services to meet economic, environmental, security, and social objectives. CMSP is an attempt to move away from traditional, single-sector management approaches to enhance resource protection and development. Federal and state government agencies are developing Coastal and Marine Spatial Planning capabilities to help make better resource management decisions, particularly as demand for ocean space and resources continue to grow. This growth can be attributed to the emergence of new human uses converging with traditional human development and harvesting of ocean and coastal resources. Comprehensive planning enabled NOAA, the U.S. Coast Guard and several other government agencies and stakeholders to examine shipping needs, proposed permitting of deepwater natural gas port locations, and endangered whale distributions. This was an effort to successfully reconfigure the Boston Traffic Separation Scheme (TSS) to reduce the risk of whale mortality due to collisions with ships in Stellwagen Bank National Marine Sanctuary. The reconfigured TSS reduced the risk of collision by an estimated 81% for all baleen whales and 58% for endangered right whales. Industry transit times increased by only 9-22 minutes depending on speed and conflict with deepwater ports was eliminated. In addition, the new route decreased the overlap between ships using the TSS, commercial fishing vessels, and whale watch vessels, thereby increasing maritime safety. CMSP has the significant potential of applying this integrated, multi-objective, multi-sector approach on a broader, sustained scale. In this scenario we have essentially a narrow focus. There is a cause and effect situation that is likely occurring or a reactive process. For North Carolina we need to think what is the driver and how do we incorporate this driver into a larger plan for a state-level approach to CMSP. At this moment, the driver appears to be wind energy and how these facilities are going to go in and impact existing uses of our marine resources and state and federal waters. On June 12, 2009, there was a memorandum sent out to the heads of executive departments and federal agencies establishing an Interagency Ocean Policy Task Force. This task force was charged with developing recommendations to enhance national stewardship of the ocean, coasts, and Great Lakes to promote the long-term conservation and use of these resources. The task force was led by the U.S. Center for Environmental Quality and included 24 senior level policy officials from across the Federal Government. In September 2009, the task force released its interim report. In December 2009, the task force released its interim framework for effective CMSP. In July 2010, the final task force recommendations were released and President Obama signed an Executive Order establishing a national policy for the stewardship of the oceans, coasts, and Great Lakes. This National Oceans Council represented the first ever national ocean policy. They looked at how to strengthen the government structure to provide

high level coordinated efforts and attention to the resources and attention to demands on the resources. There were nine national priority objectives which included ecosystem –based management, coastal and marine spatial planning, regional ecosystem protection and restoration, and ocean, coastal and Great Lakes observations, mapping and infrastructure. One of the priorities that was established for the National Oceans Council was the development of a national information management system (NIMS). This is data acquisition and the identification of the resources. Draft plans for NIMS implementation is due in August 2011. Final NIMS implementation plan is due November 2012. There has already been significant work done on this database in the form of the Multipurpose Marine Cadastre. This is an effort by NOAA to create an integrated marine information system that provides legal, physical, ecological, and cultural information in a common geographic information system framework. This is particularly beneficial to those involved in CMSP efforts that involve finding the best location for renewable energy projects. It provides direct access to authoritative data on marine boundaries, jurisdictions, habitat and biodiversity, geology and bathymetry from federal and state sources. In November 2010, the Smart from the Start Initiative was launched. The key players are Secretary Salazar of the Department of Interior, the Bureau of Ocean Energy Management, and NOAA. It is a plan to expedite appropriate commercial-scale wind energy development in America's waters. A lot of the momentum of this initiative has come from the Cape Wind lease. It has gone through significant environmental review. The national goal is for generation of 80% of the nation's energy from renewable sources by 2035. The goals of the initiative are to identify priority wind energy areas for potential development and designate federal lease blocks, improve coordination with local, state and federal partners, and to accelerate the leasing process. Mid-Atlantic regional environmental assessments for wind energy areas are being developed using CMSP principles. Transmission lines should be addressed simultaneously. In February 2011, the Departments of Energy and Interior released a coordinated strategic plan for offshore wind energy. The plan focuses on overcoming three key challenges; the relatively high cost of offshore wind energy, technical challenges surrounding installations, operations, and grid interconnections, and the lack of site data and experience with the project permitting process. There is money that is investing into these specific activities including technological development, removing market barriers, and the next generation of turbines. Based on stakeholder and public participation, BOEM will prepare regional environmental assessments for wind energy area to evaluate the effects of leasing and site assessment activities on leased areas. If no significant impacts are identified, BOEM could offer leases in these mid-Atlantic areas as early as the end of 2011 or early 2012. Then a comprehensive, site-specific NEPA review process will need to be conducted for the construction of any individual wind power facility. BOEM will work directly with the project managers to ensure that these reviews take place on an aggressive schedule. The National Offshore Wind Strategy is pursuing a scenario that includes deployment of 10 gigawatts of offshore wind generating capacity by 2020 and 54 gigawatts by 2030. WEA's have been defined for the mid-Atlantic and will receive early environmental reviews that will help to lessen the time required for review, leasing and approval of offshore wind turbine facilities. In March 2011, the Department of Interior expects to identify WEA's off of the North Atlantic states including Massachusetts and Rhode Island and launch additional NEPA environmental reviews for these areas. A similar process is expected to occur for the South Atlantic region, namely North Carolina, in spring 2011. In the Ocean Policy Steering Committee Report that was published in 2009, coastal and marine spatial planning was a significant component. The NOAA 309 enhancement grant strategy has plans for beginning the

discussion of how North Carolina would go down the path of creating coastal and marine spatial planning and the groups that would need to come together to facilitate the discussion. The UNC wind study is also a good example of how one of these analyses could go forward.

UNC Coastal Studies Institute
Dr. Andy Keeler

Dr. Keeler stated the Coastal Studies Institute and the public policy programs are part of a network of research and outreach that supports decision making at the state and federal levels. We are also a part of the University network that has research expertise in coastal issues. We are a focal point for northeastern North Carolina's issues because of our location. Our goals are to include public policy on the North Carolina coast by producing usable research within and across disciplines. We want better use of and accessibility to research results. One of our goals is fostering participatory decision making in the context of the research. We also want to help fulfill the role of honest broker in helping people evaluate competing claims about science and policy. CSI can provide a broad view of issues and options facing coastal North Carolina in front of the CRC. We can put individual issues in the context of fundamental socioeconomic and environmental driving forces. We can incorporate experiences from other locations and from similar issues. CSI can provide a long-term perspective on policy issues. We can also help the CRC put social science and scientific research in context for decision making. Some of the key issues that we plan to look at are adaptation to changes on the coast, energy on the coast, shoreline protection, biodiversity protection, and marine protected areas. Coastal public policy is always about adaptation because its conditions are always changing. Some of the particular focuses on public investment include infrastructure and public goods. We also need to understand market responses to changing conditions. Regulations to manage the commons in changing conditions in all kinds of biodiversity are central to adaptation. Adaptation includes prioritizing and carrying out research and development. Adaptation also includes public education about and participation in policy formation and implementation. Ocean energy research is a CSI priority. Understanding both energy system and environmental policy that affects power generated using coastal resources in the context of meeting energy needs on the coast is a focus of our program. The costs of alternative shoreline protection management strategies and expectations for the future will be looked at. There are co-benefits and costs of alternative strategies. Particular attention will be paid to financing alternatives. We will focus on real estate market feedback. We have a strong focus on long-run costs and the timing of policy and strategy changes. We have our own mess on the Outer Banks that deals with biodiversity protections. We are hoping to use this to look at the difficult decisions of management issues in both science and policy research. CSI will work with Maritime Heritage and Educations programs at CSI to examine public policy and economic value of marine protected areas. CSI is committed to building a program in public policy that compliments its other programs in Coastal Processes and Engineering, Estuarine Ecology and Human Health and Maritime Heritage. We believe that our program should be useful for supporting decision-making and for increasing systematic understanding of human-environment interactions on the coast. We place a high priority on working with the CRC and DCM.

Progress on Sea Level Rise Policy Development (CRC 11-03)
Tancred Miller

Chairman Emory stated he has had contact by some people that are concerned with the path the CRC is on. We have a draft policy on sea level rise that we are reviewing with local governments. This policy includes the Science Panel recommendation of one meter of sea level rise by 2100. Some of the things that local governments would have to consider are addressing sea level rise in land use plans and taking sea level rise into account where development is located and development standards or in locating infrastructure. While all of these are reasonable and logical subjects for local governments to consider, as we stated them in the draft policy it has caused some alarm. Additionally, I have heard concern over the projected one meter of sea level rise by the year 2100. I have not heard one single person say that they don't believe sea level rise is occurring. The use of the Duck tide gauge as the primary indicator of historic sea level rise has been questioned. The application of one rate of sea level rise along the entire coast has also been questioned. Today we will look at a revised version of the sea level rise policy. DCM has been out meeting with local governments and we will ask staff to make some revisions that are responsive to the concerns that we have heard from local governments. Without intending to, the CRC has incorporated some things in the original policy that are premature of where we are on this issue. The CRC's one meter rate came from the Science Panel, but NC-20 has an alternate view. When we asked the Panel to give us an estimate of sea level rise for the state we did not give them much time or opportunity to develop different estimates for different parts of the state. It would be helpful for the CRC to ask the Panel to take some time to see how sea level rise will affect different parts of the state. I would also like the Panel to help us understand the alternative view from NC-20. The bottom line is we need to be careful as we address sea level rise. We need local government to be our partners as we talk about how sea level rise is going to affect the coast. We need to be open to making changes in our policy and be sensitive to local government's concerns.

Tancred Miller stated Chairman Emory has reviewed the feedback very accurately. We have heard from Carteret County and other counties and it has reminded us that we have overstepped what the intent of the policy is and crossed the line between policy and regulation. It is a group effort. We have met with Carteret County, the Nags Head Planning Board, and Pender County. We have also received written comments from BASE in Brunswick County. The comments have been fairly consistent. The major concerns are the use of the Duck tide gauge data that the Panel thought we should use as a conservative estimate of what we should look at statewide. Another concern was that one single rate should not apply to the entire coast. The one meter rise rate was also a concern. There is a lot of discomfort about the one meter rate and there is probably no need to talk about a one meter rate. The CRC has no desire for a direct result to be the immediate action of the local government. The land use planning provisions also were a concern because it causes local governments to immediately apply a one meter benchmark to their land use plans, but that is not the intent and it is something that we should amend. We have made some changes to the draft policy approach. There is no rush so we abandoned a timeline. We want to focus on education and awareness at the local level. The CRC should reconsider using a benchmark. We should take it out completely. We should ask local governments to familiarize themselves with what impacts could be. NOAA has been in conversation with me and we could take another look at the tide gauge data. We also want to clarify the land use

planning guidelines. There isn't anything in this draft policy that should give a local government the concern that this will directly influence what they put into their land use planning guidelines. In the draft policy revisions, we propose that any notion that a rule update will follow this policy should be stricken. This policy should stand on its own. We would leave a note in the draft policy that says that land use planning comes through the 7B guidelines and not through the sea level rise policy. The specific things about land use planning in this draft policy are probably not necessary. Whether or not sea level rise is accelerating is probably not as important to the conversation as the agreement that sea level rise is occurring and will continue to occur. In the comments from BASE, they were concerned about low impact development and say that it is not a conservation measure. We have stricken the language from the draft policy. We have also removed the planning benchmark. There is one section that is drafted to include a reference to local land use plans. This section says that the CRC encourages coastal communities to consider regional rates using their local tide gauges as well as projected rates in planning.

Charles Elam made a motion to accept the revisions to the draft sea level rise policy and directed staff to take the new draft policy out to local governments to continue receiving feedback. Ed Mitchell seconded the motion. The motion passed unanimously (Joyce, Mitchell, Webster, Simmons, Wynns, Peele, Weld, Bisette, Cahoon, Elam) (Leutze, Old absent for vote).

PUBLIC INPUT AND COMMENT

Bill Price stated he is from Morehead City. I have heard a couple of comments here today about whether or not sea level is rising. I generally agree that sea level has been rising since the last ice age. The general question is whether or not it is accelerating. We all need to know about it. We need to know what to do about it. However, some folks are very concerned about the report. Some of the information seems to be not quite all there. There is a full tide gauge record that started in 1850. There were three gauges on the coast of North Carolina. I have a copy of the letter of transmittal of the report of 1855. It was done annually. There is an indication of tide gauge benchmarks. I would hope that at a very minimum this group would find the tide gauge data for the past 160 years and use that as a beginning point to consider sea level rise issues. In 1850 there was a series of charts and maps of the entire coastline of America. If Duck is projecting to have had 15 inches of sea level rise up until now for the past 100 years, then it would be 24 inches in 150 years. One would think that 24 inches would have had a dramatic effect on the coastline of North Carolina. I am just wondering if anyone has gone back and looked at the charts from the 1850's and compared them with charts of today to see how much difference there has been. There have been hundreds of millions of cubic yards of material that has been dredged out of the inlets and dumped offshore. It has stopped pretty much all of the downdrift material that erodes and naturally builds up the coastal plain. In any event, when I look at the chart it looks close to what I see today. Please look at the NOAA temperature record for North Carolina. There is a picture that shows NOAA weather stations and infrared heat sources. NOAA acknowledges that there is a problem with their data and they do a computer adjustment. Before making any policies you should evaluate the data that is available.

George Birchard stated he is a body surfer, geochemist, PhD, and worked in a regulatory agency with the US Regulatory Commission. I applaud you for having the courage to go forward and show leadership with sea level rise. You are the first to do this. Stick to the science. If you try

to get involved in a situation where you back off from what the science is telling you based on politics, and you have to consider politics in how you say things and how you do your basic involvement with the State, but you still have to stick to what the science is telling you. Or you are not going to have anything to base what you are doing on. You are going to be adrift. I have been looking over the last year or two at a lot of reports and scientific literature and the problems are getting worse in Greenland and Antarctica and a lot worse than the IPCC projections. I have a lot of stuff on my computer and I can't show you, but you are right to get ahead of this. You are going to get a lot of feedback and people saying that it isn't true, but go to the data and go to the science and listen to your people and don't just base it on North Carolina. You are going to have to look at global data and look at the information in peer reviewed literature and base your decisions on solid science. I go out to the Outer Banks and it is getting harder and harder to get to Cape Hatteras. It gets very complicated and we get into disagreements about dredging. Go back to the science. When I go to Hatteras they tell me just how far the sand has come in at Rodanthe. I see houses disappearing as I am body surfing. I see change. Go back to the science and stick with your guns. Listen to the local people and ask how can we help you. Don't try to force things down their throats. Try to help them solve their problems.

Sharon Spencer stated I am the Hyde County Commission Chairman. It was interesting to hear Mr. Simmons' comments and I hope I don't have to tell everybody to go get a house boat or a boat to travel around in for Hyde County. We are concerned about sea level rise. But we are also concerned about policy. We know when you make policy that means regulations. When you make regulations that means restrictions. We are desperate for economic growth. We are trying so hard to create a good infrastructure so we can do it. Everybody is struggling and we just hope that you use the good solid scientific data and remember that there are people in this equation that will be greatly impacted by what you decide.

Larry Baldwin stated I am one of the representatives of NC-20. I have had the opportunity to talk with a couple of your staff and I appreciate the time they gave us to air concerns and questions we had. Much of what I have already heard this morning took a lot of the fire out of what I had to say. I think this is the right considerations for this. Let's get the public educated that there is sea level rise. There are not too many people that deny that there is sea level rise. The rate has a lot of controversy. I think to try to counterbalance that it is always good to keep around your friends, but keep the opposition closer. If the intent is to try to get the idea out on sea level rise then let's keep it at that. It is hard to get around specifics. Even for any other rules and policies, rough policies can become de facto rule making. This sea level rise policy has done damage already. It is already in the paper. When you start airing this in public it gets into the paper that there is a 39 inch sea level rise projection. The banks and insurance have already looked at this. The County tax base could be impacted by it. Maybe not directly, but just by the demand and supply of land. There has been damage done. Insurance and costs to do D.O.T. roads with a 39 inch sea level rise is billions and billions of dollars. I would caution you before you start trying to educate the public that we try to keep the specifics out of it and then get into specifics later. The only way we are going to do this is to have a two party, pro-con committee before we get to the specifics of a policy. That way you can air a lot of public concerns before we start to get into rulemaking.

Harry Simmons stated I want to offer the opportunity to answer questions about the terminal groin legislation that has been proposed and see if there is anything I can tell you based on my knowledge. There was a lot of information provided to folks in Raleigh and some of it is in this Bill and some of it is not. I was as surprised as you were to see some of the elements in it when it came out yesterday. It does seem to be at least something that we can work with. It puts the process in the hands of the Division of Coastal Management through the Major Permit process. It adds some things that are not included in every other Major Permit. There is a whole list of things that must be met. It is acceptable to me and my group of folks. It is one of those things that you will have to wait and see how the process works.

Chris Voss stated I am here as a North Carolina tax payer but I am also a coastal ecologist. I want to say thank you for being proactive. The North Carolina coast is one of the three areas in the country that is most greatly impacted by sea level rise. I also applaud you for trying to keep the political process, which is very short-term oriented, different from sea level rise which is long term oriented. I would think you might want to consider relative sea level rise because it is a relationship of the land with the sea that is causing the effects that we see. I see that all the terms in your policy just deal with sea level rise. There is a preponderance of information that suggests that sea level rise is accelerating. I, as a scientist, think that you are missing the boat if you don't try to capture the acceleration. What you do with it as far as policy down the road is something to be decided later, but sea level rise is accelerating. As far as looking at sea level rise rates, there are various cycles and water level patterns that run on about a 20-year cycle. If you look at very short term periods then you might get information that actually conflicts with the longer term patterns. I also want to say that the goal of the Commission is to protect the tax payer. Let's be proactive. It is more cost effective in the long term if you are prepared for what is coming down the road. Fortunately, sea level rise is a very slow process and we have some time. Please let's be proactive and don't back down from the science. It is truly what is guiding us.

PRESENTATIONS

Climate Change Ecosystem Assessment

Laura Gadd

Laura Gadd stated I am here from the North Carolina Natural Heritage Program to talk to you a little bit about what our program has done to address climate change and the effects on ecosystems. The Natural Heritage Program is a program within DENR and was founded in 1976. We are part of an international network. Our staff are funded through the Natural Heritage Trust Fund grant. We have a partnership focus. We are a non-regulatory program who works with other conservation partners focusing on conservation efforts and our motto is Science Guiding Conservation. We take inventory of where the species occur and where the high quality natural communities are located in the state. Our focus for conservation is significant natural areas. We track wildlife habitats and share this information with other conservation agencies. We work very closely with DCM, WRC, State Parks and other conservation agencies in the state on state, federal and local levels to support conservation. In late 2009, DENR started working on climate change and started to develop a strategic plan. The goal of the plan was to address litigation and adaptation and the strategies that will increase resilience to natural resources to the expected changes of climate change. DENR's climate change initiative addresses both

mitigation strategies as well as adaptation strategies. The Natural Heritage Program is addressing climate-sensitive ecosystems. We started this process about a year ago in early 2010. We were charged with coming up with an assessment of how ecosystems will be effected by climate change. We developed a detailed ecosystem risk assessment. Then we needed to identify what species and ecosystems are going to be most at risk from the expected climate change factors. We then identified adaptation strategies or management practices to enhance resiliency. Priority conservation areas and corridors had to be identified as well as avoiding adverse effects on biodiversity from human responses to climate change. We took a hierarchical approach. It started with our panel of biologists and the initial structure was worked out internally. It was then reviewed and we received input from our partners. When we started this process we knew there was uncertainty. We have to generalize from the limited detailed data on particular effects. When we started this process we were taking our information from Climate Wizard (www.climatewizard.org). This is a program put together by the Nature Conservancy where they have assimilated different kinds of climate models. Our methodology included compiling a list of physical and biological changes that we expect to happen based on a list of impacts from climate change. Then determine if the impacts are good or bad. Then we rank climate change threats in comparison to other threats. Then we recommended adaptation strategies. We are still in the process of identifying conservation priorities. We have identified 42 ecosystem groups. These include terrestrial, aquatic, and successional communities. Of the 42 ecosystem groups, estuarine communities is one of them. For these estuaries the climate impacts that we have identified are sea level rise salt intrusion, sea level rise inundation, drought, flooding, and storm surge from increased storms. At the ecosystem level the response could be inland migration, change in species composition, elevation change as it shifts inward, and change in acreage. At the community level we have identified four different communities. The communities are salt marsh, brackish marsh, salt flat, and salt shrub. At the species level we know there are rare, disjunct or endemic species there that are already extinction prone. Any kind of major disruption could be bad news for these species. We also know that a lot of these species are already well adapted to a naturally dynamic environment. In the estuarine communities climate change is probably the biggest threat followed by development and pollution. The adaptation strategies for this ecosystem are to protect future sites which would allow for migration of the ecosystem, control erosion, maintain hydrology, allow barrier islands to naturally migrate, preserve riparian buffers, and stormwater controls. Another example along the coast is the dry longleaf pine community. The effects we think will most likely be caused by climate change are wind damage, milder winters and wildfires. We know these systems are adapted to wildfires and they are actually a good thing if it is not catastrophic. With warmer temperatures we could see an increase in invasive species. There could also be a change in structure if we have different species migrating up from the south and coming into these ecosystems. The longleaf pine communities can also increase in range. The communities in these systems include xeric sandhill scrub, mesic pine flatwoods, as well as many rare plants and animals. Some are already very rare and could be prone to extinction. Invasive species such as fire ants and armadillos moving north would threaten eggs, immature snakes and other ground nesting vertebrates. The combined threats to the longleaf pine community are development, conversion to agriculture, fire suppression, and lastly climate change. Adaptation strategies for these systems include protecting what we have, controlling invasive species, conducting prescribed fires, and restoring the landscape connections. Of the 42 ecosystems that we looked at, we looked at the ecosystem groups that were most threatened by climate change. The coastal

plain nonalluvial mineral wetlands, estuaries, freshwater tidal wetlands, maritime grasslands, maritime upland forests, and maritime wetland forests had sea level rise as the most threatening. The assessment identifies not just vulnerable habitats, but also those with resilience. We should not abandon highly threatened ecosystems, habitats, or species. Recommended interventions are things that we should be doing anyway. Climate change is not the only threat. There are still a lot of other threats that we have been working on for a long time and we don't want to abandon those. All of these reports are found on our website at www.climatechange.nc.gov.

Sea Level Rise and Marsh Migration – Spartina Marshes Dr. Carolyn Currin

Carolyn Currin stated this will address how marshes will respond to sea level rise. The marshes we have today developed during a period of increasing sea level rise. Marshes are well adapted towards keeping up with sea level rise and thriving during periods of sea level rise. There are rises and falls in the mean of sea level rise. It is not a straight line. We plan for the mean but it is just an average. There is a tremendous amount of variability in sea level rise both annually and over the long term. Over the past 100 years we have had about a 20 centimeter rise in sea level around the world and is about 2 millimeters per year. The current rate in North Carolina is projected to be three to four millimeters per year. We do anticipate acceleration. The marsh's response to sea level rise could be erosion due to wave energy, sink/drown, accrete in place, prograde seaward, or transgress inland. Salt marshes in many areas have demonstrated the ability to increase their elevation at a rate equal to recent relative sea level rise. As the tide comes in it carries sediments in with it and it builds up the marsh platform. The marshes also respond to tidal flooding by producing more biomass. There are a lot of people around the state who are tracking this process. We establish benchmarks and look at millimeter changes in surface elevation by comparing changes. The other thing we do to look at how much sediment is coming in on top is to put down horizon markers and measure millimeter changes. We can also use the benchmarks to use GPS systems to make digital elevation models and track centimeter level changes. We have had a four year project here in Carteret County where we focused on fringing salt marshes. We have learned that the edges of these marshes are losing elevation. However, on the upper edge they are building elevation. That can't keep on for too long or you will end up with a very steeply sloped marsh. We also have some evidence that if there is an oyster reef or toe at the edge of the marsh that it slows the elevation loss. We have another project down in Onslow County where for the past two years we have looked at marsh net elevation change. We have found that spartina marshes are accreting at a rate of 2-9 millimeters per year. We have done some fertilization and found that if you fertilize the marshes the elevation increases significantly. We have also looked at juncus marshes a little bit. The marsh equilibrium model suggests long-term sustainability is a problem with accelerated sea level rise. There are a number of research groups in the state that are doing this kind of work. Another way marshes can react is transgression, the horizontal movement of the marsh. One really important factor in marsh transgression is the slope of the land. If there is a lot of sediment supply and a fairly gentle slope then you will be able to build your marsh at the sediment supply and the marsh will be able to transgress inland. As you decrease your sediment supply with the same slope then you are not able to maintain the lower marsh and it will be eroding inland but you will still have transgression upland. The problem is if you have a steep slope. If the slope gets steep enough then the marsh isn't going to be able to transgress inland. Marshes occupy a narrow

band between high tide and mean sea level. Spartina marsh is mostly under water at high tide. The species distribution follows small changes in tidal elevations. In North Carolina the estuarine tidal range varies between 20 cm and 120 cm increasing from north to south. You can see the transgression into uplands marked by dead trees. The trees have likely died because of salt water intrusion. Shorelines are very dynamic. If you are in the more southern parts of the state where there are high banks you could have had a fringing marsh, but once it erodes then there isn't any place for it to go. Slope is going to be a major determining factor on whether the marshes will be able to transgress. Another issue is whether or not there is a hardened shoreline. If you have a heavy clay soil it will be harder for the marsh to get in and penetrate the heavy clay soil. Shoreline development limits marsh transgression even in areas with low elevation change. There are also groups in the state using a variety of modeling approaches to forecast exactly how marshes are going to respond to sea level rise. In Carteret County some parts of the county will probably get transgression. In other areas, like the backside of barrier islands, it is more likely to overwash. Other areas, like along the backside of Bogue Sound, are going to suffer from erosion. If there is not adequate sediment supply then some marshes, like Middle Marsh, will just sink. They either have keep up with sea level rise or they will sink. Shoreline slope, sediment supply, and coastal development will largely determine the ability of the marshes to vertically accrete and/or horizontally transgress. We don't know what the rate of sea level rise is going to be and storm events are game changers.

Swan Quarter Dike Project
Rob Williams, USDA-NRCS

Rob Williams stated I am an engineer on the NRCS staff in Raleigh. Five hurricanes between 1954 to 1960 led to development and approval of the Watershed Workplan that falls under the Watershed Protection and Flood Prevention Act. The original Swan Quarter Work plan was signed on February 2, 1965 by the chairman and secretary of the Pamlico Soil and Water Conservation District. This District is now broken up into the Beaufort, Hyde, Washington, Tyrrell, and Dare Districts. The original work plan encompassed quite a bit of area including 17.7 miles of earthen dike, 3 pumping plants, 16 tide gate structures, 19.1 miles of channel improvements, and 11,440 acres. There were four primary objectives. The first was the acceleration of planning and installation of on-farm conservation land treatment measures. The second was to improve outlets for on-farm and small group drainage ditches. The third was the elimination of flooding caused by high water and wind tides. The last was the reduction of flood damage from excess direct precipitation. Nothing was done on this project at this time. There were concerns about long-term pumping costs and concerns about the fact that the land treatment measures had been installed and were progressing well with other funding sources. There was a request from the local sponsors to modify this plan. That was done in 1984 and was called the West, Quarter, Double, and Bay Supplement. It deleted the entire original work plan except for reduction of flood damages caused by high wind tides. It also added the Hyde County Board of Commissioners as a project sponsor. The project decided to use the 25-year high wind tide as the control elevation for this project. The source of that decision was a 1955 Corps of Engineers report on Hurricanes Affecting the North Carolina Coastal Areas, Appendix B. The revised plan was significantly cut back to 6.1 miles of earthen dike, no pumping plants, 29 tide gates, 34 water control structures, 2.9 miles of channel improvements, and 7,040 acres. The Corps' permit was obtained in February 1986 and work began in 1987. There were a series of seven contracts

and the extent of each contract was determined by funds availability. The first phase was the installation of an earthen dike on the east side of the project. The second phase was the installation of one of the tide gate structures. The gates are modular so you can put as many gates in as you want based on the size of the channel. Phase three of the project was a continuation of the gate installations. The fourth phase was also a continuation of the gate installation. The fifth phase was the installation of the earthen dike. The sixth phase was the final phase of the earthen dike at that time. Phase seven was a maintenance phase that addressed the few washout areas that had occurred and installed one more tide gate. The work was completed on these seven phases by 1995. Following several hurricane events in the 1990's the local sponsors came back to us and requested that the project be extended west through the Town of Swan Quarter out to the junction of NC45 and US264. An environmental assessment was developed in August 2002, the CAMA permit was issued in December 2002, and the Corps permit was issued in January 2003. The work was carried out in six contracts determined by funds availability. The funding for these later phases was from Congressional earmarks and the American Recovery and Reinvestment Act. In 2003 we had Hurricane Isabel and had quite a bit of damage. The dike received a lot of deposits that had to be cleaned off. The eighth phase of the project picked up where phase seven left off. It was the installation of an earthen dike. Phase nine consisted of a continuation of the earthen dike where phase eight left off. Phase nine also included a couple of wetlands mitigation sites. Phase ten of the project was the last phase of the earthen dike. Phase eleven was a vinyl and composite post wall. Phase twelve was a continuation of the wall. Phase thirteen is the phase that is currently under construction. It extends the vinyl wall and goes into an earthen dike. We are currently under construction and are on schedule. The scheduled completion date is May 16, 2011.

Draft Subcommittee Description/Structure/Assignments (CRC 11-02)

Mike Lopazanski

Mike Lopazanski stated we have been talking for some time about revisiting our meeting format. The CRC set up a subcommittee to look at our meeting format and come up with some recommendations. The subcommittee recommended returning to a standing committee structure but with some differences from how it was run before. We are going to have two committees. The first will focus on estuarine and ocean systems. The second will focus on ocean hazards. The estuarine and ocean systems committee will deal primarily with the AECs, coastal wetlands, estuarine waters, public trust areas, and coastal shorelines. The ocean hazard committee would deal with the ocean erodible area, high hazard flood area, inlet hazard areas, and unvegetated beach areas. The committees would not necessarily meet every CRC meeting. The committee would only meet if they had an assignment. The assignments would be made by the CRC Chair. The committee meetings would be held on Wednesday morning or early afternoon before the CRC meeting begins. The committees would not meet concurrently. CRC and CRAC have been given the opportunity to sign up for the committee that they are most interest in. The Executive Committee will make the final committee member assignments. Any actions in committee will be brought before the full Commission for a vote. If committee meetings are scheduled prior to a CRC meeting, it is unlikely that there will be a CRAC meeting.

ACTION ITEMS

Land Use Plan Certifications and Amendments

John Thayer

John Thayer stated there are four Land Use Plans up for certification. These are Dare County, Hertford County, Town of Nags Head, and the joint plan between New Bern, Trent Woods, and River Bend. Staff has reviewed these documents and recommends that they have met the substantive requirements of the 2002 7B guidelines and also recommend certification. There are no outstanding issues with any of these documents.

Charles Elam made a motion to certify the Dare County Land Use Plan. Renee Cahoon seconded the motion. The motion passed unanimously (Joyce, Mitchell, Webster, Simmons, Wynns, Peele, Weld, Bissette, Cahoon, Elam) (Leutze, old absent for vote).

David Webster made a motion to certify the Hertford County Land Use Plan. Renee Cahoon seconded the motion. The motion passed unanimously (Joyce, Mitchell, Webster, Simmons, Wynns, Peele, Weld, Bissette, Cahoon, Elam) (Leutze, Old absent for vote).

Chuck Bissette made a motion to certify the Town of Nags Head Land Use Plan. Bill Peele seconded the motion. The motion passed unanimously (Joyce, Mitchell, Webster, Simmons, Wynns, Peele, Weld, Bissette, Elam) (Cahoon abstained) (Leutze, Old absent for vote).

David Webster made a motion to certify the New Bern, Trent Woods, River Bend Joint Land Use Plan. Renee Cahoon seconded the motion. The motion passed unanimously (Joyce, Mitchell, Webster, Simmons, Wynns, Peele, Weld, Bissette, Cahoon, Elam) (Leutze, Old absent for vote).

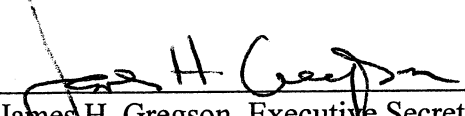
John Thayer stated the Carteret County Land Use Plan has met the conditions of the conditional certification and has been certified by DCM Director Jim Gregson.

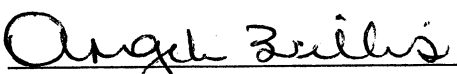
OLD/NEW Business

Chairman Emory stated the revised draft sea level rise policy will be sent out to boards/commissions, local governments, and interested parties and will be accompanied by a letter from him. The revised policy will also be taken back to the local governments that have already seen the old draft policy. Renee Cahoon stated it is not necessary to revisit the Nags Head Planning Board. Bill Peele asked that staff notify the CRC members when/where the Science Panel meets.

With no further business, the CRC adjourned.

Respectfully submitted,


James H. Gregson, Executive Secretary


Angela Willis, Recording Secretary