



Workshop Meeting of the Town of Carolina Shores
Board of Commissioners
November 2, 2015 10:00am

Call to Order

- I. Administrative Reports
 1. Administrative Reports
 - a. Presentation of the FY 15 Audit
 2. Committee Reports
- II. New Business
 3. Regular Meeting, November 5, 2015 Agenda Items:
 - a. Flood Recovery Package Update
 - b. Communications Policy Review
- III. Public Comment
- IV. Mayor and Board of Commissioner Comments
- V. Closed Session: None
- VI. Adjournment

Town of Carolina Shores Board of Commissioners
Agenda Item Summarization & Narrative

Item: Agenda Adjustments

Contact: Mr. Walter B. Goodenough, Mayor

Location: Agenda Adjustments
“Adjustments to the agenda and approval thereof”

Follow-up: None

Requested Action: Board Action: Approve/Disapprove

Budgetary Impact: None

Narrative:

This item presents for the Board’s consideration adjustments to the agenda from the time the time the agenda was created to allow for flexibility in deliberations of the Board.

Town of Carolina Shores Board of Commissioners
Agenda Item Summarization & Narrative

Item: Public Comment

Contact: Mr. Walter B. Goodenough, Mayor

Location: Public Comment
“Public Comment”

Follow-up: None

Requested Action: Allow time for public comment.

Budgetary Impact: None

Narrative:

This item presents for the Board’s consideration those citizens that have comments pursuant to GS 160-81.1.

§ 160A-81.1. Public comment period during regular meetings.

The council shall provide at least one period for public comment per month at a regular meeting of the council. The council may adopt reasonable rules governing the conduct of the public comment period, including, but not limited to, rules (i) fixing the maximum time allotted to each speaker, (ii) providing for the designation of spokesmen for groups of persons supporting or opposing the same positions, (iii) providing for the selection of delegates from groups of persons supporting or opposing the same positions when the number of persons wishing to attend the hearing exceeds the capacity of the hall, and (iv) providing for the maintenance of order and decorum in the conduct of the hearing. The council is not required to provide a public comment period under this section if no regular meeting is held during the month. (2005-170, s. 3.)

Time Limit: 5 minutes

Town of Carolina Shores Board of Commissioners
Agenda Item Summarization & Narrative

Item: Consent Agenda

Contact: Mr. Walter B. Goodenough, Mayor

Location: Consent Agenda
"Consent Agenda"

Follow-up: None

Requested Action: Pass all items with one motion, second, vote.

Budgetary Impact: Possible subject to items.

Narrative:

This item presents for the Board's consideration an expedited, omnibus action item for non-controversial, pro-forma, and routine items.

**Town of Carolina Shores
Board of Commissioners
Pre-Agenda Meeting Minutes
September 8, 2015
10:00 a.m.**

DRAFT

Members Present: Mayor Walter B. Goodenough and Commissioners: Joseph Przywara, Greg Davis, Bill Brennan, John Russo and John E. Manning. Also Present: Jon Mendenhall, Town Administrator and Nicole Marks, Town Clerk.

Members Absent: None

Others Absent: None

Call to Order:

At 10:00 a.m. Mayor Walter B. Goodenough called to order the Board of Commissioners Workshop Meeting.

Administrative Reports:

Town Administrator Report/Jon Mendenhall – On file at Town Hall:

This report serves as the report of administrative activities undertaken by the Town in the month of August and summarizes administrative, operational, and project updates for the reporting period.

Administrative

August has seen the following administrative activities take place: animal service contract discussion to improve conditions, on-going economic development discussions with interested potential developers, progress on FY 16 goal implementation.

The HR Committee met in August to discuss committee initiated Personnel Policy changes; these recommendations are on the September Board agenda and include: probation period reduction, longevity pay changes, and employee handbook creation.

Open positions at the present time are: Maintenance Worker, Office Assistant, and Groundskeeper. Administration recommendation is to interview for and hire the positions in September with input from the Supervisor of each position.

The Town is working on a more robust safety program roll-out, previously this included weekly vehicle/equipment safety inspections and monthly facility safety inspections. Dedicated safety training has been a noted deficiency for some time. With the assistance of the League of Municipalities, the Town is enrolling in an online safety program that includes a library of over 60 individual safety videos to begin a dedicated (weekly) process of safety training for employees. Topics include industrial equipment safety, confined space, ergonomics, workplace

violence and sexual harassment to name a few. Back-end record keeping is streamlined with this program since documentation of training can be printed and added to personnel files for employees documenting the receipt of safety training. This program, offered through the League of Municipalities (at no additional cost to the Town) is called Safety Catch and will be implemented starting in September. The plan is that this training will complete the three-legged approach to safety: 1) Training, 2) Inspection, 3) Incident Response = Safety Culture.

Operational

Finance

Finance is working with the Auditor on the annual audit process as well as supporting procurement activities across Departments.

Public Works

Maintenance

The July schedule experienced no delay on vegetative maintenance. Roadside ditch maintenance has experienced a set-back with the dump truck problems that have caused intermittent and short-term delays. All other equipment is operational.

Inspections

Inspections have been very busy with the Medical Center project as well as an uptick in residential building activity. The finalization of permit form changes that was previously completed are being evaluated for the 1st cycle of continuous improvement edits to make ease of use changes, this will occur in the Fall months. New phases in Calabash Lakes and The Farm at Brunswick are being prepared (in various stages of review) to be brought on-line.

Public Safety

Code Compliance is working on a summer-fall work program: 1) business registration and recognition of the Carolina Shores municipal name – business registration has been delayed until the General Assembly adjourns as there are some pending bills that may alter business registration conducted by municipalities, 2) catalog commercial signs (affixed to building and free-standing) – catalog for Summer 2015 completed, compliance letters mailed out. Code Compliance as part of their emergency management portfolio conducted one emergency management (hurricane preparedness) training at The Farm at Brunswick. A second training is being planned for Calabash Lakes.

Project

Drainage

Roadside Drainage Maintenance

1. Roadside Drainage – roadside drainage ditch maintenance will continue pending equipment repair.

Resurfacing

Annual Resurfacing Project

1. Pinewood Drive – preliminary plans and specifications are being produced as well as a certified cost estimate. The forward looking guidance is that a contract award should be able to occur in September; however, timelines are tight.
2. The Farm at Brunswick – seal coating projected completion 8/21/15, under-drains remain outstanding (should start once seal coating is completed).

Incorporations via Reference

Inspections – please refer to the Inspections Report as provided

Public Safety – please refer to the Calabash VFD Report and Calabash Rescue Squad as provided.

Mr. Mendenhall discussed some NCDOT coordinated activities for the Fall: adjusting the corporate signage due to annexations, speed limit study and beautification request regarding Country Club. It was the consensus of the Board too have Mr. Mendenhall write letters for the items above.

Committee Reports:

Keep Brunswick County Beautiful – Mr. Gere Dale gave the KBCB report. Mr. Dale said the organization did not meet in August because a number of the members were on vacation so there is nothing to report in regards too the meeting. Mr. Dale said the Town should have received the quarterly newsletter which was seven pages. Mr. Dale said in that newsletter, there is a reminder that next week is solid waste Free Dump Week beginning Monday thru Saturday. Mr. Dale said there are some criteria as to what can be taken up there and what can't be taken up there but I think our residents should be reminded in some way of that event. Mr. Dale said they can basically take up most everything except yard waste and regular garbage. Mr. Dale said he believes the Town does have the newsletter. Mr. Dale said a week from Saturday at the South Brunswick Middle School, they are going to have the same collection that they had at Shallotte in the spring. Mr. Dale said that would be hazardous waste and clothing collection. Mr. Dale said he realizes the school is a ways away but for people that need to get rid of hazardous waste and want to make clothing contributions, that's a very good opportunity to do so. Mr. Dale said I hope someday the Town's people can be reminded of these events. Thank You.

Tree Advisory Committee – Commissioner Russo said they are going to try to set up the 40 Year Plan again. Commissioner Russo said there are two volunteer positions open, one for Tree Committee and one for inspections and he hopes to have appointments on Thursday. It was the consensus of the Board to list appointments for Thursday's meeting.

New Business:

Regular Meeting, September 10, 2015 Agenda Items:

First Reading of an Ordinance Rezoning Calabash Lakes Phase 3, Public Hearing and Second Reading to Occur on September 10, 2015:

COMMISSIONER DAVIS MADE A MOTION TO APPROVE THE FIRST READING OF AN ORDINANCE REZONING CALABASH LAKES PHASE 3. COMMISSIONER BRENNAN SECONDED THE MOTION. MAYOR GOODENOUGH ASKED IF THERE WERE ANY DISCUSSION. Commissioner Manning asked if this was passed by the Planning Board. Commissioner Przywara said yes and clarified how the 7 ½ foot setback came to be. Commissioner Przywara said there was a meeting between D.R. Horton and the residents at Calabash Lakes. Commissioner Przywara said there were a number of people that supported the 7 ½ foot setback and Commissioner Manning said okay he was just checking. Commissioner Davis said D.R. Horton did exactly what the Planning Board asked them to do; which was to meet with the residents. Commissioner Davis said 84 homeowners showed up for the meeting. Commissioner Davis said he thought it was explained quite well, a compromise was offered by D.R. Horton

which will cost them a tremendous amount of money in cutting back the number of homes built. Commissioner Davis said D.R. Horton originally asked for a 5 foot setback and the bulk of those people at that meeting were satisfied. Commissioner Davis said then it came back to the Planning Board again, there are still people that are against it and there will always be people against it, he understands that. Commissioner Manning asked if this was a recommendation from the Planning Board and Commissioner Davis said yes, it is a unanimous recommendation. Commissioner Przywara asked if an approval of the First Reading is needed today and Commissioner Davis said yes. MAYOR GOODENOUGH CALLED FOR A VOTE AND MOTION CARRIED BY UNANIMOUS VOTE.

Consideration of a Development Agreement for Calabash Lakes Phase 3, Public Hearing to Occur September 10, 2015:

There was discussion on this item and this item to be placed on the agenda for the Board of Commissioners Thursday's meeting. A Public Hearing will occur.

Consideration of Personnel Policy Revisions:

There was discussion on pay scale, step increments, fixing salaries for positions, keeping employees and staying competitive to keep employees. Staff is still collecting information.

Approval of the Final Plat for Calabash Lakes Phase 1 C:

There still continues to be an issue with under-drains and D.R. Horton has drafted a letter as to what they would like to see. There was discussion on this item. The Town's engineer said they need more data. It was the consensus of the Board of Commissioners to hold off on this item and to not approve this item until they get more data.

Public Comment:

Gere Dale, 46 Calabash Dr. – Mr. Dale said for many years we had a recycle receptacle at the Recycle Center for bags, grocery bags and trash bags but this administration removed that container. Mr. Dale said he believes the collection of those bags was taken periodically by the Maintenance Department over to the Food Lion who graciously accepted them and what they did with them, I do not know. Mr. Dale said that was eliminated when we went to single streaming. Mr. Dale said he got a copy a couple of weeks ago from Brunswick County Solid Waste of acceptable and unacceptable items for recycling. Mr. Dale said there are at least 6 items that are being recycled that are unacceptable. Mr. Dale said molded foam, he sees quite regularly, bubble wrap, plastic grocery bags, trash bags, bread bags and molded foam egg cartons; those are all not acceptable. Mr. Dale said there are a couple of containers out there at the Recycle Center, blue containers that contain plastic bags and he does not know what happens to them. Mr. Dale said both of the containers that he looked at were jammed full and they can't be recycled, so he's confused as to why they are there. Mr. Dale said the second side of the compactor remains closed and I know you talk about it being for safety reasons but with cars backed all the way out to the Highway, that's a safety concern. Mr. Dale said the overflow receptacle for the yard waste sits there, blocking people from going into the yard waste area. Mr. Dale said there appears to be no logical reason for restricting that. Mr. Dale said hopefully in a couple of months, some of the things will change out there, he sincerely hopes so. Mr. Dale said he wasn't at the August meeting but he got a copy of the minutes yesterday and there were a couple of items that were mentioned in his absence that pertain to him and he would at least like a chance for a rebuttal.

Mr. Dale said he indicated at the workshop that he had seen coffee shop signs out on the highway on Saturday August 1st, I did see those very early on that day but he doesn't know if they were there later in the day. Mr. Dale said a comment was made about the duck pond and why didn't I do something about that when I was a Commissioner. Mr. Dale said that was 6 years ago, you've had 6 years now to fix the duck pond. Thank you.

Mayor and Commissioner Comments:

Commissioner Manning – Commissioner Manning said hopefully everyone had a safe and enjoyable Labor Day. Commissioner Manning said he agrees with Mr. Dale but he believes those blue containers were put there by Waste Industries not by us, so I have no idea and I promised to not get involved. Commissioner Manning said the only question he had about Mr. Dale's comment was the trash bags. Commissioner Manning said are we talking about garbage bags or light plastic bags as trash bags? Commissioner Manning said were they paper or plastic? Commissioner Manning said he wanted to remind everybody about September 11th on Friday. Commissioner Manning said if you can, I know our community sent out notice to everybody about the overpass on 130 by the Welcome Center.

Commissioner Davis – None

Commissioner Przywara – None

Commissioner Russo - None

Commissioner Brennan – None

Mayor Goodenough – None

Closed Session:

COMMISSIONER BRENNAN MADE A MOTION TO GO NTO CLOSED SESSION PURSUANT TO N.C.G.S.143-318.11 (a)(6). COMMISSIONER MANNING SECONDED THE MOTION. MAYOR GOODENOUGH CALLED FOR A VOTE AND MOTION CARRIED BY UNANIMOUS VOTE.

COMMISSIONER BRENNAN MADE A MOTION TO GO BACK INTO OPEN SESSION. COMMISSIONER DAVIS SECONDED THE MOTION. MAYOR GOODENOUGH CALLED FOR A VOTE AND MOTION CARRIED BY UNANIMOUS VOTE.

COMMISSIONER BRENNAN MADE A MOTION THAT WE HIRE MCIVER FOR A PART TIME OFFICE ASSISTANT POSITION FOR AN AVERAGE OF TWENTY HOURS PER WEEK AT A SALARY OF \$10.00 PER HOUR. COMMISSIONER DAVIS SECONDED THE MOTION. MAYOR GOODENOUGH ASKED IF THERE WERE ANY DISCUSSION. MAYOR GOODENOUGH CALLED FOR A VOTE AND MOTION CARRIED BY UNANIMOUS VOTE.

COMMISSIONER BRENNAN MADE A MOTION TO RECOMMEND THAT WE HIRE MR. WILKES AS A FULL TIME MAINTENANCE TRAINEE AT A RATE OF \$12.00 PER HOUR FOR THIRTY FIVE HOURS PER WEEK AND THE LENGTH OF THE PROBATION PERIOD IS SIX MONTHS AND THIS IS A FULL TIME POSITION WITH BENEFITS. COMMISSIONER RUSSO SECONDED THE MOTION. MAYOR GOODENOUGH ASKED IF THERE WERE ANY DISCUSSION. Commissioner Manning asked how long the training

period was going to be and Mayor Goodenough said six months. Commissioner Manning said then he has six months to prove himself. MAYOR GOODENOUGH CALLED FOR A VOTE AND MOTION CARRIED BY UNANIMOUS VOTE.

COMMISSIONER BRENNAN MADE A MOTION TO RECOMMEND THAT THEY HIRE MR. HENDERSON AS A PART TIME EMPLOYEE AGAIN AT TWENTY HOURS PER WEEK AT A RATE OF 1,000 HOURS PER YEAR MAX AS A PART TIME GROUNDSKEEPER AT \$10.00 PER HOUR FOR TWENTY HOURS A WEEK AND THERE WILL BE SOME SEASONAL SHIFTS IN THERE BUT THAT IS A PART TIME EMPLOYEE WITH NO BENEFITS. COMMISSIONER DAVIS SECONDED THE MOTION. MAYOR GOODENOUGH ASKED IF THERE WERE ANY DISCUSSION. MAYOR GOODENOUGH CALLED FOR A VOTE AND MOTION CARRIED BY UNANIMOUS VOTE.

Adjourn:

COMMISSIONER BRENNAN MADE A MOTION TO ADJOURN THE SEPTEMBER 8, 2015 BOARD OF COMMISSIONERS WORKSHOP MEETING. COMMISSIONER MANNING SECONDED THE MOTION. MAYOR GOODENOUGH ASKED IF THERE WERE ANY DISCUSSION. MAYOR GOODENOUGH CALLED FOR A VOTE AND MOTION CARRIED BY UNANIMOUS VOTE.

Walter B. Goodenough, Mayor

Submitted by:
Nicole Marks
Town Clerk

**TOWN OF CAROLINA SHORES
BOARD OF COMMISSIONERS
REGULAR MEETING MINUTES
September 10, 2015
2:00 p.m.**

DRAFT

Mayor Walter B. Goodenough called the September 10, 2015 meeting to order at 2:00 p.m. The Pledge of Allegiance was recited and there was a moment of silence. Commissioners Present: Joseph Przywara, John E. Manning, Greg Davis, Bill Brennan and John Russo. Also Present: Jon Mendenhall, Town Administrator and Nicole Marks, Town Clerk.

Absent: None

Agenda Adjustments:

None

Public Comments:

Ron Floor, 37 Carolina Shores Dr. – Mr. Floor said he’s been reading some newspapers and social media about different town’s posts on off-shore drilling and testing. Mr. Floor said he understands that everybody from Virginia down to South Carolina has opposed this except for Brunswick County Commissioners which are for it. Mr. Floor said it seems like Brunswick County Commissioners are in favor of this. Mr. Floor said does this Town have a position?

Commissioner Davis said he would make a motion in opposition of off-shore drilling.

Consent Agenda:

COMMISSIONER MANNING MADE A MOTION TO APPROVE THE FOLLOWING CONSENT AGENDA ITEMS.

- Approval of Minutes: August 3, 2015 and August 6, 2015

COMMISSIONER RUSSO SECONDED THE MOTION. MAYOR GOODENOUGH ASKED IF THERE WERE ANY DISCUSSION. MAYOR GOODENOUGH CALLED FOR A VOTE AND MOTION CARRIED BY UNANIMOUS VOTE.

Administrative Reports:

Mr. Mendenhall said he is pleased to update that the three individuals the Board appointed to Full-Time Maintenance Worker, Part-Time Groundskeeper and Part-Time Office Assistant have been notified of their appointment and they will all start on Monday at different times and they are very excited.

Committee Appointments:

COMMISSIONER DAVIS MADE A MOTION TO REAPPOINT GEORGE MULCAHY TO THE TREE ADVISORY COMMITTEE AND TO APPOINT JANET HEINIS TO THE TREE ADVISORY COMMITTEE. COMMISSIONER BRENNAN SECONDED THE MOTION. MAYOR GOODENOUGH ASKED IF THERE WERE ANY DISCUSSION. MAYOR GOODENOUGH CALLED FOR A VOTE AND MOTION CARRIED BY UNANIMOUS VOTE.

Public Hearings:

Calabash Lakes Phase 3 Rezoning from R-8 to PRD:

COMMISSIONER DAVIS MADE A MOTION TO OPEN THE PUBLIC HEARING ON THE CALABASH LAKES PHASE 3 REZONING FROM R-8 TO PRD. COMMISSIONER MANNING SECONDED THE MOTION. MAYOR GOODENOUGH ASKED IF THERE WERE ANY DISCUSSION. MAYOR GOODENOUGH CALLED FOR A VOTE AND MOTION CARRIED BY UNANIMOUS VOTE.

There were no public comments.

There was discussion on easements around the ponds.

COMMISSIONER DAVIS MADE A MOTION TO CLOSE THE PUBLIC HEARING ON CALABASH LAKES PHASE 3 REZONING FROM R-8 TO PRD AND GO BACK INTO OPEN SESSION. COMMISSIONER MANNING SECONDED THE MOTION. MAYOR GOODENOUGH ASKED IF THERE WERE ANY DISCUSSION. MAYOR GOODENOUGH CALLED FOR A VOTE AND MOTION CARRIED BY UNANIMOUS VOTE.

Calabash Lakes Development Agreement:

COMMISSIONER DAVIS MADE A MOTION TO OPEN THE PUBLIC HEARING ON CALABASH LAKES DEVELOPMENT AGREEMENT. COMMISSIONER PRZYWARA SECONDED THE MOTION. MAYOR GOODENOUGH ASKED IF THERE WERE ANY DISCUSSION. MAYOR GOODENOUGH CALLED FOR A VOTE AND MOTION CARRIED BY UNANIMOUS VOTE.

As there were no public comments, the following motion was made:

COMMISSIONER MANNING MADE A MOTION TO CLOSE THE PUBLIC HEARING ON CALABASH LAKES DEVELOPMENT AGREEMENT AND GO BACK INTO OPEN SESSION. COMMISSIONER BRENNAN SECONDED THE MOTION. MAYOR GOODENOUGH ASKED IF THERE WERE ANY DISCUSSION. MAYOR GOODENOUGH CALLED FOR A VOTE AND MOTION CARRIED BY UNANIMOUS VOTE.

Old Business:

None

New Business:

Second Reading of an Ordinance Rezoning Phase 3 of Calabash Lakes from R-8 to PRD:

COMMISSIONER RUSSO MADE A MOTION TO APPROVE THE SECOND READING OF AN ORDINANCE REZONING PHASE 3 OF CALABASH LAKES FROM R-8 TO PRD. COMMISSIONER BRENNAN SECONDED THE MOTION. MAYOR GOODENOUGH ASKED IF THERE WERE ANY DISCUSSION. MAYOR GOODENOUGH CALLED FOR A VOTE AND MOTION CARRIED BY UNANIMOUS VOTE.

Consideration of a Development Agreement for Phase 3 of Calabash Lakes:

COMMISSIONER DAVIS MADE A MOTION TO APPROVE THE CONSIDERATION OF A DEVELOPMENT AGREEMENT FOR PHASE 3 OF CALABASH LAKES. COMMISSIONER MANNING SECONDED THE MOTION. MAYOR GOODENOUGH ASKED IF THERE WERE ANY DISCUSSION. MAYOR GOODENOUGH CALLED FOR A VOTE AND MOTION CARRIED BY UNANIMOUS VOTE.

Approval of the Final Plat for Calabash Lakes Phase 1 C:

Mr. Mendenhall said at the present time, we have received no further engineering update. Mr. Mendenhall said it would be his recommendation to table this item until further data is received. There was discussion with the developer on this item. It was approved by consensus of the Board of Commissioners to table this item until the October Workshop in order to receive more information.

Mayor and Board of Commissioners Comments:

Commissioner Brennan – Commissioner Brennan said he is pleased that we have a full staff. Commissioner Brennan said we have made tremendous strides and hope to keep building in tremendous strides moving forward.

Commissioner Russo – Commissioner Russo said he is waiting to see what the Legislation does as far as what the Tree Inspectors can do. Commissioner Russo said as far as the voluntary tree inspectors, he's hoping and trying to get all the developments as one. Commissioner Russo said he's starting already with Ocean Forest. Commissioner Russo said he is trying to get one person in each development that will volunteer to go out on tree inspections with us which are the originals. Commissioner Russo said only when we get an application for a tree removal in their development. Commissioner Russo said he's hoping that will bring everyone in on the same line. Commissioner Russo said he would like to send out a bulletin asking for one person from each development; if an application should come in for their development. Commissioner Russo said he is trying to give everyone a hand in what we are doing. Commissioner Russo said again, we may have to wait until we see what Legislation does with Building Inspectors.

Commissioner Manning – Commissioner Manning said he wanted to remind everyone that tomorrow is 911 and observance.

Commissioner Davis – None

Commissioner Przywara – Commissioner Przywara wanted to tell Andy Webster that the feedback that he got back from the residents at The Farm was they were very happy with the s

sealer. Commissioner Przywara said the only little complaints he heard were some inconveniences. Commissioner Przywara said that Matt rides bike a lot and the roads are a lot smoother and glad they got it done. Commissioner Przywara said he understands that you are going to go back and touch up some of the crosswalks. Commissioner Przywara said they are seeing a lot of progress on the ditch cutting and the grass is growing back. Commissioner Przywara said it was a good move to go too full time maintenance staff and there is a lot of progress being made in this municipality.

There was discussion with Andy Webster on who owns the Shingletree ditch and who is responsible for the maintenance. The Board said D.R. Horton owns the ditch and you are responsible for the maintenance on the ditch and they can go to Register of Deeds to verify.

Mayor Goodenough – Mayor Goodenough said for the past six years he’s been a Commissioner and Mayor of this Board. Mayor Goodenough said for members that were here prior to Mr. Manning such as Joyce Dunn, I will give them some recognition. Mayor Goodenough said we made great strides and great accomplishments in this town; we have full time maintenance workers, equipment we purchased, ditch maintenance and swale maintenance. Mayor Goodenough said the overall corporate community; we improved the overall looks of the community. Mayor Goodenough said and to have this town step backwards is not a smart move and I just hope everything works out alright in the future, for the best of this Town, not just one community.

COMMISSIONER DAVIS MADE A MOTION TO CALL A SPECIAL CALLED MEETING ON SEPTEMBER 17, 2015 AT 10:00 AM IN THE CHAMBERS OF TOWN HALL, 200 PERSIMMON ROAD, CAROLINA SHORES FOR THE PURPOSE OF THE PINWOOD DRIVE PAVING BID AWARD CONTRACT. COMMISSIONER PRZYWARA SECONDED THE MOTION. MAYOR GOODENOUGH CALLED FOR A VOTE AND MOTION CARRIED BY UNANIMOUS VOTE.

Closed Session:

None

Adjourn:

COMMISSIONER BRENNAN MADE A MOTION TO ADJOURN THE SEPTEMBER 10, 2015 BOARD OF COMMISSIONERS MEETING. COMMISSIONER RUSSO SECONDED THE MOTION. MAYOR GOODENOUGH CALLED FOR A VOTE AND MOTION CARRIED BY UNANIMOUS VOTE.

Walter B. Goodenough, Mayor

Submitted by:
Nicole Marks
Town Clerk

**TOWN OF CAROLINA SHORES
BOARD OF COMMISSIONERS
SPECIAL CALLED MEETING MINUTES
September 17, 2015
10:00 a.m.**

DRAFT

Mayor Walter B. Goodenough called the September 17, 2015 Special Called Meeting to order at 10:00 a.m. Commissioners Present: Greg Davis, John E. Manning, Joseph Przywara, Bill Brennan and John Russo. Also Present: Jon Mendenhall, Town Administrator; Julie Munday, Finance Director and Town Engineer, Holly Cook.

Absent: Nicole Marks, Town Clerk

Mayor Goodenough said the purpose of the Special Called Meeting is opening, discussing and possibly awarding bids for the paving project.

Town Engineer, Mrs. Holly Cook from East Coast Engineering & Surveying gave the presentation on the Pinewood Paving Project. Ms. Cook said they did receive three bids and they came in much higher than they had anticipated and much higher than the State of North Carolina threshold allows. There was discussion on NCDOT Standards, alternatives and who the bid was sent out to. The Board discussed the threshold of \$600,000.00 and Mrs. Cook said it was 20% higher than the threshold allows. Mrs. Cook said they looked at what they could do to get the price down and one way was to give the contractor's more time for bidding. Mrs. Cook said their company made calls to local contractors for bidding. Mrs. Cook said they also sent the bid out to contractor's in South Carolina. Mayor Goodenough said they were basically talking about resurfacing, doing some milling at the intersections and taking out two or three metal road culverts and replacing them with concrete. The Board discussed reason why they can't accept these bids, the first being State Statute and simply because the cost way out of line for what they have budgeted for the project. Commissioner Davis said we cannot spend \$1,000,000.00 on this section of road. Mayor Goodenough said the Town has already spent \$28,000.00 to \$30,000.00 for the engineering firm to prepare and send out the bid. Mayor Goodenough asked if the Town was going to have to pay again to have them send it out for bid again and Mrs. Cook said yes, you will have to pay for their service to send the bid out again. Mrs. Cook said she would need more information from the Board before she could give them an idea of cost. Commissioner Russo asked if the Town was mandated to replace the road to NCDOT Standards and Mrs. Cook said no. There was discussion on utility allowances for location of utilities. Mrs. Cook said the Board could open it up to two bids and ask for alternatives. Mr. Mendenhall said the recommendation would be to have an engineering study done; not a lot of study and the Board would need to look at the estimated prices to understand the difference that was discussed, so you can evaluate what these options look like in terms of price before you go to bid, before you go through this process. Mrs. Cook said the bid package was 110 pages. Commissioner Przywara said the Board is rejecting the bid because it wasn't in compliance with State Statute. Mr. Mendenhall asked Mrs. Cook if she could bring back some recommendations in two weeks to this Body at their October meeting and Mrs. Cook said absolutely. It was approved by consensus that the bid does not have to be too NCDOT Standards. There was discussion on the bid process and release of information.

COMMISSIONER RUSSO MADE A MOTION TO NOT ACCEPT THE BID. COMMISSIONER DAVIS SECONDED THE MOTION. MAYOR GOODENOUGH ASKED IF THERE WERE ANY DISCUSSION. Commissioner Przywara said the Board is not accepting the bid because of North Carolina General Statute. MAYOR GOODENOUGH CALLED FOR A VOTE AND MOTION CARRIED BY UNANIMOUS VOTE.

The Board asked Town Engineer, Mrs. Cook on how they should proceed with splitting the bid. Mrs. Cook said she would have to look at the numbers to see how best to do that. There was further discussion on locating utilities. Mrs. Cook explained the scope of the bid to the Board. Mrs. Cook discussed: preliminary site work, traffic control, erosion and sediment control which is required by law, demolition, the Pinewood Drive roadway and milling. Commissioner Russo asked if FEMA would be involved and Mrs. Cook said yes. Commissioner Davis asked what is driving up the cost another \$300,000.00 and can't believe the cost of \$50,000.00 for mobilization. Mrs. Cook said timeframe and location of utilities are big factors in the price being higher as well. Commissioner Russo discussed the replacement of the reflectors. Mrs. Cook discussed re-grading, storm drainage, headwalls and work on the median. Mayor Goodenough said the total cost of the project should be between \$500,000 -\$600,000. Mayor Goodenough asked if the Town runs the risk of spending more money by splitting the project. Mrs. Cook said that depends. There was further discussion by the Board of splitting the project. There was discussion of having the Town's Engineering Technician inspecting the work. Mrs. Cook will attend the Town of Carolina Shores Board of Commissioners October meeting and bring with her recommendations on the rebidding of the Pinewood Drive project.

Adjourn:

COMMISSIONER DAVIS MADE A MOTION TO ADJOURN THE SEPTEMBER 17, 2015 BOARD OF COMMISSIONERS SPECIAL CALLED MEETING. COMMISSIONER BRENNAN SECONDED THE MOTION. MAYOR GOODENOUGH ASKED IF THERE WERE ANY DISCUSSION. MAYOR GOODENOUGH CALLED FOR A VOTE AND MOTION CARRIED BY UNANIMOUS VOTE.

Walter B. Goodenough, Mayor

Submitted by:
Nicole Marks
Town Clerk

**TOWN OF CAROLINA SHORES
BOARD OF COMMISSIONERS
REGULAR MEETING MINUTES
October 8, 2015
2:00 p.m.**

DRAFT

Mayor Walter B. Goodenough called the October 8, 2015 meeting to order at 2:00 p.m. The Pledge of Allegiance was recited and there was a moment of silence. Commissioners Present: Joseph Przywara, John E. Manning, Greg Davis, Bill Brennan and John Russo. Also Present: Jon Mendenhall, Town Administrator; Julie Munday, Finance Director and Nicole Marks, Town Clerk.

Absent: None

Agenda Adjustments:

None

Public Comment:

Ms. Joyce Dunn, 41 Gate 1 – Ms. Dunn said she wanted to let you all know that she is probably one of the very few people in her community who are defending the fact that the maintenance could have no way prevented the flooding we had; the weather caused the flooding, although maintenance could be a lot better. Ms. Dunn said but I am not one of the people defending your response to it. Ms. Dunn said I've been out in our community with volunteers ever since this began, helping out the neighbors that have no flood insurance. Ms. Dunn said there are about 7 or 8 of those houses that are tragic and they have lost several thousands of dollars and don't have the money to rebuild. Ms. Dunn said I have to say, everywhere where I have been, I have not seen any of you. Ms. Dunn said you closed your office for four days in the middle of a terrible disaster and I think that as our leaders, everyone of you should have been going door to door finding out what where the problems were and offering help and there has been no help offered. Ms. Dunn said and when we called to ask can we do this or can we do that, no one has said oh gosh let me see how I can help you and the answer has been no, we are not doing that. Ms. Dunn said I think it was a dismal failure of leadership and I have not said anything at any meetings before because I don't think it's appropriate to comment publically during an election season. Ms. Dunn said but I have to say here, I am so disappointed. Ms. Dunn said I have never seen such a dismal failure of leadership in such a terrible crisis. Ms. Dunn said in all honesty I have seen any of you and there are still people out there in terrible crisis who have not gotten help. Thank you.

Gordon Robinson, 2 Myrtlewood Drive – Mr. Robinson said in Southeastern North Carolina, there's two towns that are next to each other, in fact they are even on the same road, they are both on Persimmon, they both have a Town Hall and they both have a Public Works Department. Mr. Robinson said they all have the same problems, they don't have earthquakes or sandstorms or tornadoes but they have a problem with water. Mr. Robinson said we had a four day emergency due to water; I've gone out twice a day all these days. Mr. Robinson said on Sunday, there was some activity in the Calabash Town Hall and the Public Works Department

appeared to be moving and there were trucks moving around. Mr. Robinson said he came here and there was nothing, Town Hall was closed, twice he came to try to the door just to be sure but there were no cars out here except the town cars and they didn't move for four days. Mr. Robinson said he went and checked the Public Works Department, checked the doors there too, nothing. Mr. Robinson said he did finally meet two men that said they were cleaning some ditches but they left at 3:00. Mr. Robinson said on Monday, the Town of Calabash was wide open, Town Hall had a lot of cars there, there was a lot of activity and Public Works Department seemed to be going out. Mr. Robinson said he comes over here and there is nothing at Town Hall, no cars here and checked the doors and couldn't get in. Mr. Robinson said the Public Works Department, the same thing, no activity in the midst of an emergency that is know to be the biggest problem in Southeastern North Carolina. Mr. Robinson said he would like to know if either the Mayor or the Town Administrator would like to address the problem of why we had such a deficit in leadership in this Town, in the past week, either one.

Mayor Goodenough said this is not the time for us to make those comments but thank you for yours.

Dan O'Reilly, 27 Pinewood Dr. – Mr. O'Reilly said I have complained about the outside corner of Myrtlewood and Pinewood Drive, not cleaning out this ditch and the man as far as I have know for sixteen years since he's lived there, he's never, never once put a rake into his ditch. Mr. O'Reilly said the town has never cut the trees or trimmed the trees that are hanging into the drainage ditch on the empty lot next to it, Ms. Barbara Hartnett, the neighbor who adjoins that property has constantly called this Town Hall to try to address the problem but they put some stones in, they put a pipe in to try to back up some of the debris that comes out of there but nobody has gone after the homeowner. Mr. O'Reilly said John Russo has been there but guess what, I got all that man's garbage in my driveway and my lawn when that (expletive) started flowing out of his property, it's disgraceful, when is something going to get done about these ditches, you ride around and half of those pipes are clogged. Mr. O'Reilly said nobody is addressing that, this Town six years ago were supposed to start doing something about the ditches, to reconfigure, to level out why hasn't anything been done about it? Mr. O'Reilly said six years ago, we were told the homeowner takes care of his half of the ditch and the town will take care of their half of the ditch. Mr. O'Reilly said well guess what, I haven't seen the Town out there taking care of the ditches. Mr. O'Reilly said the drain pipes under those driveways aren't clear. Mr. O'Reilly said there was a female engineer here that got fired because she insisted that those pipes get cleaned and she sent letters out to that. Mr. O'Reilly said the Town should be hanging its head in shame on that one because she was a 100% correct. Thank you.

Gere Dale, 46 Calabash Dr. – Mr. Dale said this is certainly non-political and it's very emotional for him. Mr. Dale said he's lived here for 28 ½ years, of course going through Floyd in 1999 there was major flooding in this Town, 40 some homes were flooded out. Mr. Dale said the good news is I don't believe there were that many flooded out this time, perhaps half that number. Mr. Dale said between 1999-2009 the Town did a lot of work to put in new concrete culverts underneath a lot of the major roads and enlarged the openings so the water could flow. Mr. Dale said he thinks that had a very positive affect. Mr. Dale said there was work done on the ditches up on Northwest Drive, there were additional conduits put in from Northwest Drive going out underneath to Food Lion. Mr. Dale said finally there was a huge area excavated behind the Recycle Center that was supposed to take up whatever overflow from the Oakbark ditch and Food Lion ditch. Mr. Dale said well there was water in that area but it certainly did not take up the amount of water that would've precluded flooding on Northwest Drive and Oakbark. Mr. Dale said he doesn't know whether it's lack of engineering or whether it's lack of

maintenance by the Town but he certainly thinks you need to take a look at it because it was put there designed to be an overflow from all the water coming from the front and back of Carolina Shores. Mr. Dale said bear with him while he gives five scenarios and he will try to not be too emotional. Mr. Dale said Glenda Ward who lives at 1, Court 6 went out Friday evening because water was up to her window, in her home at 1 Court 6, she climbed out the window to go out and try to un-trap the water in the culvert that's behind her house. Mr. Dale said when the water was up over her waste, she decided that wasn't a good thing to do; she called Town Hall and left a message. Mr. Dale said she came to Town Hall on Saturday afternoon, there was nobody here. Mr. Dale said all she wanted was for somebody to come out and unclog a metal culvert at Gate 5. Mr. Dale said she had water up to her window, now the reason why is because the water in the swales on Carolina Shores side of Highway 17 drained into a common area, that common area comes over and drains underneath Northwest Drive and into a metal culvert that's supposed to carry that water over into the ditch along the other side, the Golf Course side of Northwest Drive. Mr. Dale said that has been clogged up according to the resident for two years. (At this time, the five minute public comment allotment time was up and Mr. Dale asked if he could please continue. Mayor Goodenough said yes, I will give you another couple of minute's sir). Mr. Dale said there were maintenance people that came out this morning, I was there at the time they came out and in ten minutes they completely cleared that area completely, completely a fall out on part of the Town. Mr. Dale said Larry and Debbie Gonzalez who live at 17 Northwest Drive, live opposite where the ditch comes across Highway 17 and drains into the Northwest Drive area. Mr. Dale said on Friday night, they were avalanched and they have water at least nine inches in their house. Mr. Dale said they claim and he's sure they are correct, not only was the water coming across but garbage and sewer were coming across. Mr. Dale said that has been a constant source of angst on his part, why Carolina Shores North water has to drain over into Carolina Shores. Mr. Dale said he is sure the water coming from that source, was a major reason why there was flooding on Northwest Drive. Mr. Dale said Steve and Judy Maiorca that live at 5 Oakbark claim that their Oakbark ditch has not been cleaned in two years. Mr. Dale said Henry and Maryann Kubacki who live at 72 Calabash Drive had water in their house, significant water in their house. Mr. Dale said that was caused by a malfunction that the Town failed to recognize to clear out before we had this major rainfall. Mr. Dale said Bill Matteson, who lives at 21 Oakbark Court, that's the very end of Oakbark Court that house historically, particularly in 1999 flooded. Mr. Dale said Bill has spent \$70,000.00 to try and make his home waterproof and rainproof. Mr. Dale said he built up the property with bookoo truckloads of material; he's actually built a canal in back of his house to channel the water away. Mr. Dale said he got water up to about a foot, foot and a half at his house despite all those efforts. Mr. Dale said he could go on but he thinks those 5 horror stories are enough to make you all very concerned. Thank you.

Mary Timothy, 31 Bayberry Circle - Ms. Timothy said she wants to discuss two horror stories. Ms. Timothy said one is Brenda Babs (sp?), she lives at 12 Court 12 and she had called numerous times in the summer because she has two drains that are clogged and nobody came to unclog them. Ms. Timothy said that Friday morning she underwent surgery on her arms and her legs. Ms. Timothy said because of the surgery it was doctor's orders that she stay in bed. Ms. Timothy said that afternoon she called and asked me to walk her dog and she called me in a panic because her house was under water the two drain pipes were literally shooting water. Ms. Timothy said she panicked and started cleaning and broke the stitches. Ms. Timothy said luckily, we started to call neighbors and one happened to be a nurse who came down and helped her physically and bandage up her arms from moving stuff that she should not have been moving. Ms. Timothy said the other one is Tom McClure and he lives on 5 Northwest Drive. Ms. Timothy said Friday afternoon his wife was getting home from the hospital and she has had

three surgeries and their house went under water and they couldn't handle it. Ms. Timothy said he is a very private person, so they got them over to her house for the weekend because they couldn't go in there and their family drove down. Ms. Timothy said so there was a problem and both the houses back to the main canal, it was devastating. Ms. Timothy said they tried to call and contact someone but no one was here.

Anthony Masi, 1054 Waterview – Mr. Masi said it's been repetitive as he understands about the speeding cars up and down Waterview Lane, excessive speeds and I live right on that road. Mr. Masi said he sees it many times. Mr. Masi as a matter of fact he was coming along a couple of weeks ago and almost got run down by a car that was doing better than 25 mph. Mr. Masi said he was at the meeting yesterday at the POA and it was brought up again, it's a repetitive thing. Mr. Masi asked what can be done with this. Mr. Masi said I know they had speed signs up to tell you your speed but none of this is doing any good so I was wondering what can be done to reinforce this. Mr. Masi asked about putting in speed bumps. Mr. Masi said we had this problem up North on a street and they didn't want to do speed bumps because of liability and so forth and wanted the Board to consider putting in a Stop Sign or throw rocks at them. Mr. Masi said he was told to try and get a plate number and give it to a Sheriff. Mr. Masi said something needs to be done. Thank you.

Consent Agenda:

COMMISSIONER BRENNAN MADE A MOTION TO APPROVE THE FOLLOWING CONSENT AGENDA ITEMS.

- Halloween Resolution
- Off-Shore Drilling Resolution

COMMISSIONER MANNING SECONDED THE MOTION. MAYOR GOODENOUGH ASKED IF THERE WERE ANY DISCUSSION. MAYOR GOODENOUGH CALLED FOR A VOTE AND MOTION CARRIED BY UNANIMOUS VOTE.

Administrative Reports:

Mr. Mendenhall said the Administrative Report is attached and was developed last week and there has been a lot of storm activity since then and gave a brief update.

Storm Activity Update – Mr. Mendenhall said the Town had 66 calls for service and there are 11 calls still out. Mr. Mendenhall said 39 houses have been damaged and the Town is going to each and every one. Mr. Mendenhall said we operated a clearing house and called in the N.C. Baptist Men, American Red Cross and the N.C. Methodist Men and they are doing free work for the residents. Mr. Mendenhall said there is substantial debris in some culverts that needs to be removed, so we are prepared for another event. Mr. Mendenhall said there have been briefings occurring daily and he will discuss that further under item 4b.

Finance Report – Ms. Munday, Finance Director gave the following report:

**TOWN OF CAROLINA SHORES
FINANCE REPORT
1st Quarter 2015-2016**

GENERAL FUND

Beginning Balance \$4,439,118

BUDGET SUMMARY

	2015-2016	ACTUAL AS	PERCENT
		OF 09-30-2015	
ADOPTED			
EXPENDITURES			
OPERATING	1,220,600	267,858	
CAPITAL	457,000	92,904	64,200 EQUIPMENT
CAPITAL BALANCE	288,776	28,704	PROF FEES
TOTAL...	1,677,600	360,762	22%
REVENUES			
PROPERTY TAX	365,000	2,402	
SALES TAX	560,000	215,210	
UTILITY FRANCHISE	120,000	40,745	
MISC. (Bldg.Permits, Beer/Wine, Interest, MV)	525,600	170,385	
Powell Bill Funds	107,000	53,834	
TOTAL...	1,677,600	482,576	29%

Ending Balance: **\$4,491,108**

Update on Pinewood Drive Project from Town Engineer – Mrs. Holly Cook from East Coast Engineering & Surveying discussed the Pinewood Drive Project with the Board said she is assigned the Pinewood Drive resurfacing and drainage project. Mrs. Cook said from discussion at the last meeting they have taken a look at splitting the project into two bid phases. Mrs. Cook said the first phase would be the drainage and patchwork and the second phase would be the resurfacing. There was further discussion on scheduling. Mayor Goodenough said for the residents that didn't know, the bids came in well over a million dollars and the Board only budgeted shy of five hundred thousand for this project, so the Board is looking to split the bid package. Mayor Goodenough said they are looking to change of the culverts and do some patchwork first and then phase in the resurfacing. Mrs. Cook discussed locating the utilities for this project and core samples. Mr. Mendenhall said under item 4b, Flood Disaster Update there is a memo regarding a Flood Recovery Package which could impact the Board's decision on the Pinewood Drive Project.

Flood Disaster Report - Mr. Mendenhall gave the last briefing message for Flood Disaster (which is on file with the Town Clerk). Mr. Mendenhall presented the Board of Commissioners with the following Flood Recovery Package below:

MEMORANDUM

TO: Mayor and Board of Commissioners
FROM: Jon M. Mendenhall, Town Administrator
SUBJECT: Flood Disaster Recovery
DATE: 10/8/15
ENCL: Last Briefing Message, Proclamation of State of Emergency, State of Emergency Resolution
CC: File

The flood disaster experienced by the Town from Friday, October 2, 2015 to Monday, October 5, 2015 caused significant damage and requires a comprehensive recovery package:

Flood Recovery Package

Waive Permits and Regulations

- Waive building permits on those residences that were impacted (damage assessment on file) until October 30, 2015. Approximately 39 impacted structures.
- Waive tree inspections town-wide until October 30, 2015

Postpone Capital Projects Until Recovery Cost is Clear

- Postpone Pinewood Drive

Reallocate Funds: (FEMA eligible reimbursement [if available])

- By postponing Pinewood Dr: \$288,776 available for reallocation
- EOC Work – emergency response, over-time call-ups

- Cost Estimate: \$10,000.00
 - Debris removal from Canals – remove debris/de-muck/de-silt and clear all culverts (43,000 LF of primary canals). Work will probably take 43 days at 1,000 LF of canal per day.
 - Work to be done by contractor
 - Cost Estimate: \$100,000.00; cost estimate should be finalized in 1wk
 - Debris removal from roadside ditch – remove debris/de-muck/de-silt and clear all culverts, 180,000 LF of roadside ditch (subdivisions: Carolina Shores, Village at Calabash). Work will probably take 180 of work at 1,000 LF of roadside ditch per day.
 - Work to be done by Town forces, additional equipment needed (2nd dump truck, jetter, possibly a chipper to chip branches)
 - Cost Estimate: \$100,000.00; cost estimate is for additional equipment
 - Repair flood damaged streets
 - Work to be done by contractor
 - Cost: \$13,255.64 + approximately \$7,000 contingency = \$20,000
- Reallocation: \$288,776 available - \$230,000 emergency work = \$58,776 balance

Hazard Mitigation Grant

- Intend to apply (if available) for a Hazard Mitigation Grant: Drainage work on Northwest Drive, Palmer Drive & Bogie Vicinity, Nautical Drive, Oakbark Court, Calabash Drive, Pinewood Drive, and Sunfield Drive. Intent is to study drainage (where not previously studied) and to fix drainage as much as practical in flood impacted areas.

Better than Before

The proposed recovery package is that the Town of Carolina Shores will not only recover from this unprecedented disaster, but will be better than before. Fixes are in the works for all the flooded areas to mitigate future flooding subject to hazard mitigation grant funding.

1. Debris has been washed into roadside ditches and canals, this debris has to be removed otherwise we are not ready for the next storm. Town forces will focus on the roadside ditches and culverts, and a contractor will focus on canals.
2. The following streets where flooding occurred will have their drainage studied (pending Hazard Mitigation Grant funding) and drainage will be improved (pending Hazard Mitigation Grant funding)
 - a. Calabash Lakes Blvd –engineered, construction permits pending
 - b. Northwest Dr – needs to be engineered and a grant applied for
 - c. Palmer Dr & Bogie – needs to be engineered and a grant applied for
 - d. Nautical Dr – engineered, and a grant needs to be applied for
 - e. Oakbark Ct – needs to be engineered and grant applied for
 - f. Pinewood Dr – engineered, and a grant needs to be applied for
 - g. Sunfield Dr – needs to be engineered and a grant applied for
 - h. Calabash Dr – needs to be engineered and a grant applied for

Action Items

At the pleasure of the Board:

1. Approve flood recovery package.

2. Pursuant to the Emergency Operations Plan, ratify the State of Emergency.
3. Instruct that thank you letters be sent to: American Red Cross, Brunswick County Emergency Services, Brunswick County Sheriff, Calabash Volunteer Fire Department, NCDOT, NC Baptist Men, NC Methodist Men

There was discussion on the Flood Disaster Report and the Pinewood Drive Project.

COMMISSIONER BRENNAN MADE A MOTION THAT WE GO AHEAD AND 1) APPROVE THE MONEY TO BE SPENT FOR THE CLEANING UP OF THE DITCHES AND ALL THE STORM DAMAGE, FLOOD RECOVERY PACKAGE AND 2) GO AHEAD WITH THE CULVERT WORK AS PLANNED ON PINWOOD DRIVE. COMMISSIONER DAVIS SECONDED THE MOTION. MAYOR GOODENOUGH ASKED IF THERE WERE ANY FURTHER DISCUSSION. Commissioner Manning said he feels they should do Sunfield too at the same time. Commissioner Przywara said lets stay where we are at right now and if we somehow end up getting more money, there's nothing saying we can't go back. Commissioner Manning said we're cleaning up one end but not the other end. MAYOR GOODENOUGH CALLED FOR A VOTE AND MOTION CARRIED WITH A 4-1 VOTE. COMMISSIONERS BRENNAN, RUSSO, PRZYWARA AND DAVIS AS YES AND COMMISSIONER MANNING AS NO.

There was discussion that the Board of Commissioners authorizes the culvert work as planned on Pinewood Drive.

COMMISSIONER MANNING MADE A MOTION TO APPROVE THE RESOLUTION OF STATE OF EMERGENCY FOR HURRICANE JOAQUIN-HISTORIC FLOODING. COMMISSIONER DAVIS SECONDED THE MOTION. Commissioner Przywara said he would like to make a modification to that motion because the Resolution is not only claiming a State of Emergency, it's also removing the State of Emergency because every time a State of Emergency is declared, it's terminated, it's both. COMMISSIONER MANNING AMENDED HIS MOTION TO INCLUDE CLARIFICATION THAT THIS RESOLUTION IS NOT ONLY CLAIMING A STATE OF EMERGENCY, IT'S ALSO REMOVING THE STATE OF EMERGENCY BECAUSE EVERY TIME A STATE OF EMERGENCY IS DECLARED, IT'S TERMINATED, THIS RESOLUTION IS BOTH. COMMISSIONER DAVIS SECONDED THE AMENDED MOTION. MAYOR GOODENOUGH ASKED IF THERE WERE ANY FURTHER DISCUSSION. MAYOR GOODENOUGH CALLED FOR A VOTE AND MOTION CARRIED BY UNANIMOUS VOTE.

Public Hearings:

None

Old Business:

None

New Business:

Consideration of a Final Plat for Phase 1 C of Calabash Lakes – There was discussion on this item. Commissioner Przywara said he wants to make sure they don't end up with drainage

issues like what they have at The Farm with the gumbo and clay. Commissioner Przywara said if the Town has our inspector out there, they can scoop out some of the material to see if it is acceptable. Mr. Mendenhall said so the direction is to extend the stone to be sure there is suitable material and if unsuitable material is encountered, extend the stone so you remove the unsuitable material.

COMMISSIONER MANNING MADE A MOTION TO APPROVE THE CONSIDERATION OF A FINAL PLAT FOR PHASE 1 C OF CALABASH LAKES SUBJECT TO THE ADDITION NOTED ABOVE TO EXTEND THE STONE TO BE SURE THERE IS SUITABLE MATERIAL AND IF UNSUITABLE MATERIAL IS ENCOUNTERED, EXTEND THE STONE SO YOU REMOVE THE UNSUITABLE MATERIAL. COMMISSIONER PRZYWARA SECONDED THE MOTION. MAYOR GOODENOUGH ASKED IF THERE WERE ANY FURTHER DISCUSSION. MAYOR GOODENOUGH CALLED FOR A VOTE AND MOTION CARRIED BY UNANIMOUS VOTE.

Committee Reports:

Keep Brunswick County Beautiful - Mr. Gere Dale gave the report for KBCB. Mr. Dale said he is the representative for the Town for KBCB and it's an environmental outfit. Mr. Dale said we didn't have a meeting in September but we are going to have a large presence at Sunset at Sunset this Saturday. Mr. Dale said we hope that anyone who is going will come around to their table. Thank you.

Mayor and Board of Commissioners Comments:

Commissioner Brennan – Commissioner Brennan said he thinks people don't realize the magnitude of the storm we just had, 23 inches. Commissioner Brennan said yes we had some home damage, yes the Town did everything they possible could in terms of getting ready for it, the crews were out in the ditches two days, twenty-four, forty-eight hours before the storm started. Commissioner Brennan said if people had problems and needed evacuations and things like that, then certainly 911 services was the place to call. Commissioner Brennan said I think it's very unfair that people complain about not having maintenance staff, basically the people that are cleaning the ditches available during the storm. Commissioner Brennan said again, we have emergency services personnel for that. Commissioner Brennan said our Maintenance Department is not emergency services. Commissioner Brennan said now, they did everything they could, they walked the ditches and if stuff happened after, in the middle of storm, that is something they should not have too address. Commissioner Brennan said you're asking people to risk their life and limb, when in fact if people have to be rescued and taken out of their house, that's fine but it's not the responsibility of the Town to deal with individual's property. Commissioner Brennan said that's his point.

Commissioner Russo – Commissioner Russo said to add to Gere's mention about the 17 crossover, from Highway 17 to Northwest Drive that was our worst corner and asked if they changed that to two six foot pipes, it was supposedly going to do okay but this 1,000 year rain showed it didn't do it. Commissioner Russo said our ditches, every one of them even the one he was stuck in Sunday, after an hour of when it stopped raining, the water receded. Commissioner Russo said so that tells me that the Town's ditches were working but they were not made for this 1,000 year rain. Commissioner Russo said it also showed him that some of the ditches that we thought were doing the right thing on Sunfield; the water was going backwards instead of forwards. Commissioner Russo said so something at the other end was causing it. Commissioner Russo said that change that they made was supposed to do everything they

thought it would do, it just didn't because of the type of rain that we had. Commissioner Russo said our men worked from their house, our Foreman had the truck home and he came out. Commissioner Russo said Mr. Mendenhall was out in one of our vehicles. Commissioner Russo said he was out until he got stuck in the water. Commissioner Russo said we held the people back based on the County's idea of everybody being off the road. Commissioner Russo said we leaned more towards safety, rather than going out and getting stuck ourselves. Commissioner Russo said the Northwest Drive Ditch, in back of the houses which that cross culvert empties into, we don't own it, it's deeded too the County. Commissioner Russo said we only maintain it because if we didn't do it, nobody would. Commissioner Russo said but we are not responsible for that ditch. Commissioner Russo said he's been saying that since he and Dale were running together. Commissioner Russo said the County owns it and if we don't do it, the County says they are not going to be bothered with it. Commissioner Russo said there's a problem, too say we didn't take care of the ditch, we tried to take care of the ditches that we don't even own. Commissioner Russo said there are two ditches on Sunfield that were put in by the builder and to this day we still don't know who put them in. Commissioner Russo said one of them caused the back-up on Sunfield. Commissioner Russo said you have to look at what's legal, it's not a problem they ignored, it's just something they may not have been able to do. Commissioner Russo said if you would have talked to him Thursday, he would have said that everyone of our ditches were going to work perfectly; until he saw the rain and got out in it and saw certain places. Commissioner Russo said they will see if Mr. Mendenhall can get some money for it. Commissioner Russo said he agrees they should do the first thing first which are the ditches; get them all cleaned, he just gets a little upset.

Commissioner Manning – Commissioner Manning said in regards to the Carolina Shores North water flowing over, the water that flows behind Food Lion, in a large ditch, which flows down to the old Morgan's Auto Body and then across 17 again to Shingletree, the Shingletree then flows into the Waccamaw and floods out and until it gets cleaned out, water doesn't flow into it, I'll tell you that now. Commissioner Manning said there was an article on the weather report this morning talking about the Waccamaw being at crest level right now. Commissioner Manning said so it does cause a larger problem than what people think. Commissioner Manning said he agrees with John, when they did that cut off from the North to us, Northwest Drive, that was there for Floyd and that is really when the last flooding occurred. Commissioner Manning said I think the residents here should not be as upset as he thinks some are. Commissioner Manning said that's just his opinion. Commissioner Manning said you could be living in Brunswick Plantation which got the most of the publicity if you read the Beacon. Commissioner Manning said you talk about people spending money; they will spend a lot of money over there to try and get rid of the flooding. Commissioner Manning said we tried and he thinks we improved the water flow here. Commissioner Manning said to gripe is one thing but the demand that we stay open on a bad day is another thing. Commissioner Manning said the thing is we have to look out for our employees getting in here and if we feel that the roads or conditions are not suitable for them to be traveling, then I don't think they should have too come in. Commissioner Manning said if that means we should all run down to Calabash and thank them for being open on Monday, then go right ahead. Commissioner Manning said he thinks they made the right move and the Mayor made the right move on Thursday signing an order. Commissioner Manning said we did have a voluntary evacuation and the high school was open for everyone's usage. Commissioner Manning said he and Commissioner Przywara said they went up and checked out the evacuation area at West Brunswick High School and there was hardly anybody there but it was open, they had television for the people that were coming in. Commissioner Manning said there was a Sheriff's Deputy there to make sure nothing happened. Commissioner Manning said the County and the Town did what we needed to do at the time. Commissioner Manning said

everybody is going to find fault at something. Commissioner Manning said he thinks that on a whole this Town responded in the right direction and that most people should be thankful, really. Commissioner Manning said that is just his thought.

Commissioner Davis – Commissioner Davis said he was amazed as to what we were able to get out of this community water wise, at a time when we had a storm that no one in their right mind would ever dream would happen in that short of time. Commissioner Davis said the ditches were not designed for that kind of water. Commissioner Davis said Shingletree backed up early on Friday which created a mess and we can't control a swamp. Commissioner Davis said a ditch that empties into a river that is still flooded to this day. Commissioner Davis said there were a few homes that flooded, I feel horrible for those people and he's glad there were services out there helping them. Commissioner Davis said he takes exception to the fact that we weren't available as much. Commissioner Davis said there were Commissioners in and out of the Command Center, there were phone calls being made. Commissioner Davis said there are other neighborhoods besides one that they checked to see if they had problems. Commissioner Davis said we had two other communities that you couldn't get in and out of and those people got through it. Commissioner Davis said Mr. Mendenhall was on the ball the entire time.

Commissioner Przywara – Commissioner Przywara said I know our presence was here and we were out there riding around. Commissioner Przywara said he had a Honda Accord and he got nervous with that and his wife though he was nuts because he was out at 5:30 pm riding around and it was ugly. Commissioner Przywara said he doesn't recall if it was when Selby was Mayor or not but there was a meeting with the County to re-divert Carolina Shores North's water to go up the other side of Highway 17. Commissioner Przywara said the other thing I think we need to do is we had two Resolutions, one for Halloween and one for the Off-Shore Drilling and we didn't get any action on them other than talked about them; do you need a motion on them? Ms. Marks said they were approved on the Consent Agenda.

Mayor Goodenough – Mayor Goodenough said he tried to get out of his development and when he got water half way up his SUV, I decided it would be foolish to even try leave and came back home. Mayor Goodenough said within an hour and half after the rain stopped, I was driving through every one of these communities, I was driving through four inches of rain, six inches of water and I could drive every road in every one of our communities without a problem an hour and a half after the rain stopped. Mayor Goodenough said yes, there was water on the roads but it was drivable. Mayor Goodenough said I want to commend the Town for being here, the Maintenance workers were out there, I passed Chris and passed our Code Compliance Officer on the corner of Sunfield and Persimmon and she had the road blocked off and Chris had the backhoe against that culvert pipe and digging out debris and piling it on the side. Mayor Goodenough said we had our people doing what they were supposed to do during the storm without injury or threat of life or loss of life. Mayor Goodenough said we lost nobody in this storm, nobody. Mayor Goodenough said we had 37 evacuations from the Fire Department and they should be commended and thanked for all the work they did. Mayor Goodenough said the County was where they needed to be. Mayor Goodenough said he was on the telephone with Mr. Mendenhall six or seven times a day and he was either here and if he couldn't stay here, he was at the Fire Department handling operations from up there. Mayor Goodenough said so for someone to say that they saw six vehicles parked out there and we were not here, that's just false. Mayor Goodenough said and because it's that particular time of year, we're going to get a bad rap no matter what. Mayor Goodenough said everybody did their due diligence and I will stand on my record and I will stand on anybody else's record here again, I want to thank the previous

Board's for their due diligence. Mayor Goodenough said Mr. Dale you are responsible for a lot of the culvert work that was done over here six or seven years ago and it did help. Mayor Goodenough said Ms. Dunn, you and I both went to Bolivia and the first thing we did was get that culvert changed out over there that had been on the back burner. Mayor Goodenough said had the culvert been left alone, a few people wouldn't be sitting here and there would be six feet of water in this building and I think we all know that. Mayor Goodenough said the reason that the water comes over from Carolina Shores North across Highway 17 and then back over to this community is because the Army Corps of Engineers when they laid all this out that was the natural flow of that water to come over here and they did not divert it, so they kept it the way it is. Mayor Goodenough asked the Board of Commissioners to write a strongly worded letter to the Army Corps of Engineer, DENR, County and Brunswick County Commissioners that the water be diverted back up Highway 17 where it belongs and stay on that side of 17 instead of coming into our community. Mayor Goodenough said that was the main cause of the flooding over on Northwest Drive. Mayor Goodenough said yes we do know about it, we know the water was flowing eight feet in front of someone's house that had nothing to do with what were capable of or being able to handle as a Town or community. Mayor Goodenough said that was a problem eight years ago, also during Floyd, it's still a problem. Mayor Goodenough said it was nothing we did or did not do. Mayor Goodenough said he doesn't know what else to say other than I believe we did everything humanly possible for this Town to avert an even bigger catastrophe. Mayor Goodenough said again, no loss of life and everybody's safe. Mayor Goodenough said if you still don't think we averted a catastrophe, turn on the TV. look at Columbia, look at Charleston, look at Raleigh and other places. Mayor Goodenough said when this storm hit and the Fire Department was called out on emergencies, Bolivia was sitting up there going what are you doing with all your fire and emergency equipment and the Chief had to tell them personally, we've got twelve inches of rain down here. Mayor Goodenough said and it was bright sunshine in Shallotte, Ocean Isle Beach and nobody up there knew what was going on down here until eight hours later and that's the God's honest truth. Mayor Goodenough said I think we owe a lot to our emergency service people. Mayor Goodenough said right now you may not like what we did or think we could've done something different but send every one of them a letter thanking them for the lives they saved.

Closed Session:

None

Adjourn:

COMMISSIONER BRENNAN MADE A MOTION TO ADJOURN THE OCTOBER 8, 2015 BOARD OF COMMISSIONERS MEETING. COMMISSIONER MANNNG SECONDED THE MOTION. MAYOR GOODENOUGH ASKED IF THERE WERE ANY FURTHER DISCUSSION. MAYOR GOODENOUGH CALLED FOR A VOTE AND MOTION CARRIED BY UNANIMOUS VOTE.

Walter B. Goodenough, Mayor

Submitted by:
Nicole Marks
Town Clerk



RESOLUTION

Approval of Closed Session Meeting Minutes

WHEREAS: North Carolina General Statute 143-318.10 (e) provides that every public body shall keep full and accurate minutes of all official meetings, including any closed sessions held pursuant to North Carolina General Statute 143-318.11, and

WHEREAS: The Board of Commissioners of the Town of Carolina Shores acknowledges full and accurate minutes were kept for the following Closed Sessions:

- | | | | |
|------------------|------------------|-------------------|-------------------|
| March 31, 2009 | November 5, 2009 | December 10, 2009 | March 4, 2010 |
| April 7, 2010 | May 3, 2010 | August 12, 2010 | January 27, 2011 |
| July 15, 2011 | July 2, 2012 | June 6, 2013 | May 5, 2014 |
| May 8, 2014 | June 5, 2014 | July 7, 2014 | August 7, 2014 |
| October 6, 2014 | November 3, 2014 | January 5, 2015 | January 8, 2015 |
| February 2, 2015 | February 5, 2015 | March 2, 2015 | April 6, 2015 |
| May 4, 2015 | May 7, 2015 | June 18, 2015 | September 8, 2015 |

NOW THEREFORE BE IT RESOLVED by the Board of Commissioners for the Town of Carolina Shores that the above closed session minutes be approved:

Approved this _____ day of November, 2015.

Mayor Walter B. Goodenough

Nicole Marks, Town Clerk

ATTEST:

Town of Carolina Shores Board of Commissioners
Agenda Item Summarization & Narrative

Item: Administrative Report

Contact: Mr. Jon Mendenhall, Town Administrator

Location: Administrative Reports
“Administrative Reports”

Follow-up: None

Requested Action: Receive reports on the administration of the Town

Budgetary Impact: None

Narrative:

This item presents for the Board’s information various reports on the administration of the Town.

TOWN OF CAROLINA SHORES NORTH CAROLINA

200 Persimmon Road
Carolina Shores, NC 28467



Phone 910-575-4877
Fax 910-575-4812

MEMORANDUM

TO: Mayor and Board of Commissioners
FROM: Jon M. Mendenhall, Town Administrator
SUBJECT: October Administrative Report
DATE: 10/26/15
ENCL: None
CC: File

This report serves as the report of administrative activities undertaken by the Town in the month of October and summarizes administrative, operational, and project updates for the reporting period. This report also summarizes and provides a brief narrative on items of business to be considered at the Regular Meeting of the Board.

Administrative

Administrative work is focusing primarily on supporting the various projects that are on-going and monitoring progress on goals set by the Board. Goal attainment appears to be approximately 50% complete for the fiscal year. Completion of The Farm under-drains and Pinewood drainage would greatly increase attainment. The flood recovery package is on the agenda to discuss under old-business as some clarification is needed prior to proceeding.

Operational

Finance

Finance, in conjunction with the auditor, will present the audit for the previous fiscal year.

Public Works

Maintenance

The October schedule experienced delay attributable to weather: approximately 2wks of flood recovery work resulted in schedule slippage. The bi-annual canal cutting has been postponed due to the Flood Recovery Package since Category A debris removal will occur by a private contractor. The canals and major ditches have been placed on a bi-annual cycle to allow for sufficient vegetation to maintain banks and slopes, the last cutting occurred in March-April with

the planned 6mos interval falling in October. Roadside ditch maintenance will continue into November, at which time Maintenance will switch gears and focus on trimming as outlined under projects. Estimates have been compiled for all procurements under the Flood Recovery Package. Competitive bidding of this work is occurring. As previously reported in October, equipment will be rented to facilitate Christmas light hanging and tree trimming (3mos instead of 2mos or approximately 1mo per maintenance zone). The annual master schedule anticipates that this will have to be a re-occurring activity until some of the most pervasive over-growth is brought under tighter management.

Inspections

Inspections worked through the damage assessment process as part of flood recovery work. Each structure that reported damage was visited (some multiple times) in order to get an accurate inventory of damaged structures. Pursuant to Board action on the Flood Recovery Package, all permits and inspection fees were waived for the structures where a damage assessment was on file. Inspections has now largely returned to a normal program of work, permit volume on new construction remains high.

Public Safety

Code Compliance is working on a fall work program: 1) business registration and recognition of the Carolina Shores municipal name

Project

Drainage

Roadside Drainage Maintenance

1. Roadside Drainage – roadside drainage ditch maintenance will continue into November at which time it will conclude in order to support 3mos of trimming: canals, roadside shoulders, and over-hanging limbs

Resurfacing

Annual Resurfacing Project

1. Pinewood Drive – engineering exploratory work nearly complete, bid package available for Town review and approval first week in November

Incorporations via Reference

Inspections – please refer to the Inspections Report as provided

Public Safety – please refer to the Calabash VFD Report as provided

BUILDING INSPECTIONS DIVISION
MONTHLY ACTIVITY REPORT
October 1-28, 2015

This report covers the period of October 1-28, 2015. The month of October is very active in all areas including building permits, inspections, plan reviews, and service requests.

BUILDING PERMITS & CERTIFICATES OF OCCUPANCY ISSUED

8 permits for new single family have been approved (construction value \$1,368,771). There are also 4 new permits for a multi-family unit (construction value \$809,405)

In addition, there are 9 building permits for repair/remodel underway.

5 certificates of occupancy were issued in October 2015 (construction value \$1,017,165)

There are 66 valid new home permits open now where the homes are in various stages of construction.

OTHER PERMITS ISSUED

Mechanical: 10
Electrical: 1
Plumbing: 1
Zoning: 4

INSPECTIONS

178 building inspections have been completed.

TREE PERMITS

Permits: 2
Trees: 14
Approved: 14
Denied: 0
Replacement: 0

OTHER ACTIVITIES

Approximately \$31,362.64 in permit fees was collected in October 2015. YTD collected \$133,777.58.

All monthly reports to federal, state, and county have been completed in addition to weekly and monthly reports to construction statisticians.

Building inspections staff issued 34 recycle center stickers.

Town of Carolina Shores Board of Commissioners
Agenda Item Summarization & Narrative

Item: Review of Annual FY 15 Audit

Contact: Ms. Julie Munday, Finance Director

Location: New Business

Follow-up: None

Requested Action: Acceptance of audit report (motion, second, vote)

Budgetary Impact: None

Narrative:

This item presents the Board with the annual audit, a presentation by the auditor will occur at the Workshop meeting.

Town of Carolina Shores Board of Commissioners
Agenda Item Summarization & Narrative

Item: Public Hearings

Contact: Mr. Walter B. Goodenough, Mayor

Location: Public Hearings
"Public Hearings"

Follow-up: None

Requested Action: Conduct Public Hearing(s) as scheduled

Budgetary Impact: None

Narrative:

This item presents for the Board's action various public hearings as scheduled by the Board subject to the rules of procedure duly adopted by the Board of Commissioners and further subject to the requirements of the North Carolina General Statutes.

Town of Carolina Shores Board of Commissioners
Agenda Item Summarization & Narrative

Item: Flood Recovery Package
Contact: Mr. Walter B. Goodenough, Mayor
Location: Old Business
Follow-up: None
Requested Action: None
Budgetary Impact: Re-allocation and appropriation

Narrative:

This item presents the Board for Old Business discussion, the Flood Recovery Package approved in its entirety at the October 8, 2015 meeting of the Board.

Updates

Canals = \$129,000 less a deduct for non-Town owned canal from Persimmon south:
approximately \$110,000, additional bids are pending
Roadside Ditches = \$100,000 for a dump truck (\$60,000) and a jetter (\$40,000)
Road Repair = \$11,000, additional bids are pending
Response = \$5,000
Total: \$226,000; original estimate = \$230,000, \$4,000 less than estimated
Additional Savings = Sales tax recoup of 7% on equipment or \$7,000 resulting in total
savings of \$11,000 (\$4,000 + \$7,000 = \$11,000)

Recommendation

Authorize continued forward progress on above recovery items.

Hazard Mitigation Spot Improvements

Easement acquisitions in “finger ditches”
Count: 15
Approximate Scope: 100LF x 30LF; easement survey, legal cost, engineering pipe sizing
cost, work to be completed by force account (Town’s forces)
Estimated Cost: \$10,000/ea

Correct-Sizing

Count: 10

Approximate Scope: Correct temporary fixes that are failing or were under-sized

Estimated Cost: \$5,000/ea

Area-Wide (previously discussed, scopes were undefined, all costs are estimates)

Nautical Dr – implement drainage improvements [already engineered]

NW Dr – engineer roadside drainage improvements and driveway culvert rehab, \$60,000 in engineering, roadside fix only \$300,000

Calabash Dr – engineer driveway culvert rehab between Calabash Ct and Topsail Ct mid-block, a correct sizing and finger ditch improvement would also occur, but are accounted for separately, \$15,000 in engineering, \$50,000 in a fix

Sunfield Dr – replace failing culverts and boxes under road, finger ditch improvements would also occur, but are accounted for separately, \$30,000 estimated in engineering, \$200,000 in a fix

Pinewood Dr – implement drainage improvements [already engineered and in bid process]

Palmer Dr & Bogie Vicinity – accounted for in finger ditch section

Oakbark & Pinebark – accounted for in finger ditch section

Area-Wide Schedules

Nautical – scheduled to be complete in FY 17

NW Dr – not yet scheduled

Calabash Dr – not yet scheduled

Sunfield Dr – scheduled to be complete in FY 18

Pinewood Dr – complete in FY 16

Palmer & Bogie – complete in FY 16*

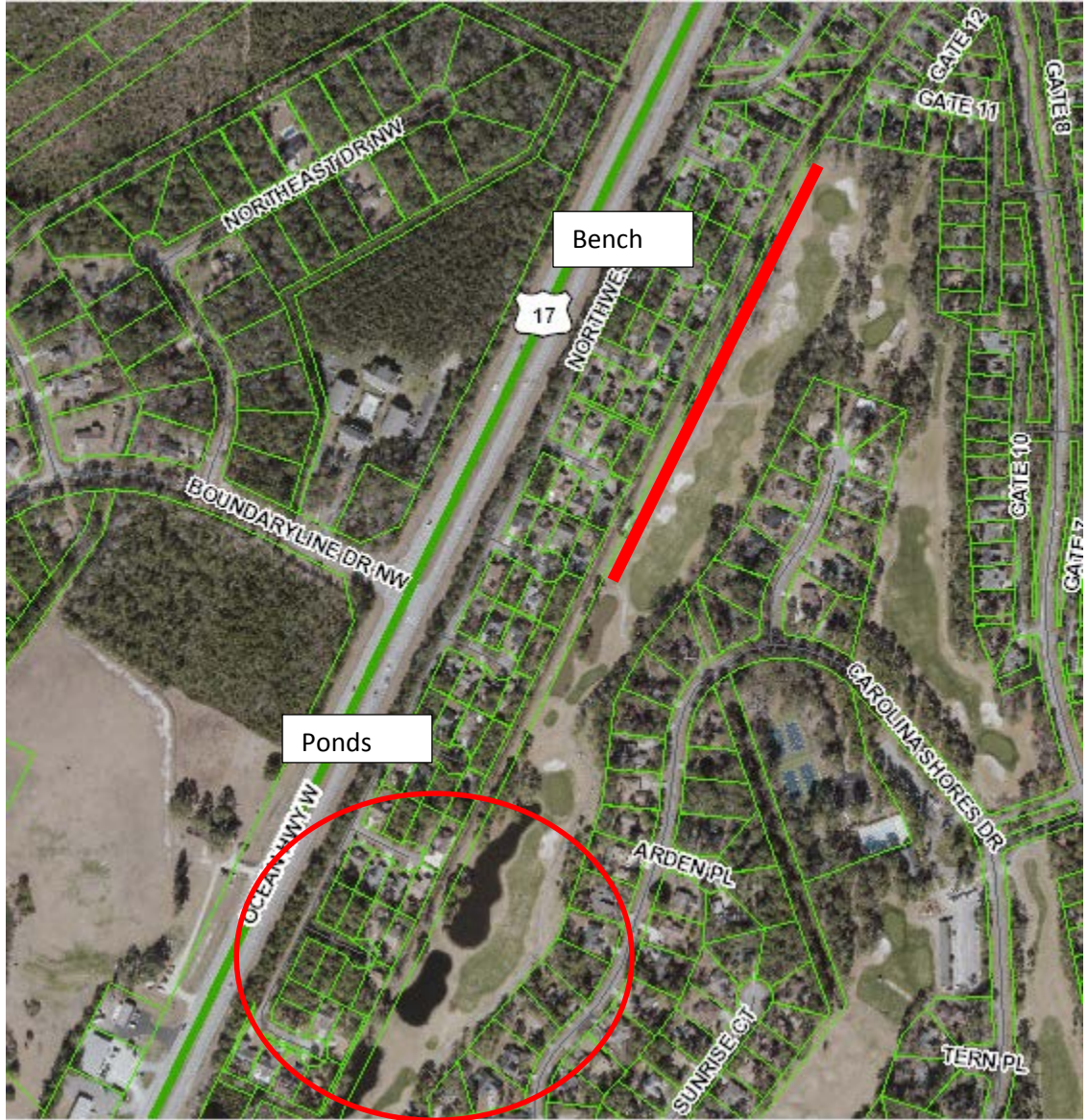
Oakbark & Pinebark – complete in FY 16*

*Presuming authorization

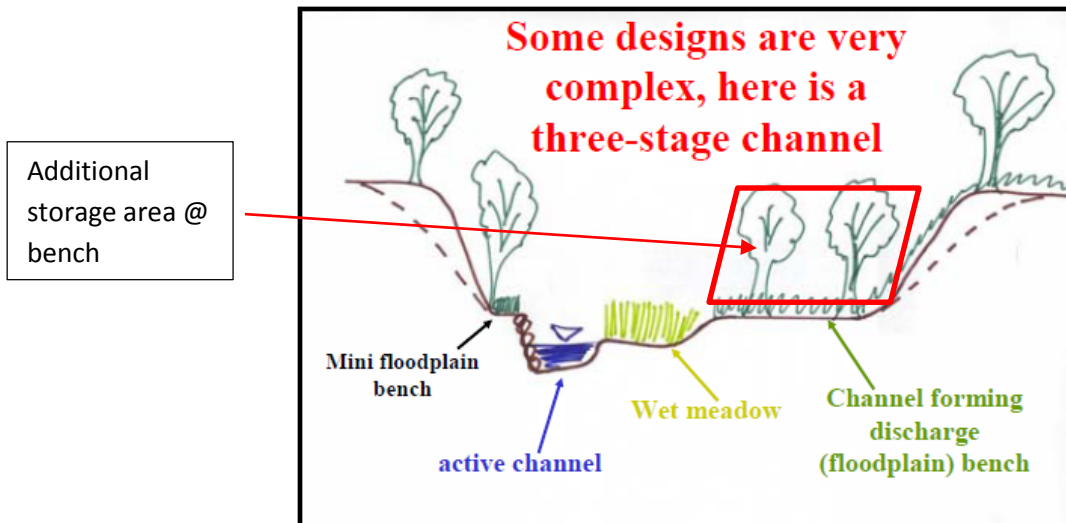
Innovation for Persistent Problem Areas

NW Dr

1. Acquire County's easement
2. Acquire an easement for the golf course ponds allowing them to be pumped down pre-event (48hrs approximately of pump down prior to a storm). Dig-out ponds for further storage. Construct a weir system to allow full-depth storage in upper-most reach of NW Dr Canal and permanent pumps to draft out of weirs into pond storage

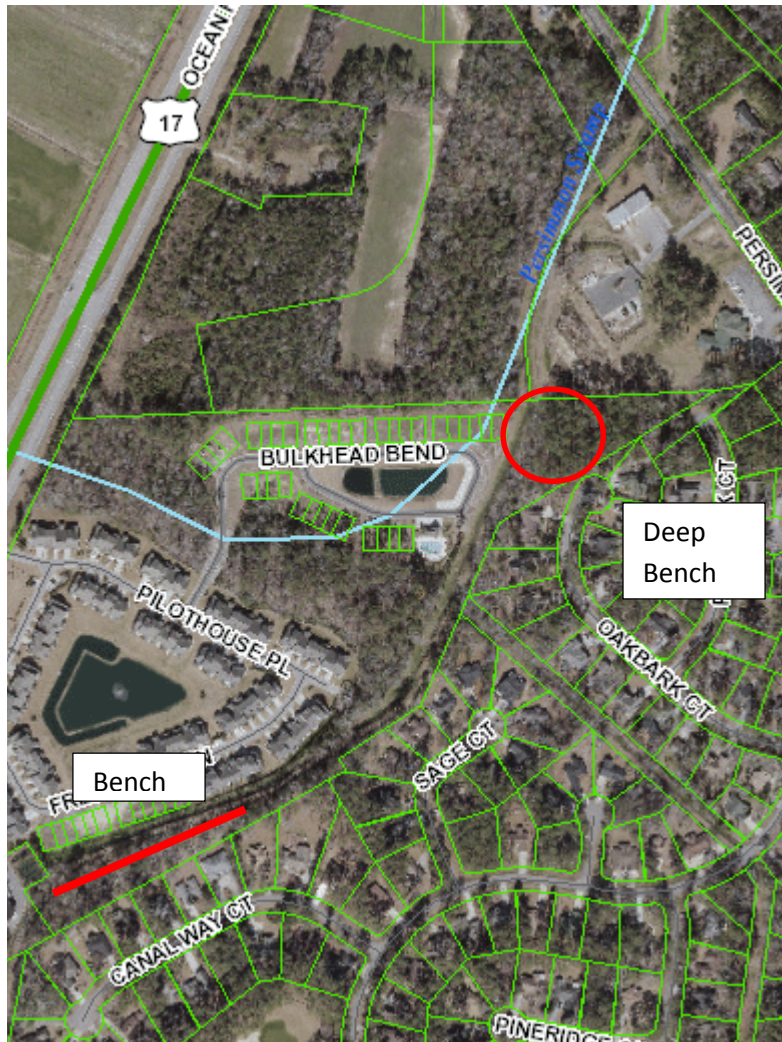


3. Acquire additional easement land from the golf course to construct a floodplain bench allowing more storage during peaking events.

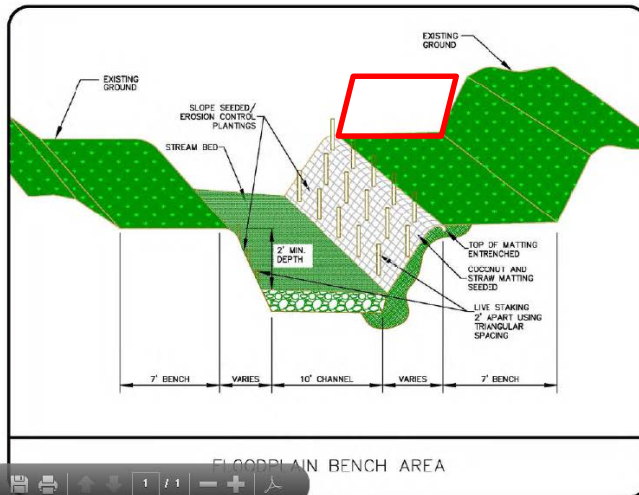
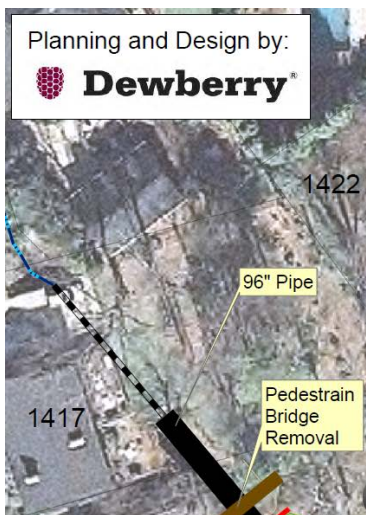


Oakbark and Pinebark

1. Acquire easement where none exists: Food Lion Shopping Center, Beacon Townes, and Novant Health
2. Construct a floodplain bench on the Beacon Townes property (southside of canal)



Storage Area Created: Polygon



Chapter 10

Two-Stage Channel Design



Issued August 2007

Cover photo: Low gradient, nonincising channels and ditches may be modified by creating a narrow flood plain, thereby creating some ecological benefits, while minimizing the need for maintenance (clean-outs).

Advisory Note

Techniques and approaches contained in this handbook are not all-inclusive, nor universally applicable. Designing stream restorations requires appropriate training and experience, especially to identify conditions where various approaches, tools, and techniques are most applicable, as well as their limitations for design. Note also that product names are included only to show type and availability and do not constitute endorsement for their specific use.

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654.1000 Purpose

Constructed channels are part of extensive portions of productive agricultural land in the United States. These channels provide important drainage and flood control functions. However, these agricultural channels are often constructed as traditional trapezoidal ditches using threshold design techniques. While this approach is suitable in some areas, channels of this design can require frequent and expensive maintenance in other parts of the country. In addition, natural ecological functions are normally not a consideration in the design of these channels. This chapter presents an alternative design to the conventional trapezoidal drainage channel. This two-stage channel system incorporates benches that function as flood plains and attempts to restore or create some natural alluvial channel processes. However, these two-stage channels are not an exact copy of natural streams, as the width of the benches is often small due to the confining geometry of the constructed channel. This chapter outlines measurement and analysis procedures that can be used to size two-stage channel systems that are more self-sustaining than conventional one-stage constructed channels. Although this chapter focuses primarily on an alternative design for constructed ditches, the technique may also have application in natural streams that have undergone incision or in streams where boundary constraints restrict restoration designs such as in urban or developed areas. A case study is also presented for a constructed two-stage ditch in Michigan.

This two-stage channel design approach is applicable to low gradient ditches and channels that are not undergoing incision.

Figure 10-1 Trapezoidal cross section of a constructed drainage ditch



654.1001 Introduction

Agricultural ditches and channels have long been used to provide important drainage and flood control. Historically, many of these drainageways are designed following threshold design techniques and result in a large, trapezoidal cross section. The primary purpose of the constructed channel is to convey water from agricultural fields.

Figure 10-1 illustrates the basic design configuration for a trapezoidal channel, and figure 10-2 is an example of one in Iowa. In many situations, the waterway does behave as a threshold channel, so this is an appropriate approach. However, when the waterway behaves as an alluvial channel, the ditch can be too entrenched and have overwidened bed widths. While the large section of a traditional agricultural drainage channel may provide sufficient flood conveyance, the more frequent discharges may not flow at a depth and velocity sufficient to move sediment through the reach. Deposition results, requiring maintenance to maintain the design flow capacity. As deposition occurs, bank stability may also become an issue as sediment deposits may force flows into one bank or the other. In addition, baseflows in this wide channel may have a depth which does not provide adequate aquatic habitat.

Figure 10-2 Drainage ditch constructed in north-central IA



Fluvial processes at work in agricultural ditches functioning as alluvial channel systems often try to develop a flood plain that consists of low benches. While this deposition reduces flood capacity, these ditches show improved stability and improved habitat quality. This chapter presents a two-stage approach to design stable agricultural drainage channels (fig. 10-3). Specifically, the two stages are the:

- dominant discharge or channel-forming discharge channel
- flood plain bench or flood plain channel

This two-stage approach provides improved physical, as well as ecological performance. The channel-forming discharge channel provides the necessary sediment conveyance, while the flood plain channel provides for the design flood conveyance. By nesting the channel-forming discharge channel within the larger channel, the entire waterway is more stable.

The technique described herein uses bankfull discharge as representative of the channel-forming discharge. Therefore, the channel-forming discharge channel is referred to as the bankfull channel. The bankfull channel has also been referred to as the effective discharge channel. However, this is not necessarily accurate. There are no calculations made to define the effective discharge. Rather, this lower stage is assumed to be the bankfull discharge of a low-flow channel formed in a typical constructed ditch. The distinctions between bankfull, channel-forming, and effective discharge are addressed in more detail in NEH654.05. The differences between alluvial and threshold channels are addressed in NEH654.07.

654.1002 Background

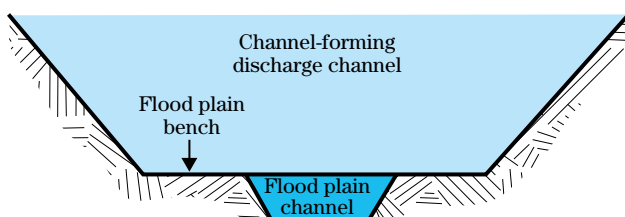
Highly modified channels drain extensive portions of productive agricultural land in the United States. Headwaters are typically the most modified. In some areas, virtually all of the natural channels have been deepened and straightened to facilitate the flow of water from agricultural subsurface drainage outlets and to maximize water conveyance. Work is done periodically to maintain the drainage function, which typically includes removal of woody vegetation, weeds, and deposited sediment. Ancillary work includes stabilizing bank slope failures and toe scour. Ditch form is a result of not only construction and maintenance, but also to verifying degrees, due to fluvial (flowing water) processes.

Ditch maintenance typically restores the ditch to a trapezoidal shape designed to transport large storm events (fig. 10-4). To facilitate drainage and reduce the frequency of over bank flows, trapezoidal ditches are designed to accommodate large flows (5- to 100+- year recurrence interval) within the ditch. Also the width of the ditch bottom is constructed wider than the channel bottom that would form by fluvial processes, thus, making the channel relatively wide and shallow. Therefore, the constructed ditch channel is often oversized for small flows and provides no flood plain for large flows.

In contrast to trapezoidal agricultural drainage ditches, integral parts of many natural stream channels are the flood plains. The flood plains of natural streams (except for those with steep bed slopes) are characterized by frequent, extensive over-bank flow. In dynamic equilibrium, a stream system depends on both the ability of the flood plain to dissipate the energy of high flows and to concentrate the energy of low flows to effectively create a balance in sediment transport, storage, and supply. In natural alluvial streams, fluvial processes work to size and maintain the dimensions of the bankfull channel based on the effective discharge (Ward and Trimble 2004).

In response to the construction of an oversized trapezoidal channel, alluvial channel processes often work to create a small bankfull channel by building a flood plain or bench within the confines of the ditch (fig. 10-4). If conditions allow, these benches can reach

Figure 10-3 Conceptual design for two-stage channel system



a stable size, thickly vegetated with mostly grasses. This results in a two-stage channel. The small bankfull channel will often meander slightly within the ditch. The bankfull channel will usually have steep (1H:1V) sides and a bed consisting of material coarser than that of adjacent reaches where benches have not formed. Further details on fluvial processes in ditches are available from Landwehr and Rhoads (2003) and Ward, Mecklenburg, and Brown (2002). It is important to note that these deposits within a constructed trapezoidal ditch reduce the overall flood conveyance. As a result, the channel may no longer provide the designed flood protection.

(a) Advantages of a two-stage channel

Benefits of a two-stage ditch over a conventional trapezoidal ditch are potentially both improved drainage function and ecological function. Drainage benefits may include increased ditch stability and reduced maintenance. Evidence and theory both suggest that ditches prone to filling with accumulated sediment may require less frequent dipping out if constructed in a two-stage form. Second, channel stability may be improved by a reduction in the erosive potential of larger flows as they are shallower and spread out across the bench (fig. 10-5).

Figure 10-4 Ditch before maintenance and after maintenance (MN)

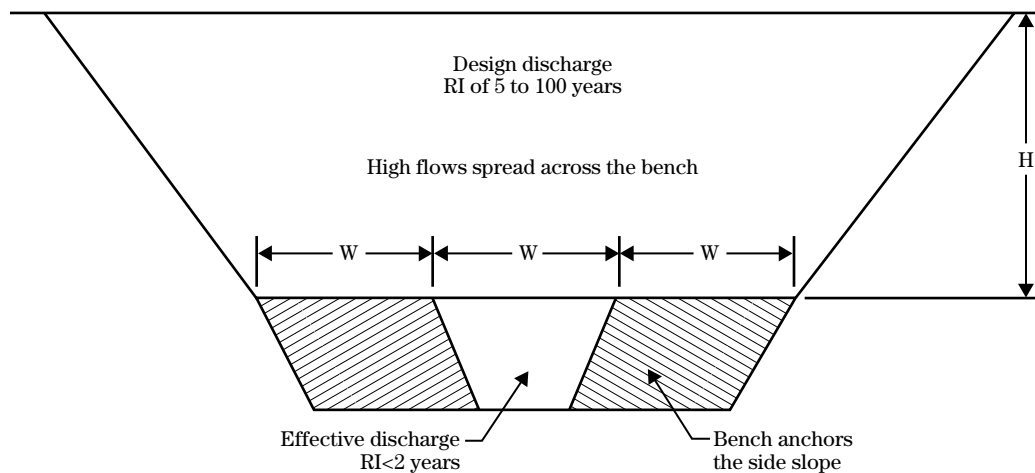
(a) Before



(b) After



Figure 10-5 Two-stage ditch geometry with minimum sized benches



Stability of the ditch bank should be improved where the toe of the ditch bank meets the bench, rather than the ditch bottom. Here the water depth is effectively reduced, and the shear stress (erosive force) on the toe of the bank is less. Also, not being in contact with low flow, this bank material will be dryer and can be stabilized with vegetation using threshold design techniques as described in NEH654.08. Since a two-stage channel in an alluvial system will be more likely to retain its design shape, it is easier to predict its flood protection performance.

The biggest advantage of these two-stage channels is the ability to transport sediment more effectively. However, the two-stage ditch also has the potential to create and maintain better habitat than a conventional trapezoidal ditch. The narrow, deep bankfull channel provides better water depth during periods of low flow. Grass on the benches can provide some instream cover and shade. The substrate in the bankfull channel is improved as the two-stage form increases sediment conveyance and sorting, with fines deposited on the benches and coarser material forming the bed.

(b) Design of a two-stage channel

Design and construction of two-stage channels is different than that of traditional trapezoidal channels. The design of a two-stage agricultural ditch in an alluvial channel system involves correctly sizing the bankfull channel and minimum bench widths for the flood plain bench. The dimensions of the bankfull discharge or fluvial channel dictate the two-stage channel design. If properly sized, the bankfull channel will be maintained by fluvial processes and will reduce or possibly even eliminate large-scale channel maintenance. The flood plain bench serves as a flood plain for the smaller bankfull channel, but it acts more as a threshold channel. The upper stage must convey the channel-forming discharge and must have an adequate size to prevent design flood flows from overtopping the ditch banks and flooding surrounding land.

654.1003 Field measurements

Initial reconnaissance of the site area is recommended to establish a base knowledge of the project characteristics, surrounding area, and regional environment. The unique characteristics of the project site will generate the criteria for regional measurements. If searching for a reference reach, the watershed area, vegetation, soil, land use, and slope should correspond to the site in question.

Where a modification will be made to an existing channel, detailed measurements should be made of the channel profile and the dimensions of the bankfull channel and benches that have formed within the channel system. Often, the bankfull channel will be overwidened, and the benches will be intermittent and sloping. Guidance on performing such investigations is provided in NEH654.03. Conducting an onsite geomorphology study is a simple and reliable method, but is only adequate if:

- a bankfull channel and benches have formed
- the project length is short; the drainage area is relatively constant

A detailed survey along the reach of interest, or a reference reach, consists of measuring the profile, pattern, and dimension of the channel. The profile is the slope of the bed surface including all pools, riffles, and runs. The undulating elevations of the channel bed leads to questions of the true channel profile. To compensate for the bed slope variability, the water surface is also measured to represent the slope of the channel. The pattern of a reach measures the sinuosity of the bankfull channel. This is obtained using a compass and measuring the azimuth from magnetic north. The dimensions of the channel are obtained by surveying cross sections, either at increments along the reach or at representative cross sections. A laser level and survey tape, or a total station instrument, are often used. The distance from the left channel bank and the change in elevation are measured for each grade break across the channel cross section. A pebble count should be performed to estimate the mean bed particle size. Guidance for performing pebble counts is provided in NEH654 TS13A.

654.1004 Bankfull channel design

The first step in developing a two-stage design is determining the probable dimensions of the bankfull channel. This channel will carry most of the sediment in the channel. The width of the bankfull channel is a key design characteristic. It will determine the success in achieving the intended drainage effects, as well as ecological benefits. Channel design dimensions are determined by measuring the bankfull discharge features or calculating the effective discharge at the project site and then by creating a watershed specific regional curve for the project.

(a) Regional curve development

The probable dimensions of the bankfull channel can be empirically determined based on regional studies similar to those that are conducted for natural streams. Typically, for natural streams this knowledge is acquired by developing regional curves that relate the bankfull channel dimensions to drainage area. Traditional regional curves are created by performing numerous profile and cross-sectional surveys at locations with different drainage areas, which often include U.S. Geological Survey (USGS) stream gage sites as described in NEH654.05 and NEH654.09. The regional sites should be selected to provide fluvial information over a range of drainage areas that can be plotted to show channel dimension relationships to drainage area.

Measurements can be taken at the water surface and the bankfull fluvial features. Each gage station has a unique rating curve, which is a relationship between the gage reading and the streamflow rate. The bankfull height at each gage can be obtained by the measurements at bankfull and the water surface along with the USGS real-time gage value. However, it is important to note that while each gage station may have a unique rating curve, the relationship between gage height and discharge is not necessarily unique. The rating curve may shift over the long term as the cross-sectional shape and/or elevation changes, and it may shift over the course of a hydrograph due to the unsteady loop effect or changing bedforms. If the rating curve is applicable, these values, combined with the width, will

provide an additional point when creating a regional curve. An applicable and complete regional curve can be a valuable tool for two-stage channel design, as well as many other stream design activities.

Care must be taken with the use and development of the regional curves. The data used to develop a curve needs to be from physiographically similar basins. Drainage network patterns and the relative location of the channel site with respect to uplands are significant characteristics. The bed and bank characteristics used in the regional curve development should be the same as those at the project site. Issues related to the development and use of regional hydraulic geometry curves are described in more detail in NEH654.09.

Small watersheds that are drained by agricultural ditches can present particular challenges in the development of traditional regional curve data. In most parts of the Nation, there are a limited number of small-gaged watersheds, and these typically have short records or have been discontinued. Some additional difficulties associated with developing regional curves are that gages are often located at road crossings or the reach within the vicinity of the gage is highly modified.

(b) Rapid regional curve development

For two-stage channel design in many agricultural watersheds, an abbreviated rapid regional curve may be adequate. The method consists of finding ditches or streams with well-developed benches/flood plains and measuring at least the width and depth of the naturally formed bankfull channel. The selected channels must have reached a state of equilibrium and must be stable. Sites for any regional curve should also have similar characteristics to the project site and should come from physiographically similar watersheds. Several measurements should be taken for each range of drainage areas to verify that the measured feature is consistent with those across the watershed. Whenever possible, precision surveying instruments should be used to make the elevation and distance measurements.

Traditional regional curves are created by performing numerous detailed surveys at locations with different drainage areas. In contrast, a rapid regional curve channel dimension measurement consists of quickly

measuring visual fluvial features with a 100-foot tape and a telescoping leveling rod. The channel dimensions taken at a complementary range of several drainage areas should provide a sufficient spread for each log cycle. The bankfull dimensions of width and depth are measured where visible fluvial features are noticed. The drainage area for each measurement is acquired from a variety of methods such as calculating the area by hand using a planimeter or computer GIS software. The measured dimensions can be the plotted area versus drainage area, and a power regression equation can be fitted to the data. This equation can be used to estimate the bankfull channel design dimensions for a ditch, given the drainage area.

This rapid regional curve approach has been used on several watersheds in Ohio. Reportedly, this approach typically provides relationships between the bankfull channel and drainage areas with r^2 values of 0.8 or greater (Ward 2005; Ward et al. 2003).

(c) Reference reach

Measurements from a reference reach can provide valuable design guidance for the design of the bankfull channel. Typically, for natural streams this knowledge is acquired by conducting detailed surveys along a reach of interest and by conducting a detailed survey of a reference reach along the same stream or a similar nearby stream system. However, finding reference reaches can be a time consuming, costly, and frustrating activity. The attributes of the local subwatershed, such as the topography, soil and bedrock properties, vegetation on the banks and adjacent riparian zone, and size and characteristics of the active flood plain, can result in a variety of different stable channel dimensions for similar-sized drainage areas within a watershed or region. For a reference reach to be directly applicable, it must have similar climate, history, drainage area, and watershed conditions. More information on the identification and use of reference reaches is provided in NEH654.09 and 654.12.

654.1005 Flood plain channel design

The formation of benches in constructed ditches is the natural result of fluvial processes in most alluvial systems. The bench acts as a flood plain within the ditch to dissipate energy, reduce the erosive potential of high-flow volumes, and reduce the shear stress on the bank toe. In establishing two-stage geometry, it is often not cost effective or practical to form a flood plain as wide as fluvial processes would form under natural conditions. Large, deep agricultural ditches have often already been constructed to handle discharges from subsurface drainage systems. Making these large ditches even wider would result in extensive earth moving, high cost, and substantial losses in productive agricultural land. Therefore, the ability of these small flood plains (benches) to aid in developing a self-sustaining system is dependent on the establishment of dense grass cover on the benches and banks of the ditch. Also, the side slopes and depths of the ditch above the benches must satisfy geotechnical engineering requirements to provide bank stability.

In a designed two-stage channel, the elevations of the flood plain channel benches are dependent on correctly determining the size of the bankfull channel. The flooded width is defined as the total width across the ditch at the stage elevation where benches have formed and/or are anticipated to form. The two-stage width ratio is defined as the flooded width divided by the top width of the bankfull channel. Based on visual observations and modeling bed-load transport, two rules of thumb have been established:

- If the total width, when out-of-channel flow is initiated, is less than three times the top width of the bankfull channel, the benches might not fully develop, the benches are more likely to be unstable, and shear stresses on the bed and banks of the ditch will be high during large events.
- If the total width, when out-of-channel flow is initiated, is more than five times the top width of the bankfull channel, the channel will begin to exhibit a natural meander pattern that, at places in the ditch, is likely to cut into the banks of the ditch.

Therefore, when out-of-channel flow is initiated, the designed target total width should be between three to five channel widths (total bench sizes that are two to four times the channel width), if the objective is to provide adequate conveyance capacity and a more self-sustaining system, while maintaining a relatively straight ditch geometry. If the project goals or the stability requirements of the channel design require the development of a sinuous channel, a wider bench may be required. However, channel alignment design elements, such as are described in NEH654.12, will need to be addressed so that a stable planform is chosen.

654.1006 Flood conveyance

The overall conveyance capacities of the two-stage systems can be sized based on the probability of out-of-ditch flooding into adjacent areas. This probability is based on the recurrence interval storm event that the entire ditch can transport. Where possible, stream gage data should be used to determine the discharges associated with a prescribed recurrence interval. However, in most parts of the Nation, there are limited numbers of small watershed gages. Typically, these gages have short records or have been discontinued. Therefore, measured streamflows at locations without gages are determined from hydrologic models or from regional discharge curves. One source of regional discharge information is the National Flood Frequency (NFF) Program. The NFF Program includes 2,065 regression equations for 289 flood regions nationwide. These equations are contained in a Windows® program for estimating the magnitude and frequency of peak discharges for unregulated rural and urban watersheds. This program can be obtained at the following Web site:

<http://water.usgs.gov/software/>

Since most two-stage channels are of fairly uniform section and constant slope, a resistance equation, such as Manning's equation, can be used to calculate the depth corresponding to the design flow recurrence intervals.

654.1007 Spreadsheet tools for data analysis and design

Many of the calculations for two-stage channel assessment and design can be performed with the help of computer spreadsheets. One set has been developed by the Ohio Department of Natural Resources (ODNR). This suite of spreadsheet tools can be obtained from the following Web site:

<http://www.ohiodnr.com/soilandwater/streammorphology.htm>

These spreadsheets aid in designing a new bankfull channel together with various size benches, based on the following:

- a regional curve for the area
- cross-sectional data for a ditch or channel reach
- profile data for the reach that can include bed, water elevation, bench, and top of ditch data
- the D_{50} fraction of the bed material
- user-defined adjustments to the channel, bench, and ditch geometry

The channel width, depth, and cross-sectional area associated with the bankfull discharge at each location surveyed are entered into the spreadsheet to develop a regional curve. The calculated drainage area and bankfull discharge at each location are also entered into the same spreadsheet. A log-log plot is then made of each bankfull discharge dimension versus drainage area. A least-squares analysis is then used to fit a power regression line (a trend line) through each set of data and calculate the coefficients of the regional curve.

In the spreadsheet, stage-discharge relationships for each site are obtained based on Manning's equation. A separate Manning's n value is used for the bankfull channel and the vegetated benches and banks of the ditch. The roughness of the bed, banks, and benches vary seasonally based on winter conditions, vegetation growth, maintenance, and scour or deposition on these features. Therefore, the approach used only provides a general representation of roughness conditions. User-defined discharge versus recurrence

interval data, or estimates based on the USGS Urban Method for Ohio, are used together with Manning's equation to calculate the flow stage associated with each recurrence interval. The ODNR channel design spreadsheet is programmed to obtain coefficients for recurrence intervals of 0.25, 0.5, 1.0, and 1.5 years.

In the spreadsheet, bed-load transport in the bankfull channel is calculated based on the probable discharges that will occur during a 100-year time period, the D_{50} of the bed material, and based on estimates obtained from the Meyer-Peter and Müller bed-load transport equation (Ward and Trimble 2004). Estimates are obtained for the bed load, recurrence interval of the bankfull discharge, and probable stage of the bankfull discharge.

While these spreadsheet tools have been developed to aid in the analysis of stream form and processes, they are best applied to alluvial stream systems that are a function of the bankfull discharge.

(a) Site selection and reconnaissance

Potential sites for regional curve measurements were marked on Michigan, Indiana, and Ohio State Gazetteers published by DeLorme. Sites were selected to provide data for several sized drainage areas within each log cycle. Due to the remoteness of the area from Columbus, Ohio, no preliminary reconnaissance was conducted. At each site, the widths and depths associated with grade breaks were measured using a 100-foot tape and a telescoping surveying rod. A more detailed and accurate survey was conducted at the Hillsdale ditch using a laser level, 100-foot tape, and a telescoping rod with a laser receiver. At that site, cross-sectional information was obtained every 100 feet, and the location of the thalweg was noted. On November 16, just prior to construction of the two-stage geometry, a pebble count was conducted for reaches 600 to 800 feet, 800 to 1,000 feet, and 1,000 to 1,200 feet.

(b) Regional curve

Data were obtained at 14 locations within a 600-square-mile drainage area. A regression analysis of the data (fig. 10-7) indicates that the bankfull discharge dimensions are highly correlated with drainage area.

The poorest correlation is with channel depth, perhaps because some of the channels were associated with streams that were highly connected to the flood plain, while others were associated with grade breaks and small bench formation in ditches. The Hillsdale ditch has a 4.5-square-mile drainage area, and its measured channel dimensions are located almost exactly on the regression lines.

(c) Discharge data

The regional curve analysis was extended to the USGS gage on the St. Joseph River near Newville, Indiana. Streamflow data for this gage was obtained from the following Web site:

<http://water.usgs.gov/oh/nwis/rt>

At this site, a laser level was used to determine the bankfull discharge and water surface elevation. Real-time gage data were available at the time the survey was performed and downloaded from the Internet. Due to deep flow conditions, it was only possible to estimate the width of the river by making a measurement on the road across the bridge.

(d) Discharge versus recurrence interval

An annual series of peak flow data for the period 1947 through 2002 were available for the gage on the St. Joseph River near Newville, Indiana. The Weibull method (Ward and Trimble 2004) was used to develop a plot of discharge versus recurrence interval data resulting in a high correlation ($r^2=0.96$) between peak discharge and recurrence interval.

Example 10–1: Hillsdale County case study

The Hillsdale County, Michigan, case study was conducted as part of a demonstration project for The Nature Conservancy, Upper St. Joseph River Project Office, and is funded with a grant from the Great Lakes Commission. The survey was conducted in July 2003, and an existing ditch was modified to a two-stage geometry in November 2003 (fig. 10–6). The project site is located in Hillsdale County, within the St. Joseph Watershed (MI). In 1997, the ditch was cleaned out as part of a maintenance action and in July 2003, had 0.5 to 2.0 feet of sediment deposits on the bed and had formed small intermittent benches.

Figure 10–6 Ditch before construction at location 1,000–1,200 ft, and after widening of small benches at location 1,600–2,100 ft (Hillsdale County, MI)

(a) Before



(b) After



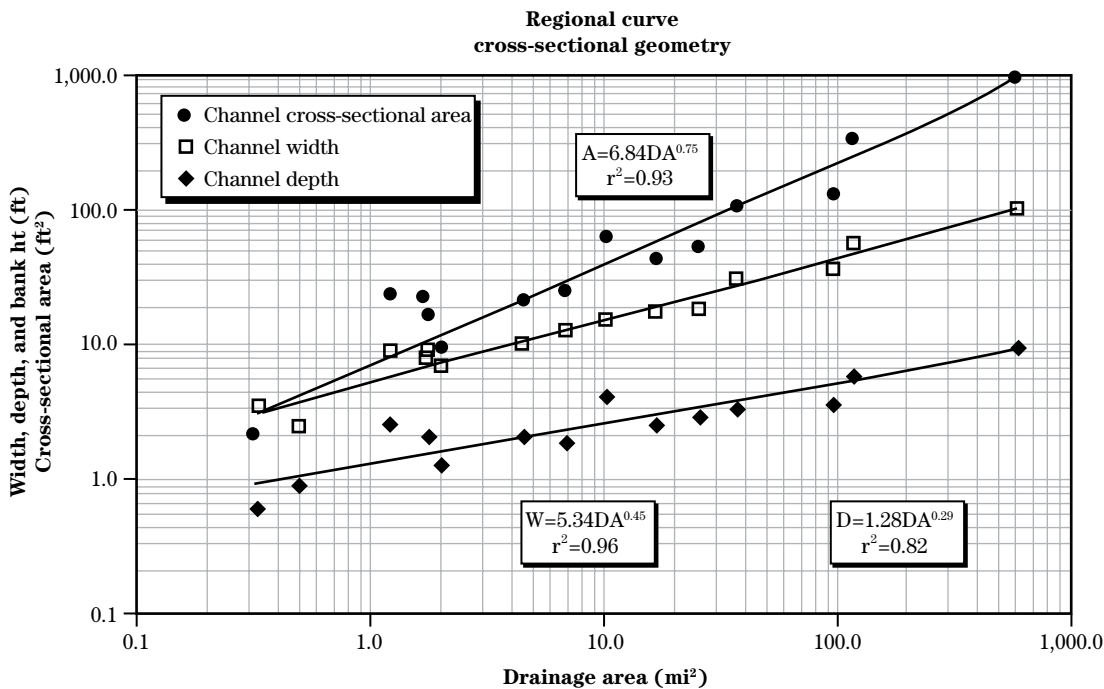
On the day of the survey, the water depth at the gage was about 3.7 feet (based on the real-time measurement from the USGS NWIS Web site), and the bankfull discharge dimensions were measured on both banks at about 3.7 to 5.4 feet above the water elevation. The most dominant feature was a continuous approximately 20-foot high bench that was located on the left bank. A shorter bench at a similar elevation was located on the right bank. Therefore, it was estimated that the bankfull stage was 7.4 to 9.1 feet.

An approximate rating curve for the gage was created using data from the USGS Web site. The bankfull discharge was estimated from the survey data, and the rating curve to be between 740 and 1,330 cubic feet per second. While this is a wide range, an analysis of the recurrence interval curve indicates that this corresponds to a recurrence interval that is much more frequent than 1 year. This frequent occurrence is not

surprising. In flat, poorly drained areas in the Midwest, where subsurface drainage is widely used, the bankfull discharge occurs frequently and primarily due to subsurface drainage discharges. Since this bankfull discharge is associated with high subsurface flows, it is usually associated with a recurrence interval that is much more frequent than one year (Ward 2005; Ward et al. 2003).

An analysis of the daily flow records shows that discharges within this range or larger occur on average 40 to 80 days annually. This range of flow seems to be too frequent to correspond to the bankfull or channel-forming discharge. However, an analysis of the daily flows exceeding 1,330 cubic feet per second revealed that, on average, they are associated with 1 to 13 discharge events annually, and the duration of these flows ranged from 1 to 49 days. High flows lasting many days typically occurred between November and April. On

Figure 10-7 Bankfull discharge channel dimensions for the St. Joseph River (OH) upstream of the gage near Newville, IN



average, annually, there are slightly more than five events, with an average duration of 8 days that exceeded 1,330 cubic feet per second.

A bankfull channel associated with very frequent flows is consistent with observation by Ward, Mecklenburg, and Brown (2002) in Wood County, Ohio. However, in a recent study, they noted that typically, only about 10 percent of the sediment is transported by flows that are less than double the mean discharge. For most of the gages, less than 25 percent of the sediment load is transported by flows that are 3 to 5 times the mean discharge. (Ward et al. 2003). For example: the mean annual discharge for the St. Joseph gage is about 540 cubic feet per second, so it is probable that a discharge of 1,330 cubic feet per second or higher corresponds to the bankfull discharge at the gage.

At the gage, the river was very entrenched the top of the bank corresponded to a stage of at least 16 to 18 feet (not measured). From further analysis, it was estimated that the out-of-bank discharge is 6,000 to 9,000+ cubic feet per second and corresponds to a 4- to 20-year recurrence interval flow. Therefore, at this location, the behavior of the river is similar to that of a ditch.

The results of discharge versus recurrence interval estimation analysis are presented in table 10–1 for this example. The gage data results were obtained from the regression equation. At the gage, the USGS Rural method gave similar results to the gage data. However, the USGS Urban method greatly overestimated the discharges, even though an annual precipitation of only 32 inches was used, rather than the 34 to 35 inches suggested by the annual precipitation map for Ohio (Ward and Trimble 2004). For the rural equation, a slope of 0.1 percent (5.2 ft/mi) and a storage value of 3 were used. At the Hillsdale ditch, the urban method also gave much higher estimates than the rural equation. However, if the urban method were calibrated based on the ratio of the urban to gage data results, the urban and rural methods gave similar results, except for a recurrence interval of 2 years. It was decided to base the analysis on the rural equation results. For this ditch, knowledge of the actual discharge versus recurrence interval has little influence on the design. The ditch is extremely large, and regardless of what estimates are used, the out-of-bank discharge is associated with a recurrence interval greater than 100 years.

Table 10–1 Discharge vs. recurrence interval results at the gage and the Hillsdale ditch

Recurrence interval (years)	St. Joseph gage			Hillsdale ditch		
	Gage data	USGS Urban method	USGS Rural method	USGS Urban method	Urban calibrated	USGS Rural method
2	4160	4902	5261	176	149	110
5	6337	9735	7365	302	197	171
10	7984	13920	8635	373	214	205
25	10162	22495	10148	546	247	246
50	11809	30121	11141	663	260	274
100	13456	37488	12148	786	282	301

(e) Ditch geometry

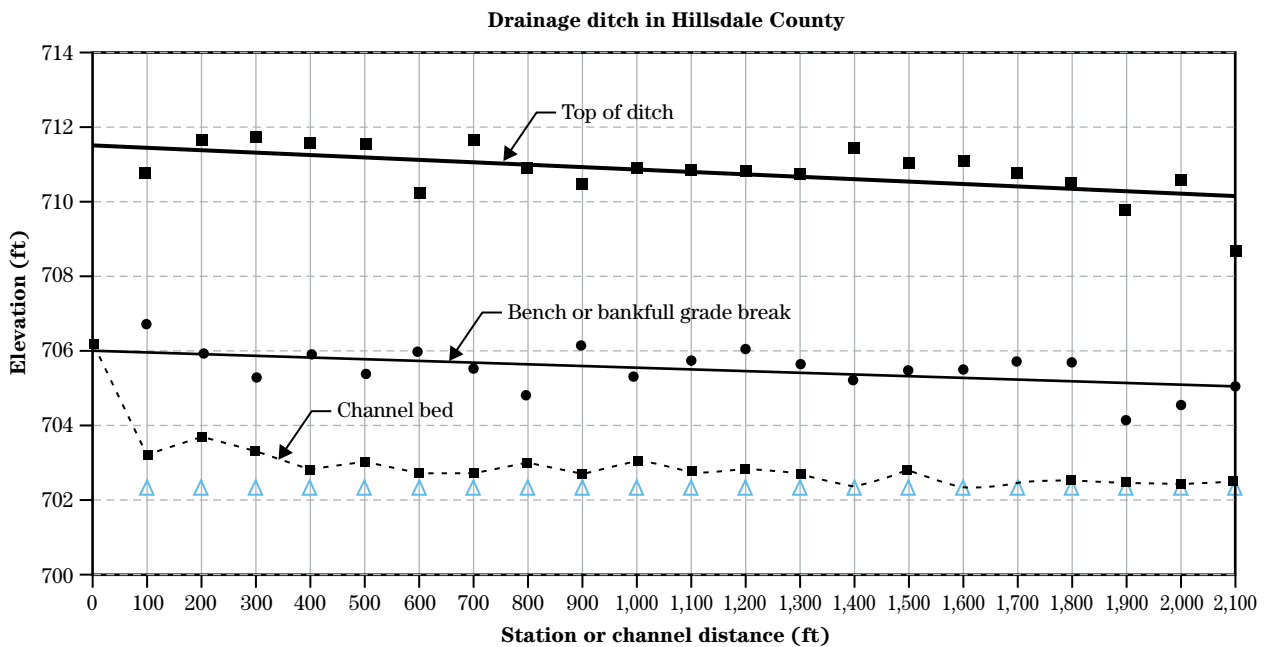
A survey of a 2,100-foot length of ditch was performed on July 17, 2003. Station 1+00 is located 100 feet south of the upstream bridge, and station 21+00 is located near the southeast corner of the field on the right bank. This location is close to the Michigan-Ohio state line and the point where the ditch enters a wooded area.

Working conditions in the ditch were difficult because of steep slopes, dense vegetation, and deep deposits of fine sediment in the bottom of the ditch. Therefore, cross-sectional data were obtained by locating a person with a rod and receiver on each side of the ditch and stretching a tape between the two people. Each person took elevation and position data on their side of the ditch and part of the bankfull channel. Notes were made indicating the location of the thalweg in the bankfull channel, and the water depth. Thalweg data were then used in place of conducting a separate profile survey. Also, grade-break data and top-of-bank data were extracted from the cross-sectional data to obtain profiles of these features. Profiles of the various features are shown in figure 10–8. All elevation

data are relative to an arbitrary datum. For most of the ditch, the bed slope varied from 0.05 to 0.2 percent.

A typical cross section is shown in figure 10–9, with a possible new design with a 4:1 overtopped width to channel-width ratio. For a 4:1 ratio, the total width of the benches is three times the width of the bankfull channel. The top width of the bankfull channel is 10 feet, the mean depth is 1.8 feet, and the maximum depth is 2.3 feet. Based on an analysis of the data, the maximum stable size of this channel might be 12.3 feet wide, with a mean depth of 2.2 feet, and a maximum depth of 2.8 feet. The channel has a 0.1 percent slope, the channel dimensions estimated from the regional curve (top width of 10 ft and maximum depth of 2.3 ft), and an over bench flow width to channel width ratio of 4:1. The 0.2-year recurrence interval discharge almost fills the small channel, the 1.6-year recurrence interval discharge fills the channel to a depth of about 4.5 feet, and the stage for the 100-year discharge is just over 5.5 feet. For these conditions, fine sediment will be flushed from the bankfull channel, and substrate with a mean size of about 3 to 4 millimeters will be established.

Figure 10–8 Profiles of the bed, bench, and top of ditch



This ditch was cleaned out about 6 years prior to this survey and only exhibited intermittent small bench formations along much of its length. There was up to 2 feet of sediment deposited on the bed in the first few hundred feet, perhaps because of the culvert configuration and a rapid change in bed elevation. Further downstream from the bridge, the bench formations improved, the depth of the sediment deposits decreased, and in places (1,000 to 1,400 ft), clean, coarse substrate was observed in the bottom of the bankfull channel.

(f) Bed material and bed-load transport

The measured D_{50} and D_{84} for reaches 600 to 800 feet, 800 to 1,000 feet, and 1,000 to 1,200 feet were <1 millimeter, <1 millimeter and 12 millimeters, and 3 millimeters and 10 millimeters, respectively. More than 80 percent of the bed material was clay and silt where there were only small intermittent benches (600–800 ft). In the next two reaches, the bench development was more pronounced, and the main channel was narrower, resulting in the coarse substrate sizes. Pebble

counts for the last 200 feet (1,000–1,200 ft, fig 10–6a) had the coarsest substrate, widest benches, and narrowest bankfull channel.

The mean bed-material size is associated with the tractive force (mean shear stress) on the bed and can be estimated as (Ward and Trimble 2004):

$$D_{50} = 1000ds$$

where:

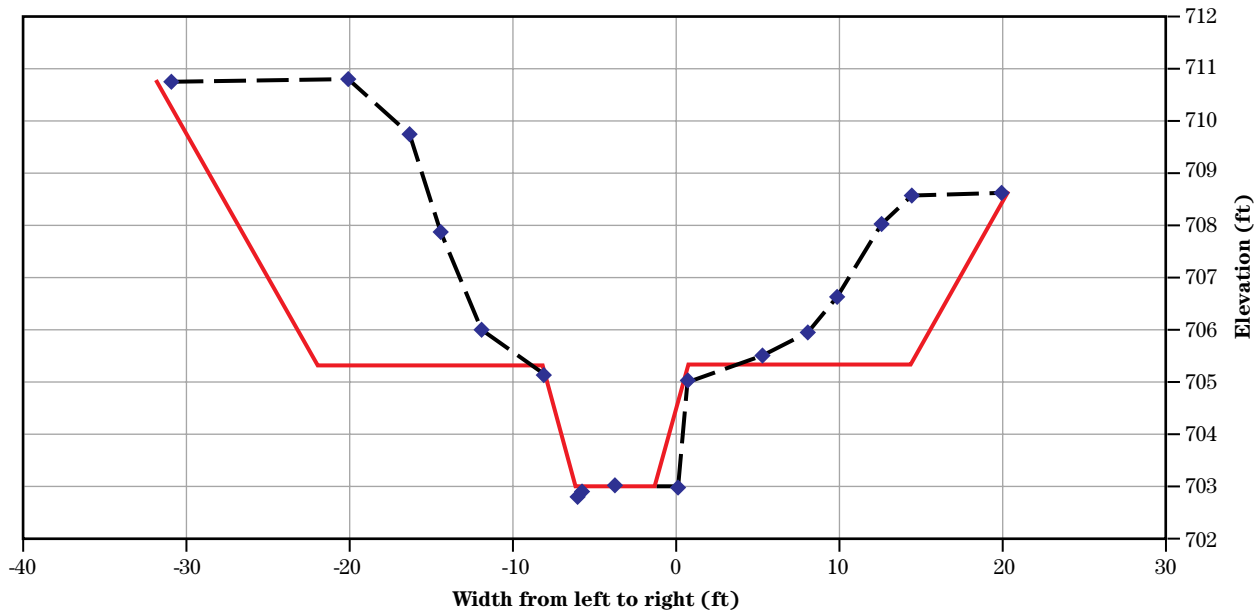
D_{50} = particle size (mm)

d = flow depth (m)

s = bed slope (ft/ft)

Therefore, a 0.6-meter (2.0 ft) bankfull discharge depth in a channel with a bed slope of 0.1 percent might result in a D_{50} of 6 millimeters. The bed slope varies from 0.05 to 0.2 percent, and the bankfull discharge depth is 1.8 to 2.5 feet, so the probable D_{50} is about 3 to 13 millimeters. This is in good agreement with the measured D_{50} and D_{84} of 3 millimeters and 10 millimeters in the channel at reach 1,000 to 1,200 feet, where fluvial benches have formed.

Figure 10–9 Pre- (dashed line) and post- (solid line) maintenance geometries at a location with a grade break, but weak bench formation at the elevation where it was determined that a bench would naturally form. The existing main channel has a similar geometry to the projected geometry.



While this equation is readily applied, it should be noted that it contains some inherent assumptions. Its use assumes that sufficient coarse material is available to form the armor layer. If sufficient coarse material is not available, then this approach may not be advisable.

Actual bed-load transport is difficult to quantify because of the complexity of the system and the lack of any sediment transport data. Relative bed-load estimates were obtained by relating bed-load transport to the current channel conditions: a bed slope of 0.1 percent and a D_{50} of 2 millimeters. The geometry for current conditions was approximated as a cross-sectional area that is three times the area predicted by the regional curve and an over-bench flow width to channel width ratio of 1.5. The results of the bed-load transport analysis results are summarized in table 10–2. It is anticipated that fluvial processes will establish a coarse substrate with a mean particle size of 4 to 8 millimeters, and bed-load transport will be less than half current rates. Following the flushing of deposited fines, and bench building by fluvial processes, the total sediment export will primarily be a function of conservation practices on the landscape and ditch instability problems upstream of this reach.

(g) Discussion

In establishing two-stage geometry, the ditch is widened at the elevation that corresponds to existing bench features or the elevation at which these benches are predicted to form from fluvial processes.

Vegetation is left along the fringe of the existing channel, and no work is done to reshape or narrow the current channel. The benches will vegetate quickly, and it is anticipated that the channel will adjust its shape as a function of fluvial processes.

A much debated and often controversial issue is the type of vegetation that should be established on the benches and at the top of the ditches. Trees provide many benefits in natural stream systems and are particularly important for the aquatic biota. However, in straightened, channelized systems, grass might provide better overall benefits. Often trees will affect the ability of nature to establish stable benches, as much of the stability of these systems depends on the dense grass cover that quickly establishes, in the absence of trees. A way of viewing these systems is to think of the small bankfull channels as meadow streams (Rosgen type E channels) that lack the sinuosity that occurs in natural systems. Therefore, trees will often provide the most benefit if they are set back from a grass buffer at the top of the two-stage system or at locations where there is a wide, well-attached flood plain—something that is rarely found in watersheds with extensive networks of agricultural ditches. Constructing wide benches with a 10:1 or larger flood-width ratio might be considered, but that approach will be very expensive in locations where the main function of the ditches is primarily to convey discharges from subsurface drainage systems. In those situations, the ditches must be more than 5 feet deep and sometimes are more than 10 feet deep.

Table 10–2 Relative bed-load transport for various channel conditions

Geometry	Bed slope 0.05%		Bed slope 0.1%		Bed slope 0.2%	
	Relative bed load	D_{50} (mm)	Relative bed load	D_{50} (mm)	Relative bed load	D_{50} (mm)
Current	0.36	2	1	2	2.45	2
3:1 bench ratio	0.06–0.18	4–6	0.28–0.49	6–8	1.03–1.38	8–10
4:1 bench ratio	0.04–0.16	4–6	0.25–0.45	6–8	0.96–1.30	8–10

The primary costs of two-stage ditches are associated with the increased ditch width required. This increased width requires additional initial earthwork. Costs for construction increase with both watershed size and ditch depth and might range from \$5 to \$20 per linear foot.

Creating a low bench typically requires the top width of the ditch to be greater than what would be required for a traditional trapezoidal channel. It is important to note that the wider ditch top width results in the surrendering of surrounding agricultural production land. To offset landowner costs, the potential for including the bench width in buffer conservation programs should be considered. Buffers have typically been measured from the top of the ditch. Alternatively measuring from the top of the small channel to include the bench and the main side slope of the ditch is preferable from a water-quality perspective and profitability perspective.

In many locations, a do nothing approach might be considered. Removing benches will only provide an increase in the conveyance capacity of the ditch. However, this improvement might only be temporary. If subsurface drains are free flowing and not blocked by bench formations, constructing wider benches may provide limited benefit and could disrupt a functional system that currently provides aquatic and terrestrial habitat and water quality benefits.

654.1008 Conclusion

In channelized ditches and streams that are entrenched and have overwidened bed widths, alluvial channel processes try to develop a flood plain that consists of low benches. Often, these ditches show improved stability. The techniques presented in this chapter are based on observations and analysis of the behavior and evolution of traditional trapezoidal earth channels.

The elevation of the benches and size of the bankfull channel can be determined from regional curves that relate channel dimensions to drainage area. The design approach considers the magnitude and design frequency of discharges for both stages of the channel. It is anticipated that total bench widths that are two to four times the bankfull channel width will result in a stable geometry and a channel with low sinuosity. The overall conveyance capacities of these two-stage systems can be sized based on the probability of out-of-ditch flooding into adjacent areas.

Construction of a two-stage channel system requires a significant capital investment to create a wider design top width. However, it is anticipated that two-stage systems will have improved conveyance capacity, be more self-sustaining, and create and maintain improved aquatic habitat.

TOWN OF CAROLINA SHORES NORTH CAROLINA

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Phone: 910-575-4877
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MEMORANDUM

TO: Mayor and Board of Commissioners
FROM: Jon M. Mendenhall, Town Administrator
SUBJECT: Flood Disaster Recovery
DATE: 10/8/15
ENCL: Last Briefing Message, Proclamation of State of Emergency, State of Emergency Resolution
CC: File

The flood disaster experienced by the Town from Friday, October 2, 2015 to Monday, October 5, 2015 caused significant damage and requires a comprehensive recovery package:

Flood Recovery Package

Waive Permits and Regulations

- Waive building permits on those residences that were impacted (damage assessment on file) until October 30, 2015. Approximately 39 impacted structures.
- Waive tree inspections town-wide until October 30, 2015

Postpone Capital Projects Until Recovery Cost is Clear

- Postpone Pinewood Drive

Reallocate Funds: (FEMA eligible reimbursement [if available])

- By postponing Pinewood Dr: \$288,776 available for reallocation
- EOC Work – emergency response, over-time call-ups
 - Cost Estimate: \$10,000.00
- Debris removal from Canals – remove debris/de-muck/de-silt and clear all culverts (43,000 LF of primary canals). Work will probably take 43 days at 1,000 LF of canal per day.
 - Work to be done by contractor
 - Cost Estimate: \$100,000.00; cost estimate should be finalized in 1wk

- Debris removal from roadside ditch – remove debris/de-muck/de-silt and clear all culverts, 180,000 LF of roadside ditch (subdivisions: Carolina Shores, Village at Calabash). Work will probably take 180 of work at 1,000 LF of roadside ditch per day.
 - Work to be done by Town forces, additional equipment needed (2nd dump truck, jetter, possibly a chipper to chip branches)
 - Cost Estimate: \$100,000.00; cost estimate is for additional equipment
 - Repair flood damaged streets
 - Work to be done by contractor
 - Cost: \$13,255.64 + approximately \$7,000 contingency = \$20,000
- Reallocation: \$288,776 available - \$230,000 emergency work = \$58,776 balance

Hazard Mitigation Grant

- Intend to apply (if available) for a Hazard Mitigation Grant: Drainage work on Northwest Drive, Palmer Drive & Bogie Vicinity, Nautical Drive, Oakbark Court, Calabash Drive, Pinewood Drive, and Sunfield Drive. Intent is to study drainage (where not previously studied) and to fix drainage as much as practical in flood impacted areas.

Better than Before

The proposed recovery package is that the Town of Carolina Shores will not only recover from this unprecedented disaster, but will be better than before. Fixes are in the works for all the flooded areas to mitigate future flooding subject to hazard mitigation grant funding.

1. Debris has been washed into roadside ditches and canals, this debris has to be removed otherwise we are not ready for the next storm. Town forces will focus on the roadside ditches and culverts, and a contractor will focus on canals.
2. The following streets where flooding occurred will have their drainage studied (pending Hazard Mitigation Grant funding) and drainage will be improved (pending Hazard Mitigation Grant funding)
 - a. Calabash Lakes Blvd –engineered, construction permits pending
 - b. Northwest Dr – needs to be engineered and a grant applied for
 - c. Palmer Dr & Bogie – needs to be engineered and a grant applied for
 - d. Nautical Dr – engineered, and a grant needs to be applied for
 - e. Oakbark Ct – needs to be engineered and grant applied for
 - f. Pinewood Dr – engineered, and a grant needs to be applied for
 - g. Sunfield Dr – needs to be engineered and a grant applied for
 - h. Calabash Dr – needs to be engineered and a grant applied for

Action Items

At the pleasure of the Board:

1. Approve flood recovery package.
2. Pursuant to the Emergency Operations Plan, ratify the State of Emergency.

3. Instruct that thank you letters be sent to: American Red Cross, Brunswick County Emergency Services, Brunswick County Sheriff, Calabash Volunteer Fire Department, NCDOT, NC Baptist Men, NC Methodist Men

Town of Carolina Shores Board of Commissioners
Agenda Item Summarization & Narrative

Item: Communication Policy Review

Contact: Mr. Walter B. Goodenough, Mayor

Location: New Business

Follow-up: None

Requested Action: Review

Budgetary Impact: None

Narrative:

This item seeks the Board's review of the Communications Policy. The Board is requested to consider the impact of social media including the request for the Town to join NextDoor, a community website.

Town of Carolina Shores
Communications Plan



October 24, 2014

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I. Introduction

The communications program of the Town is built on strong themes which is an effective manner in which to holistically address various messages related to the functions of the Town. The messages in which the Town seeks to address are outlined based on functional area:

1. Governance – the manner in which the Governing Body: Mayor and Board of Commissioners operates, the legal basis of Town government and how decisions are reached within the confines of the law
2. Administration – the administrative function of implementing the decisions made by the Governing Body
3. Finance – the accounting for of public funds
4. Planning – how land use, transportation, and environmental planning activities are undertaken
5. Permitting & Inspections – the manner in which the statewide building code is administered, permitting is conducted, and on-site field inspections are performed
6. Maintenance – the operations and maintenance of streets, drainage ways, and sanitation services
7. Public Safety – the coordinating aspects of public safety and various public safety agencies: ordinance compliance, crime control, fire protection, and emergency management
8. Goal and Value Setting – the mission of the Town, its core goals and values, presented in terms of a Mission Statement to guide the provision of public services town-wide

II. Mission Statement of the Town

The municipal government of the Town of Carolina Shores exists solely for the purpose of providing the best possible services to the citizens of Carolina Shores. It is committed to providing these services with honesty, integrity, compassion, fairness, and a commitment to excellence.

The municipal government of the Town of Carolina Shores is dedicated to providing long-term financial stability and responsible growth for the Town. All decisions will be driven by a commitment to provide the maximum benefits possible in a financially sound and responsible manner (given the economic realities facing the Town) and consistent with the laws of the State of North Carolina.

In order to do so, the municipal government of the Town of Carolina Shores will:

1. Encourage community participation in the processes of the government by consulting widely on its activities and policies.
2. Develop an organizational culture which encourages innovation and flexibility and which strives for continual improvement.
3. Leverage its strength as a uniquely diversified community by developing interactive relationships with all residents in order to enhance the quality of life throughout the township.
4. Resolve to continuously monitor progress in all these areas to insure that it is fulfilling its obligation to its residents.

III. Methods of Communication

The Town of Carolina Shores currently uses the following methods of communication to address the key messages of the Town as well as to implement the Mission Statement of the Town.

Communication Methods of the Town of Carolina Shores

Town Website – the Town uses the Town website as its primary method of communication with the public, providing timely updates to the website and communicating not only Town information, but general government (county, state, federal) information of importance to residents

Messages Addressed: 1-8

Location: <http://www.carolinashoresnc.com>

Town Bulletin – the Town publishes a monthly bulletin recapping and summarizing the proceedings of the Governing Body: the Mayor and Board of Commissioners, operational tasks of the month, updates on public infrastructure projects, and important safety/ordinance reminders

Messages Addressed: 1, 2, 6-8

Location: Town of Carolina Shores Bulletin (available on Town website)

Contact List – the Town maintains a contact list to elected/appointed boards/committees and routinely sends information of importance to these groups for wider dissemination

Messages Addressed: 1-8

Location: Emailed by Town Clerk

Posting Notices – the Town posts the agenda for all meetings conducted at Town Hall on the Town's bulletin board located at 200 Persimmon Rd

Messages Addressed: 1, 4

Location: Front Door of Town Hall, 200 Persimmon Rd

Traditional Presence – the Town maintains offices at 200 Persimmon Rd, Carolina Shores; office hours are 8:30am to 4:30pm Monday thru Friday. Residents are encouraged to visit Town Hall or to call Town Hall at 910.575.4877 during these times.

Messages Addressed: 1-8

Location: 200 Persimmon Rd, Carolina Shores, NC; 910.575.4877 (office phone)

Statutory Compliance – The Town, pursuant to Statute maintains both a sunshine list for receiving meeting notices and mandatory public comment periods during regular meetings of the Governing Body: the Mayor and Board of Commissioners.

Messages Addressed: 1-8

Location: Town Hall

Special Communication Methods

Our Town – the Town of Carolina Shores has launched a website portal as part of the Town’s overall website which encourages resident participation and which collects a large range of various information for the public to become involved in Town Government.

Agendas and Meeting Packets – as part of Our Town, the agenda and meeting packets of the Governing Body are posted. Residents are able to participate, educate, and become involved in the decision making process through a better understanding of governance. This is intended to address Message #1 and #2.

Finance – as part of Our Town, finance documents are available to the public.

This is intended to address Message #3.

Press, News, Media Releases and PSAs – the Town of Carolina Shores actively works to generate press releases on pertinent topics and works to remain in close contact with representatives of the media on breaking stories, stories of interest to residents, and news/events of significant impact.

IV. Conclusion

The Town of Carolina Shores works diligently to provide public services to residents within the town and effectively communicate with residents about their town government and the services they receive. From time to time, the Town seeks to update and continually improve the manner in which services as well as communications are delivered, by virtue of this plan and previous plans a framework is in place for such renewal.

Appendix A

Contact Information

Emergencies

Dial 911

Town Hall Location

Town of Carolina Shores

200 Persimmon Road

Carolina Shores, North Carolina 28467

Town Hall Telephone Number

(910) 575-4877

Town Hall Website

<http://www.carolinashoresnc.com>

Town of Carolina Shores Board of Commissioners
Agenda Item Summarization & Narrative

Item: Mayor and Board of Commissioners Comments

Contact: Mr. Walter B. Goodenough, Mayor

Location: Mayor and Board of Commissioners Comments
"Mayor and Board of Commissioners Comments"

Follow-up: None

Requested Action: Allow time for Mayor and Board comment.

Budgetary Impact: None

Narrative:
This item presents a time for Mayor and Board's discussion.

Town of Carolina Shores Board of Commissioners
Agenda Item Summarization & Narrative

Item: Closed Session

Contact: Mr. Walter B. Goodenough, Mayor

Location: Closed Session
[As specified on the closed session notice and agenda]

Follow-up: None

Requested Action: Enter into closed session pursuant to the notice and agenda

Budgetary Impact: None

Narrative:

Pursuant to GS 143-318.11 Closed Sessions

§ 143-318.11. Closed sessions.

(a) Permitted Purposes. – It is the policy of this State that closed sessions shall be held only when required to permit a public body to act in the public interest as permitted in this section. A public body may hold a closed session and exclude the public only when a closed session is required:

- (1) To prevent the disclosure of information that is privileged or confidential pursuant to the law of this State or of the United States, or not considered a public record within the meaning of Chapter 132 of the General Statutes.
- (2) To prevent the premature disclosure of an honorary degree, scholarship, prize, or similar award.
- (3) To consult with an attorney employed or retained by the public body in order to preserve the attorney-client privilege between the attorney and the public body, which privilege is hereby acknowledged. General policy matters may not be discussed in a closed session and nothing herein shall be construed to permit a public body to close a meeting that otherwise would be open merely because an attorney employed or retained by the public body is a participant. The public body may consider and give instructions to an attorney concerning the handling or settlement of a claim, judicial action, mediation, arbitration, or administrative procedure. If the public body has approved or considered a settlement, other than a malpractice settlement by or on behalf of a hospital, in closed session, the terms of that settlement shall be reported to the public body and entered into its minutes as soon as possible within a reasonable time after the settlement is concluded.
- (4) To discuss matters relating to the location or expansion of industries or other businesses in the area served by the public body, including agreement on a tentative list of economic development incentives that may be offered by the

public body in negotiations. The action approving the signing of an economic development contract or commitment, or the action authorizing the payment of economic development expenditures, shall be taken in an open session.

- (5) To establish, or to instruct the public body's staff or negotiating agents concerning the position to be taken by or on behalf of the public body in negotiating (i) the price and other material terms of a contract or proposed contract for the acquisition of real property by purchase, option, exchange, or lease; or (ii) the amount of compensation and other material terms of an employment contract or proposed employment contract.
- (6) To consider the qualifications, competence, performance, character, fitness, conditions of appointment, or conditions of initial employment of an individual public officer or employee or prospective public officer or employee; or to hear or investigate a complaint, charge, or grievance by or against an individual public officer or employee. General personnel policy issues may not be considered in a closed session. A public body may not consider the qualifications, competence, performance, character, fitness, appointment, or removal of a member of the public body or another body and may not consider or fill a vacancy among its own membership except in an open meeting. Final action making an appointment or discharge or removal by a public body having final authority for the appointment or discharge or removal shall be taken in an open meeting.
- (7) To plan, conduct, or hear reports concerning investigations of alleged criminal misconduct.
- (8) To formulate plans by a local board of education relating to emergency response to incidents of school violence.
- (9) To discuss and take action regarding plans to protect public safety as it relates to existing or potential terrorist activity and to receive briefings by staff members, legal counsel, or law enforcement or emergency service officials concerning actions taken or to be taken to respond to such activity.

(b) Repealed by Session Laws 1991, c. 694, s. 4.

(c) Calling a Closed Session. – A public body may hold a closed session only upon a motion duly made and adopted at an open meeting. Every motion to close a meeting shall cite one or more of the permissible purposes listed in subsection (a) of this section. A motion based on subdivision (a)(1) of this section shall also state the name or citation of the law that renders the information to be discussed privileged or confidential. A motion based on subdivision (a)(3) of this section shall identify the parties in each existing lawsuit concerning which the public body expects to receive advice during the closed session.

(d) Repealed by Session Laws 1993 (Reg. Sess., 1994), c. 570, s. 2. (1979, c. 655, s. 1; 1981, c. 831; 1985 (Reg. Sess., 1986), c. 932, s. 5; 1991, c. 694, ss. 3, 4; 1993 (Reg. Sess., 1994), c. 570, s. 2; 1995, c. 509, s. 84; 1997-222, s. 2; 1997-290, s. 2; 2001-500, s. 2; 2003-180, s. 2.)