

**BRUNSWICK COUNTY BOARD OF COMMISSIONERS  
REGULAR MEETING AGENDA**

**April 16, 2018**

**6:00 PM**

**I. Call to Order**

**II. Invocation/Pledge of Allegiance**

**III. Adjustments/Approval of Agenda**

**IV. Public Comments**

**V. Approval of Consent Agenda**

1. Administration - Proclamation Sexual Assault Awareness Month

Request that the Board of Commissioners approve a Proclamation recognizing the month of April 2018 as Sexual Assault Awareness Month in Brunswick County.

2. Board Appointment - Fire Commission

Request that the Board of Commissioners appoint Mr. Clint Berry to fill the unexpired term representing District 4 on the Fire Commission. This term will expire on June 30, 2019.

3. Board Appointment - Nursing Home & Adult Care Home Community Advisory Committee - District 5

Request that the Board of Commissioners appoint Ms. Eileen Clyne to the Nursing Home & Adult Care Home Community Advisory Committee representing District 5. This is a 1-year term that will expire on April 16, 2019.

4. Brunswick Community College - Southport Center Roof Replacement

Request that the Board of Commissioners consider approval of Brunswick Community College Trustees' Request to Renovate the Roof at The Southport Center.

5. Clerk to the Board - Meeting Minutes

Request that the Board of Commissioners approve the draft minutes from the March 19, 2018 Regular Meeting.

6. Finance - Fiscal Items

Request that the Board of Commissioners approve Budget Amendments, Capital Project Ordinances and Fiscal Items of a routine nature presented on the consent agenda.

-Sunset Harbor Water Main Budget Amendment

Transfer \$21,000 from water capital reserve undesignated to the Sunset Harbor Water Main project for payment and recording of two easements associated with the project.

-Operation Services Insurance Proceeds Budget Amendment

Appropriate insurance proceeds of \$32,904 for repair and maintenance equipment for lightning strike damages to elevator.

-Schools 2016 Bond Referendum Project Budget Amendments and CPO Adjustment

Adjustment is for the advanced funding of 2016 Bond Referendum Projects. For simplification in school project accounting, the budget amendment appropriates the anticipated GO debt proceeds for approved project advancements and returns

funds advanced from School Reserves. The finance officer can pre-audit contracts for projects in the Capital Improvement Plan that will be funded with debt proceeds.

-Schools 2016 Bond Referendum Project Budget Amendments and CPO  
Appropriates \$1,000,000 of GO Bond advance funding for the Technology Infrastructure Upgrades approved by the Board of Education as part of the Phase 1 GO Bond Projects.

-Brunswick County Schools appropriation for school technology improvements  
The Board of Education approved at their last meeting utilizing \$900,000 of their fund balance they hold for school technology improvements.

-Courthouse Project Budget Amendment  
Transfer \$25,000 of undesignated funds from county capital reserve to the courthouse project for site survey, geotechnical investigation and miscellaneous small administrative expenditures associated with the project.

-West Brunswick Regional Capital and Replacement Budget Amendment  
Transfer \$100,635 of capital and replacement reserve funding designated for West Brunswick Regional Wastewater to the West budget for reimbursement of rewiring to headworks and Xylem Water for the Oak Island Repump Station pump repair.

-Horticulture Program Revenue Budget Amendment  
Appropriate \$1,626 of horticulture program revenue for use in the horticulture program and for installation of a new fence at the greenhouse.

-Financial Reports for March 2018 (unaudited)  
Included are Summary Information for General and Enterprise Funds, key indicators of Revenues and Expenditures and Cash and Investments. All reports provided at [://brunswickcountync.gov/finance/reports](http://brunswickcountync.gov/finance/reports)

7. Finance - Resolution for Electronic Payments and Purchasing Policy Update  
Request that the Board of Commissioners approve a Resolution Authorizing the County of Brunswick to Engage in Electronic Payments and a purchasing policy update for compliance with Federal law and standards.
8. Health and Human Services - Public Housing: Execution of Annual Civil Rights Certification  
Request that the Board of Commissioners review and execute the Annual Civil Rights Certification for the Public Housing Agency.
9. Operation Services - New Landfill Schedule  
Request that the Board of Commissioners approve the recommended new schedule for the Brunswick County Landfill and start date of Monday April 30, 2018.
10. Sheriff's Office - Amended School Resource Officer's Contract For Detective Assignment  
Request that the Board of Commissioners approve an amendment to the School Resource Officer's contract with Brunswick County Schools for the additional assignment of one detective.
11. Tax Administration - April 2018 Releases  
Request that the Board of Commissioners approve the April 2018 tax releases.
12. Utilities - NCDOT Infrastructure Agreement Ocean Isle Beach Roundabout Project  
Request that the Board of Commissioners approve the infrastructure agreement with



the North Carolina Department of Transportation (NCDOT), after review by County Legal, in the amount of \$139,050 for utility work completed as part of the NCDOT Ocean Isle Beach Roundabout Roadway Project.

## **VI. Presentation**

1. Governing Body - Proclamation - Brunswick County Literacy Month (Chairman Frank Williams)  
Request that the Board of Commissioners approve a Proclamation declaring May as Brunswick County Literacy Council Month.
2. Governing Body - Proclamation - Honor Andrea White Earning the North Carolina Certified County Clerks Designation (Chairman Frank Williams)  
Request that the Board of Commissioners approve a proclamation in honor of Clerk to the Board of Commissioners Andrea White upon earning the North Carolina Certified County Clerks designation.
3. Presentation - Information Regarding the Naming of a Portion of I-140 in Honor of 10 Young Men from Brunswick County (Bob Quinn)  
Request that the Board of Commissioner receive a presentation from Mr. Bob Quinn regarding a request to name the first 5 miles of I-140 "Brunswick County's Ten Fallen Sons Highway".
4. Wilmington Urban Area Metropolitan Organization - 2045 Metropolitan Transportation Plan (Michael Madsen, GIS Analyst)  
Request that the Board of Commissioners receive a presentation on the 2045 Metropolitan Transportation Plan process from the Wilmington Urban Area Metropolitan Planning Organization (WMPO).

## **VII. Public Hearing**

1. Health and Human Services - Public Housing - Public Hearing (Catherine Lytch, Director of DSS)  
Request that the Board of Commissioners receive comments or suggestions on the Public Housing Agency goals, objectives and policies.
2. GIS - Street Adoptions Public Hearing (Jan Clemmons, GIS)  
Request that the Board of Commissioners approve the second reading and adoption of the proposed street names.
3. Planning - Rezoning Case Z-760 (Kirstie Dixon, Director of Planning)  
Request that, after the Public Hearing, the Board of Commissioners approve First and Second Readings to amend the Official Unified Development Ordinance Zoning Map from RR (Rural Low Density Residential) to C-LD (Commercial Low Density) with an associated CAMA Land Use Plan Map from LDR (Low Density Residential) to Commercial (Z-18-760).
4. Planning - Rezoning Case Z-761 (Kirstie Dixon, Director of Planning)  
Request that, after the Public Hearing, the Board of Commissioners approve First and Second Readings to amend the Official Unified Development Ordinance Zoning Map from R-7500 (Medium Density Residential) and R-6000 (High Density Residential) to R-6000 (High Density Residential) with an associated CAMA Land Use Plan Map from LDR (Low Density Residential) to MDR (Medium Density Residential) (Z-18-761).
5. Planning - Rezoning Case Z-762 (Kirstie Dixon, Director of Planning)  
Request that, after the Public Hearing, the Board of Commissioners approve First

and Second Readings to amend the Official Unified Development Ordinance Zoning Map from R-7500 (Medium Density Residential) and C-LD (Commercial Low Density) to C-LD (Commercial Low Density) with an associated CAMA Land Use Plan Map from LDR (Low Density Residential) to Commercial (Z-18-762).

### **VIII. Administrative Report**

1. Administration - Water and Sewer System Development Fees (Ann Hardy, County Manager)  
Request that the Board of Commissioners receive Brunswick County's Water and Sewer System Development Fee Analysis and approve posting the report for public review and comment.
2. Administration - Resolution For The Issuance of \$52,950,000 General Obligation Bonds (Ann Hardy, County Manager)  
Request that the Board of Commissioners approve the Bond Resolution Providing For The Issuance Of Not To Exceed \$52,950,000 General Obligation School Bonds, Series 2018.
3. Engineering - Carolina Shores North Sewer SAD (29) Project Closeout (Bill Pinnix, P.E., Director of Engineering)  
Request that the Board of Commissioners certify the CSN Sewer SAD (29) project cost, establish the cost assessment method, approve the assessment payment terms, adopt the Final Assessment Resolution and schedule the Final Public Hearing for the confirmation of the assessment roll for 6pm on May 21, 2018 in the Commissioner's Chambers.
4. Utilities - Northeast Brunswick Regional Wastewater Treatment Plant Expansion Contract McKim & Creed (John Nichols, Director of Public Utilities)  
Request that the Board of Commissioners authorize the Chairman and Clerk to the Board to approve the contract with McKim & Creed in the amount of \$1,950,850 for engineering and construction administration services associated with a 1.65 million gallon per day (MGD) expansion of the Northeast Brunswick Regional Wastewater Treatment Plant (WWTP) and Phase II Force Main (18" diameter – 11,000 LF +/-).
5. Utilities - Receive Northwest Water Treatment Plant Final Recommendations and Amendment No. 2 CDM Smith (John Nichols, Director of Public Utilities)  
Request that the Board of Commissioners receive the final recommendations for water treatment options for the Northwest Water Treatment Plant (NWWTP), budgetary cost information for the NWWTP upgrades, updated reverse osmosis pilot testing data, information regarding treatment goals, and approve the budget amendment and authorize the Chairman and Clerk to the Board to approve the contract amendment with CDM Smith in the amount of \$778,900 for preliminary engineering services associated with the design of the advanced treatment options and expansion of the Northwest Water Treatment Project.

### **IX. Other Business/Informal Discussion**

### **X. Closed Session**

1. Closed Session - Approve Closed Session Minutes and Consult with Attorney  
Request that the Board of Commissioners enter into Closed Session pursuant to G.S. 143-318.11(a)(1) to approve Closed Session Minutes and G.S. 143-318.11(a)(3) to consult with its attorney.

### **XI. Adjournment**



**Brunswick County Board of Commissioners**  
**ACTION AGENDA ITEM**  
**April 16, 2018**

**Action Item # V. - 1.**

**From:**

Andrea White

Administration - Proclamation Sexual Assault Awareness Month

**Issue/Action Requested:**

Request that the Board of Commissioners approve a Proclamation recognizing the month of April 2018 as Sexual Assault Awareness Month in Brunswick County.

**Background/Purpose of Request:**

**Fiscal Impact:**

Reviewed By Director of Fiscal Operations

**Approved By County Attorney:**

Yes

**County Manager's Recommendation:**

Recommend that the Board of Commissioners approve a Proclamation recognizing the month of April 2018 as Sexual Assault Awareness Month in Brunswick County.

**ATTACHMENTS:**

Description

- ☐ Proclamation - Sexual Assault Awareness Month

*County of Brunswick*  
*Office of the County Commissioners*



**PROCLAMATION  
SEXUAL ASSAULT AWARENESS MONTH**

**WHEREAS**, Sexual Assault Awareness Month calls attention to the fact that sexual violence is widespread and impacts every person in this community and statistics show one in five women and one in seventy-one men will be raped at some point in their lives; and

**WHEREAS**, child sexual abuse prevention must be a priority to confront the reality that one in six boys and one in four girls will experience a sexual assault before age eighteen; and

**WHEREAS**, on campus, one in five women and one in sixteen men are sexually assaulted during their time in college; and

**WHEREAS**, the theme of this year's Sexual Assault Awareness Months' Campaign is "Embrace Your Voice." How we talk about sexual violence matters. When we reflect on and change how we talk about the issue, we can create a culture of respect, equality, and safety. There are many ways to embrace one's voice, from voicing your support for survivors to speaking out against victim blaming. This campaign provides the resources needed for individuals to take actionable steps towards ending sexual violence. And it starts with recognizing the power of one's voice.

Join advocates and communities across the country in taking action to end sexual violence. April is Sexual Assault Awareness Month, and each day of the year is an opportunity to create change for the future.

**NOW, THEREFORE, BE IT PROCLAIMED THAT** the Brunswick County Board of Commissioners does hereby proclaim the month of April 2018 be recognized as Sexual Assault Awareness Month in Brunswick County, North Carolina.

This the 16<sup>th</sup> day of April, 2018.

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Frank Williams, Chairman  
Brunswick County Commissioners

Attest:

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Andrea White, NCCCC  
Clerk to the Board



**Brunswick County Board of Commissioners**  
**ACTION AGENDA ITEM**  
**April 16, 2018**

**Action Item # V. - 2.**

Board Appointment - Fire Commission

**From:**

Andrea White

**Issue/Action Requested:**

Request that the Board of Commissioners appoint Mr. Clint Berry to fill the unexpired term representing District 4 on the Fire Commission. This term will expire on June 30, 2019.

**Background/Purpose of Request:**

The District 4 seat on the Fire Commission became vacant on December 5, 2017 due to the resignation of Mr. Steven Barger. Mr. Barger was originally appointed to a 2-year term expiring June 30, 2019.

If appointed, Mr. Clint Berry would fill the unexpired term of Mr. Barger.

**Fiscal Impact:**

Reviewed By Director of Fiscal Operations

**Approved By County Attorney:**

Yes

**County Manager's Recommendation:**

Recommend that the Board of Commissioners appoint Mr. Clint Berry to fill the unexpired term representing District 4 on the Fire Commission. This term will expire on June 30, 2019.

**ATTACHMENTS:**

Description

- ☐ Fire Commission Roster
- ☐ Fire Commission Address Sheet
- ☐ Application - Clint Berry

# Fire Commission

Name	District/Category	Appointment Date	Term	Expiration Date	Serving Since
Pat Sykes	Commissioner	8/21/2017	N/A	N/A	2017
Mke Forte	Commissioner	8/21/2017	N/A	N/A	2017
Chuck Rash (unexp.)	OIB Fire Chief Appt.	4/1/2018	2	6/30/2019	2018
William Bailey	Supply Fire Chief Appt.	8/21/2017	2	6/30/2019	2017
Charles Drew	Southport Fire Chief Appt.	8/21/2017	2	6/30/2019	2017
Teresa Tickle	BSL Fire Chief Appt.	8/21/2017	2	6/30/2019	2017
Donnie Williams	Navassa Fire Chief Appt.	8/21/2017	2	6/30/2019	2017
Doug Todd	President Fire Chies Assoc.	8/21/2017	2	6/30/2019	2017
Carol Dunham	District 1	8/21/2017	2	6/30/2019	2017
Len Henderson	District 2	8/21/2017	2	6/30/2019	2017
Donna Loosley	District 3	8/21/2017	2	6/30/2019	2017
<b>VACANT</b>	District 4	8/21/2017	2	6/30/2019	2017
William Wilson	District 5	8/21/2017	2	6/30/2019	2017
John Fugee	At-Large	9/5/2017	2	6/30/2019	2017
Joyce Dunn	Mayor - Carolina Shores	8/21/2017	2	6/30/2019	2017
Alan Holden	Mayor - Holden Beach	8/21/2017	2	6/30/2019	2017
Loman Scott	Mayor Pro-Tem - Oak Island	8/21/2017	2	6/30/2019	2017
Walt Eccard	Mayor - Shallotte	8/21/2017	2	6/30/2019	2017
Brenda Bozeman	Mayor - Leland	8/21/2017	2	6/30/2019	2017
Brian Watts	Emergency Services Director	8/21/2017	N/A	N/A	2017

## Mission

To make advisory recommendations to the Brunswick County Board of Commissioners on fire protection and emergency services delivery applicable to those departments covered under the purview of the Fire Commission.

## Membership

The Fire Commission will consist of nineteen (19) members, plus non-voting staff, all of which serve two-year terms unless otherwise noted.

- ~ Two (2) Brunswick County Commissioners
- ~ Five (5) Representatives of Fire Service Organizations (1 from each District)
- ~ President of the Brunswick County Fire Chief's Association (term shall coincide with President's tenure)
- ~ Six (6) Public Citizens (1 from each District and 1 At-Large)
- ~ Five (5) Mayors/Mayor Pro-Tempores (1 from each District)
- ~ Emergency Services Director and County Staff (non-voting)

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# Fire Commission Address Sheet

Name	Phone(s)	Email Address	Mailing Address
Pat Sykes	(W) 253-2016	<a href="mailto:commissioner.sykes@brunswickco.ontync.gov">commissioner.sykes@brunswickco.ontync.gov</a>	PO Box 249 Attn: Commissioners, Bolivia, NC 28422
Mike Forte	(W) 253-2016	<a href="mailto:commissioner.forte@brunswickco.ontync.gov">commissioner.forte@brunswickco.ontync.gov</a>	PO Box 249 Attn: Commissioners, Bolivia, NC 28422
Chuck Rash	(M) 228-2406	<a href="mailto:chuck@oibgov.com">chuck@oibgov.com</a>	1135 Park Road, Unit 3104, Sunset Beach, NC 28468
William Bailey	(M) 443-9403	<a href="mailto:supplyfires@yahoo.com">supplyfires@yahoo.com</a>	47 Southport-Supply Rd., Supply, NC 28462
Charles Drew	(W) 457-7915 (M) 477-2365	<a href="mailto:charles_drew@southportnc.org">charles_drew@southportnc.org</a>	PO Box 10512, Southport, NC 28461
Teresa Tickle	(M) 547-6347	<a href="mailto:ttickle999@gmail.com">ttickle999@gmail.com</a>	2291 E. Boiling Spring Rd., Southport, NC 28461
Donnie Williams	(M) 620-5435	<a href="mailto:dwillnvfd@aol.com">dwillnvfd@aol.com</a>	336 Main Street, Navassa, NC 28451
Doug Todd	(M) 279-2959	<a href="mailto:dtodd@tribeachfire.com">dtodd@tribeachfire.com</a>	854 Sabbath Home Rd., Supply, NC 28462
Carol Dunham	(H) 575-6812	<a href="mailto:carolanmc@yahoo.com">carolanmc@yahoo.com</a>	537 Gladstone Cir., OIB, NC 28469
Len Henderson	(H) 754-5498 (M) 619-8454	<a href="mailto:jhenderson@atmc.net">jhenderson@atmc.net</a>	25 Queens Grant Cir., Shallotte, NC 28370
Donna Loosley	(M) 457-5601	<a href="mailto:dloosley@bellsouth.net">dloosley@bellsouth.net</a>	3874 Harmony Cir., Southport, NC 28461
VACANT	(M) 918-0458	<a href="mailto:sbarger2004@yahoo.com">sbarger2004@yahoo.com</a>	32 Greensboro Rd., Southport, NC 28461
William Wilson	(M) 620-0432	<a href="mailto:wwilson16@ec.rr.com">wwilson16@ec.rr.com</a>	9492 Night Harbor Dr., Leland, NC 28451
John Fugee	(M) 609-226-6720	<a href="mailto:johnfugee@gmail.com">johnfugee@gmail.com</a>	1131 Greensview Cir., Leland, NC 28451
Joyce Dunn	(W) 575-4877	<a href="mailto:tozbeach@hotmail.com">tozbeach@hotmail.com</a>	200 Persimmon Rd., Carolina Shores, NC 28467
Alan Holden	(W) 842-4627	<a href="mailto:holden@holden-beach.com">holden@holden-beach.com</a>	110 Rothschild St., Holden Beach, NC 28462
Loman Scott	(M) 713-2018	<a href="mailto:lscott@ci.oak-island.nc.us">lscott@ci.oak-island.nc.us</a>	4601 E. Oak Island Dr., Oak Island, NC 28465
Walt Eccard	(M) 880-0319	<a href="mailto:weccard@townofshallotte.org">weccard@townofshallotte.org</a>	106 Cheers St., Shallotte, NC 28459
Brenda Bozeman	(M) 279-2274	<a href="mailto:bbozeman@townofleland.com">bbozeman@townofleland.com</a>	102 Town Hall Dr., Leland, NC 28451
Brian Watts	(W) 253-2569	<a href="mailto:brian.watts@brunswickcountync.gov">brian.watts@brunswickcountync.gov</a>	PO Box 249 Attn: EMS, Bolivia, NC 28422

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# Brunswick County NC

## Application For Appointment To Boards And Committees

You **must** be a Brunswick County resident to participate on county boards and committees. Please proceed if you are a resident.

\*

Are you a permanent resident of Brunswick County?

☒ Yes ☐ No

How many years?

27

\*

Are you registered to vote in Brunswick County?

☒ Yes  
☐ No

\*

Board or Committee of Interest

Fire Commission

Board or Committee of Interest (Second Choice)

Do you anticipate any conflicts of interest if appointed?

☐ Yes ☒ No

Are you currently serving on any other Boards?

☒ Yes ☐ No

Name of Board currently serving on.

Fire Protection Oversight

Name of second Board currently serving on. (If applicable)

Economic Development Commission

### Applicant Information

First Name \*

Clint

Middle Initial

Last Name \*

Berry

Street Address

5550 Waccamaw School Rd. NW

City

Ash

State

NC

Zip

28420



**Home Phone** 910-287-4377

**Cell Phone**

**Email** berry\_s@hotmail.com

**Present** ATMC  
**Job/Employer** 640 Whiteville Rd. NW  
**Address** Shallotte, NC 28470

**Past Employment**

**Current** Boy Scouts of America  
**Civic/Community**  
**Participation**



**Brunswick County Board of Commissioners**  
**ACTION AGENDA ITEM**  
**April 16, 2018**

**From:**  
Andrea White

**Action Item # V. - 3.**

Board Appointment - Nursing Home & Adult Care Home  
Community Advisory Committee - District 5

**Issue/Action Requested:**

Request that the Board of Commissioners appoint Ms. Eileen Clyne to the Nursing Home & Adult Care Home Community Advisory Committee representing District 5. This is a 1-year term that will expire on April 16, 2019.

**Background/Purpose of Request:**

A vacancy was created on the Nursing Home & Adult Care Home Community Advisory Committee due to the retirement of Mr. Vince Musilli at the completion of his term which expired November 1, 2017.

Ms. Clyne was vetted for conflict of interest by the Regional LTC Ombudsman, completed 15 hours of training, and is now being recommended for appointment for an initial 1-year term. If appointed, Ms. Clyne's appointment will expire on April 16, 2019.

**Fiscal Impact:**

Reviewed By Director of Fiscal Operations

**Approved By County Attorney:**

Yes

**County Manager's Recommendation:**

Recommend that the Board of Commissioners appoint Ms. Eileen Clyne to the Nursing Home & Adult Care Home Community Advisory Committee representing District 5. This is a 1-year term that will expire on April 16, 2019.

**ATTACHMENTS:**

Description

- ☐ Nursing Home Advisory Board Roster
- ☐ Nursing Home Advisory Board Address Sheet
- ☐ Application - Eileen Clyne

# Nursing Home & Adult Care Home Community

Name	District	Appointment Date	Term	Expiration Date	Serving Since
Holly Brenneman	1	3/19/2018	3	3/19/2021	2017
Carol Sutter	2	8/15/2016	3	9/1/2019	2012
Arlene Rushin	3	2/6/2017	3	1/1/2020	2003
John Walz	4	2/20/2017	3	2/1/2020	2013
VACANT	5	10/1/2014	3	11/1/2017	2010
Barabara Voorhees	at-large	1/19/2016	3	2/1/2019	2014
Sheila Umbricht (unexp.)	at-large	7/17/2017	3	7/1/2020	2013
Laura Miller	at-large	8/21/2017	3	9/1/2020	2016
Colleen Combs	at-large	2/20/2017	3	2/1/2020	2015
Shirley Dowd	at-large	6/20/2016	3	7/1/2019	2007

## Mission

To monitor the Patient's Bill of Rights for residents in nursing homes in Brunswick County; to provide increased social interaction and opportunities for enrichment for these adults; to assist in preventing physical and psychological deterioration of these older adults by promoting independence; to evaluate the activities of the nursing homes so that they meet the needs of the older adults in Brunswick County; to promote community understanding of the aging process and of the needs, problems, strengths and resources of older persons; to report to the Brunswick Commissioners the status of the Committee.

## Membership

All members serve 3-year terms after the initial 1-year term.

- ~ At least 7 members, appointed by the Board of Commissioners (1 from each district; all additional are at-large members)
- ~ Each member must be a resident of the county which the committee serves.

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# Nursing Home Address Sheet

Name	Phone(s)	Email Address	Mailing Address
Holly Brenneman	(M) 571-643-6773	<a href="mailto:hollybrenneman12@gmail.com">hollybrenneman12@gmail.com</a>	7040 Bloomsbury Court, OIB, NC 28469
Carol Sutter	(H) 842-5254 (M) 908-625-3146	<a href="mailto:carw@aol.com">carw@aol.com</a>	2141 Lands End Way, Supply, NC 28462
Arlene Rushin	(H) 253-4607 (M) 515-9774	<a href="mailto:aerushin@aol.com">aerushin@aol.com</a>	2550 St. James Drive, Southport, NC 28461
John Walz	(H) 393-5255 (M) 273-4514	<a href="mailto:walzjf@msn.com">walzjf@msn.com</a>	622 Triangle Trail, Sunset Beach, NC 28468
<b>VACANT</b>	(H) 399-3136 (M) 203-524-2110	<a href="mailto:vmusilli@ec.rr.com">vmusilli@ec.rr.com</a>	1367 Parkland Way, Leland, NC 28451
Barbara Voorhees	(H) 253-8737	<a href="mailto:leboufbarb@gmail.com">leboufbarb@gmail.com</a>	3676 Bayedge Lane, St. James, NC 28461
Sheila Umbricht	(H) 575-7080	<a href="mailto:saumbrecht@atmc.net">saumbrecht@atmc.net</a>	46 Plantation Drive, OIB, NC 28469
Laura Miller	(H) 253-7339 (M) 703-201-3196	<a href="mailto:vankmiller@yahoo.com">vankmiller@yahoo.com</a>	3060 Baycrest Drive, Southport, NC 28461
Colleen Combs	(H) 202-549-3938	<a href="mailto:hartcombs@gmail.com">hartcombs@gmail.com</a>	5231 Shipmast Way, Southport, NC 28461
Shirley Dowd	(H) 755-5678		1790 Waterwing Drive, OIB, NC 28469

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# Brunswick County NC

## Application For Appointment To Boards And Committees

You **must** be a Brunswick County resident to participate on county boards and committees. Please proceed if you are a resident.

\*

Are you a permanent resident of Brunswick County?

☒ Yes ☐ No

How many years?

4

\*

Are you registered to vote in Brunswick County?

☒ Yes  
☐ No

\*

Board or Committee of Interest

Nursing Home & Adult Care Home Community Advisory Committee

Board or Committee of Interest (Second Choice)

Do you anticipate any conflicts of interest if appointed?

☐ Yes ☒ No

Are you currently serving on any other Boards?

☐ Yes ☒ No

### Applicant Information

First Name *	Eileen
Middle Initial	J
Last Name *	Clyne
Street Address	2640 Vickery Cove
City	Leland
State	NC
Zip	28451
Home Phone	None
Cell Phone	201-926-6784
Email	eileenjclyne@gmail.com

<b>Present Job/Employer Address</b>	Retired Health Care/Human Resources Administrator
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<b>Past Employment</b>	Christ Hospital, Jersey City, NJ: Director of HR St. Barbara's Hospital/Health Care System, Livingston, NJ: Director of HR Mercy Medical Center/CHSLI: Vice President of HR St. Luke's Roosevelt Hospital Center: Associate VP HR
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<b>Current Civic/Community Participation</b>	None at this time
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## **Brunswick County Board of Commissioners**

### **ACTION AGENDA ITEM**

**April 16, 2018**

#### **Action Item # V. - 4.**

**From:**  
Ann Hardy

Brunswick Community College - Southport Center Roof Replacement

#### **Issue/Action Requested:**

Request that the Board of Commissioners consider approval of Brunswick Community College Trustees' Request to Renovate the Roof at The Southport Center.

#### **Background/Purpose of Request:**

In September 2015, the Phase 1 initial renovation of the Southport Center was completed. Classes began in September 2015. 5 of the existing classrooms are studio spaces (painting, pottery, glass and silversmithing). 1 room is a general purpose classroom and there is a small cafe' space. Utilization is strong for all spaces Monday thru Thursday. The 5 studios house painting, 4 sections; pottery, 8 sections; silversmithing, 3 sections; and hot glass/stained glass/mosaic, 3 sections. The general purpose classroom is home to French, 2 sections; Guitar, 2 sections; Coastal Carolina Heritage, 1 section; Recording & Production, 1 section; Fiction Writers' Workshop, 1 section; and Quilting 1 section. Foundational Studies meets in the cafe' Tuesday and Thursday. Friday has been reserved for weekend workshops. In all, Southport currently serves approximately 300 students in Spring 2018.

Phase 2 will be to restore the roof covering unoccupied space. 9,000 square feet would support the following:

- A corporate/community room/performance space, and the first 2 studios. The space will need HVAC as well as water and task specific ventilation in the 2 studio/labs.

- A hot shop (glass blowing) which requires little renovations;

- A large metal working (possibly with MIT Fab Lab - grant funded;

- A shop for woodworking and construction targeting Heritage Arts Production crafts to include Woodturning, Cabinetry/Furniture and Tiny House Construction; Fabric Arts/Textiles.

The Trustees of Brunswick Community College received roof replacement bids on May 4, 2017 from 3 bidders ranging from \$347,182 to \$498,900. The college declined all of the bids and re-bid for replacement of the entire roof and an alternate to replace half of the roof on Nov. 21, 2017. The college received 1 bid for \$392,530 for the entire roof and \$362,201 to replace half the roof. All of the bids were declined. A decision was made to seek out of state bids and on 1/31/2018, the college received 1 bid for \$444,000 with the same price for the entire roof or half of the roof.

The College has received a bid from Millennium Contractors the low bidder for the roof with a revised quote due to increased material costs of \$415,000. This proposal will be valid for 30 days until 4/21/18. Attached is a sketch of the planned use of the building.

#### **Fiscal Impact:**

Budget Amendment Required, Reviewed By Director of Fiscal Operations

Budget amendment is to transfer contingency funds of \$215,000 to Brunswick Community College for roof replacement and repairs. The college is to use \$200,000 of their fund balance derived from local funds and per MOU, the county will evaluate the fund balance derived from county funds at the end of the current fiscal year to replenish up to \$200,000.

**Approved By County Attorney:**

Yes

**County Manager's Recommendation:**

Recommend that the Board of Commissioners consider Brunswick Community College Trustees' Request to Renovate the Roof at The Southport Center

**ATTACHMENTS:**

Description

- ☐ Southport Center Restoration Narrative
- ☐ Floor Plan Sketch
- ☐ 20180416 Budget Amendment BCC Roof Replacement



## The Southport Center

**Connection to College Mission:** The Southport Center's mission is to provide a rich platform for, and to serve as the HOME to, the **developing of the arts, arts tourism and arts business community in the region**. As an outreach of Brunswick Community College, the Center is connected by *Vision 2020* and mission to (1) provide opportunities for students to be successful, through (2) high-quality programs and services, that (3) meet the educational, cultural and workforce development needs of the community.

**Demographics of the Area:** The average age of our Southport service area population is 59, with rapid growth continuing in retirement communities throughout Brunswick County. **This adult population seeks mental stimulation, cultural enrichment, and for many supplementary income in retirement.** They are largely entrepreneurial and are passionate about engaging in their own interests on their own time schedule. Post-initial career, they bring experience, talent and discipline to their pursuit of the "next 30 years" whether for-profit or not-for-profit.

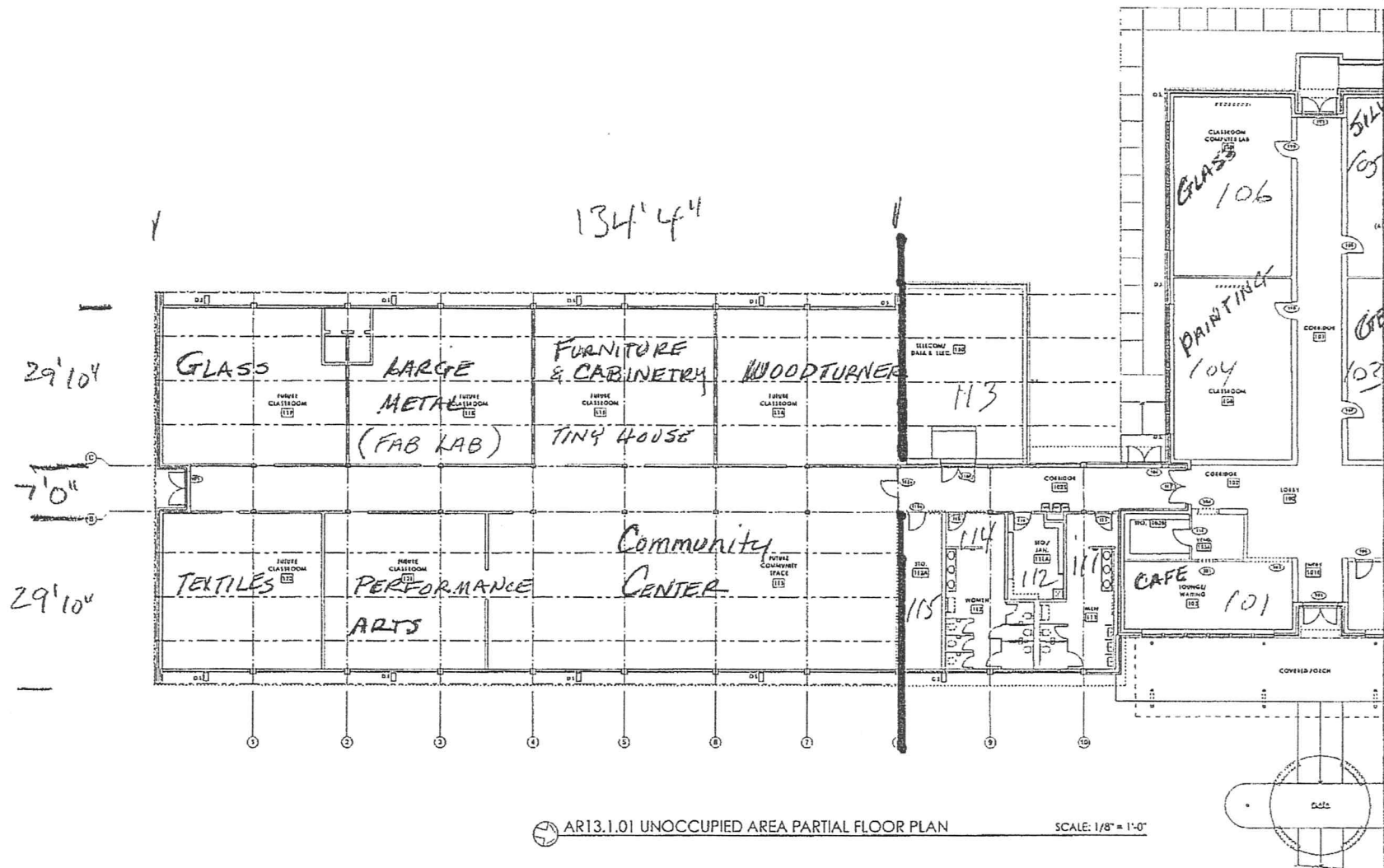
**Identification of Vision through Community Engagement.** BCC held three forums in 2016 seeking local input on the educational needs of the Southport area. The forums, with 15 – 33 participants each, included city officials from Southport, Caswell Beach, St. James, and Boiling Springs Lake; the Chamber of Commerce; the industrial and business community; the local hospital; cultural leaders; and BCC Board members and staff. The forums identified four primary areas of program focus (not to be limited to): **the Arts, an MIT Fab Lab for digital/light manufacturing, selected building trades, and a general purpose corporate/ community space.**

### Recommendation: For the Roof Renovation

**Phase I. September 2015 – The initial renovation was completed.** Classes began in September 2015. Five of the existing classrooms are studio spaces (painting, pottery, glass and silversmithing). One room is a general purpose classroom, and we also have a small Café space. Utilization is strong for all spaces Mon.-Thurs. The five studios house painting, 4 sections; pottery, 8 sections; silversmithing, 3 sections; and hot glass/stained glass/mosaic, 3 sections. The general purpose classroom is home to French, 2 sections; Guitar, 2 sections; Coastal Carolina Heritage, 1 section; Recording & Production, 1 section; Fiction Writers' Workshop, 1 section; and Quilting 1 section). Foundational Studies, meets in the Café Tuesday and Thursday 9:00-2:00. Friday has been reserved for weekend workshops. In all, Southport currently serves approximately 300 students (Spring 2018).

**Phase II. Restore roof covering unoccupied space. 9,000 SF would support the following:**

- ✓ A corporate/community room/performance space, and the first two studios. This space will need HVAC as well as water and task specific ventilation in the two studio/labs;
- ✓ A hot shop (glass blowing), which requires little renovations;
- ✓ A large metal working (possibly with MIT Fab Lab - grant funded);
- ✓ A shop for woodworking and construction targeting Heritage Arts Production crafts to include Woodturning, Cabinetry/Furniture and Tiny House construction; Fabric Arts/Textiles.



This drawing is the property of John W. Thompson, Architect, PA, and is not to be reproduced or copied in whole or part without permission of the architect. Copyright © 2014.

Southport Continuing Education Center for Brunswick Community College  
Southport, NC

DATE: 03 SEPTEMBER 2014  
ARCHITECT'S PROJECT NO.: 210303  
SCO NO.: 0504-0702  
DRAWING TITLE: PARTIAL FLOOR PLAN  
SHEET NUMBER: AR-13.1

ENVIRONMENT  
COMMUNITY  
AND CHURCH

John W. Thompson  
Architect,  
PA

Request Info	
Type	Budget Amendment
Description	BCC Roof Replacement
Justification	Board Meeting 04/16/2018-Transfer contingency funds of \$215,000 to Brunswick Community College for roof replacement costing \$415,000. The college is to use \$200,000 of their fund balance and the county will evaluate the Fund Balance derived from county fund at the end of the current fiscal year.
Originator	Tiffany Rogers

Items						
Department	Object	Dept Desc	Object Desc	Amount	Incr/Decr	Dr/Cr
109910	499100	Contingency	Contingency	-146810	Decrease	Credit
109910	499101	Contingency	Emergency Contingency	-68190	Decrease	Credit
105921	465300	Brunswick Community College	Capital Outlay-Education(920)	215000	Increase	Debit

Total	
Grand Total:	0



**Brunswick County Board of Commissioners**  
**ACTION AGENDA ITEM**  
**April 16, 2018**

**Action Item # V. - 5.**

Clerk to the Board - Meeting Minutes

**From:**

Andrea White

**Issue/Action Requested:**

Request that the Board of Commissioners approve the draft minutes from the March 19, 2018 Regular Meeting.

**Background/Purpose of Request:**

**Fiscal Impact:**

Reviewed By Director of Fiscal Operations

**Approved By County Attorney:**

Yes

**County Manager's Recommendation:**

Recommend that the Board of Commissioners approve the draft minutes from the March 19, 2018 Regular Meeting.

**ATTACHMENTS:**

Description

- Draft Minutes - 2018-03-19 Regular Meeting

**BRUNSWICK COUNTY BOARD OF COMMISSIONERS  
OFFICIAL MINUTES  
REGULAR MEETING  
March 19, 2018  
6:00 P.M.**

**The Brunswick County Board of Commissioners met in Regular Session on the above date at 6:00 p.m., Commissioners' Chambers, David R. Sandifer Administration Building, County Government Center, Bolivia, North Carolina.**

**PRESENT:** Commissioner Frank Williams, Chairman  
Commissioner Randy Thompson, Vice-Chairman  
Commissioner J. Martin Cooke  
Commissioner Pat Sykes  
Commissioner Mike Forte

**STAFF:** Ann Hardy, County Manager  
Steve Stone, Deputy County Manager  
Bob Shaver, County Attorney  
Julie Miller, Finance Director  
Andrea White, Clerk to the Board  
Amanda Hutcheson, Public Information Officer  
Capt. Mark Trull, Sheriff's Office

**Board Action, containing all items in this set of minutes, is filed within the Clerk to the Board's office.**

**I. CALL TO ORDER**

Chairman Williams called the meeting to order at 6:00 p.m.

**II. INVOCATION/PLEDGE OF ALLEGIANCE**

Vice-Chairman Thompson gave the Invocation and led the Pledge of Allegiance.

**III. ADJUSTMENTS/APPROVAL OF AGENDA**

Chairman Williams asked for any adjustments to the agenda.

Commissioner Cooke moved to remove Item VI-2, *Governing Body - Resolution in Opposition of Seismic Surveying and Oil and Gas Offshore Exploration and Drilling on the Continental Shelf off the Coast of North Carolina*.

Following discussion, Chairman Williams called the question. The motion carried 4 to 1. (Ayes: Williams, Cooke, Sykes, Forte. Nays: Thompson)

Commissioner Cooke moved to approve the agenda as amended. The motion carried 4 to 1. (Ayes: Williams, Cooke, Sykes, Forte. Nays: Thompson)

**IV. PUBLIC COMMENTS**

# DRAFT

Chairman Williams briefly reviewed the Public Comments Policy and called those who had signed up to speak. The following individuals addressed the Board:

1. Mr. Frank Kelly, resident of Southport, spoke in support of offshore drilling.
2. Mr. John Palmer, resident of Southport, spoke regarding Russia's interest in keeping American oil in the ground and Russian inspired fears. He asked that the Commissioners oppose any resolutions.
3. Mr. Dan George, resident of Winnabow, spoke in opposition of offshore drilling. He asked the Commissioners pass a resolution against seismic testing and offshore drilling.
4. Mr. Mike McGlaufflin, resident of Leland, spoke in opposition of offshore drilling and relayed his experience with the Gulf Coast. He asked that the Commissioners vote in favor of a resolution to stop the oil drilling.
5. Ms. Daphne Webb, resident of Leland, spoke in opposition of offshore drilling and shared her knowledge, as a former resident of Florida, regarding the safety risks of offshore drilling. She asked that the Commissioners pass a resolution against offshore testing and drilling.
6. Mr. Tim Page, resident of Hildebran, NC, and on behalf of Consumer Energy Alliance Southeast, urged the Commissioners to refrain from adopting a resolution opposing potential exploration and development of offshore energy.
7. Mr. Jim Mulligan, resident of Wilmington, NC, spoke in favor of the responsible development of all of America's natural resources, both on and offshore and shared information regarding oil and natural gas production off the east coast of North America and Cuba.
8. Mr. Dwight Willis, resident of Holden Beach, spoke in opposition of offshore drilling and presented 13 resolutions from towns and cities in Brunswick County to the Clerk. He asked that the Commissioners enact a resolution to oppose seismic blasting.
9. Ms. Vicki Sturgill, resident of Southport, spoke in opposition of offshore drilling. She asked that the Commissioners listen to constituents and oppose offshore drilling.
10. Mr. David Fitzgerald, resident of Wilmington, NC, spoke in favor of seismic energy surveys for fossil fuels and strong state and local regulations to prevent oil leaks. He asked that responsible steps be taken to find out what types of resources we have at our disposal.
11. Ms. Mary Ann McCarthy, resident of Southport, spoke in favor of energy surveys and asked the Commissioners to continue to oppose offshore drilling resolutions.

Chairman Williams announced the conclusion of the 30-minute period and asked if there was an objection to extending the time to allow those wishing to speak on the tethering issue an opportunity to address the Board. There was no opposition from the Board.

12. Madge Matteo, resident of Leland and President of the Advocates for Animal Rights (AFAR), spoke in opposition to tethering and in opposition to the proposed ordinance amendment being presented later on the agenda as it was not approved by AFAR, fails to provide humane treatment of animals, and fails a large population of voters.

Chairman Williams concluded the Public Comment period and called a 3-minute recess at 6:45 p.m. to allow those wishing to leave the meeting to do so.

Chairman Williams called the meeting to order at 6:48 p.m.

## V. APPROVAL OF CONSENT AGENDA

Chairman Williams asked for a motion on the Consent Agenda.

Commissioner Cooke moved to approve the Consent Agenda.

Chairman Williams asked for discussion. Hearing none, he called the question. The vote of approval was unanimous. The following items were approved:

1. **Administration - Cancellation of the April 2, 2018 Regular Meeting**  
Cancelled the April 2, 2018 regular meeting.
2. **Administration - Resolution of Support for Naming a Section of I-140 for William M. Sue**  
Approved a resolution asking the North Carolina Department of Transportation to name the I-140 bridge over Hwy. 74/76 in Brunswick County for William M. Sue.

**RESOLUTION SUPPORTING THE NAMING OF THE I-140 BRIDGE OVER HWY. 74/76  
IN BRUNSWICK COUNTY IN HONOR OF WILLIAM M. SUE**

**WHEREAS**, William M. Sue was born and raised in Leland in northern Brunswick County and is a current resident of same; and

**WHEREAS**, William M. Sue served 18 years on the Brunswick County Board of Commissioners, serving as its Chairman for five of those years, and also served on the Brunswick County Board of Education for eight years prior to his terms on the Board of Commissioners; and

**WHEREAS**, during his very first term as a County Commissioner, William M. Sue made a presentation to the North Carolina Board of Transportation requesting that I-140 (then known as the Wilmington Bypass) be completed as soon as possible; and

**WHEREAS**, William M. Sue was an active member of the advisory committee of the Wilmington Metropolitan Planning Organization and continually advocated for construction of I-140 in northern Brunswick County; and

**WHEREAS**, William M. Sue was honored by becoming a Member of the Order of the Long Leaf Pine in 2011; and

**WHEREAS**, William M. Sue has been a tireless advocate for the needs of the people of Brunswick County, serving in numerous other public and civic organizations over the decades; and

**WHEREAS**, William M. Sue has been nominated for consideration by NCDOT to have a section of I-140 in Brunswick County named in his honor.

**NOW, THEREFORE**, the Brunswick County Board of Commissioners requests that the North Carolina Department of Transportation name the I-140 bridge over Hwy. 74/76 in Brunswick County in honor of William M. Sue.

This the 19<sup>th</sup> day of March, 2018.

Frank Williams, Chairman  
Brunswick County Commissioners

Attest:  
Andrea White, NCCCC  
Clerk to the Board

3. **Administration - Proclamation of Support for Opioid Addiction Awareness Week**  
Approved a Proclamation of Support for Opioid Addiction Awareness during the weekend of April 27-29, 2018.

## PROCLAMATION OF SUPPORT FOR OPIOID ADDICTION AWARENESS APRIL 27 – 29, 2018

**WHEREAS**, the Brunswick County Board of Commissioners understands the major health problem of Opioid overdoses in the United States, the state of North Carolina and Brunswick County; and

**WHEREAS**, opioid overdoses have contributed significantly to accidental deaths among those who use, misuse or abuse illicit and prescription opioids; and

**WHEREAS**, United States overdose deaths involving prescription opioid analgesics increased to about 15,000 deaths a year in 2016, almost double the number in 2001; and

**WHEREAS**, an Opioid Task Force was organized in February 2017 by Superior Court Judge Ola Lewis and Sheriff John Ingram V; faith-based community representatives came together as one of four workgroups contributing to the report; and

**WHEREAS**, the Opioid Task Force produced a report and recommendations that were presented to the Brunswick County Commissioners for consideration; and

**WHEREAS**, on December 4, 2017 the Brunswick County Commissioners adopted a resolution “to declare and abate a public nuisance regarding the manufacture and distribution of opioids.” The resolution states that the opioid crisis is “having an extended and far reaching impact on the public, health and safety of residents and citizens of Brunswick County and must be abated.”

**WHEREAS**, regional faith based communities are coming together to provide education and awareness to combat this public health crisis by encouraging others in prevention, treatment and support of all those whose lives are affected by this epidemic.

**NOW THEREFORE, BE IT PROCLAIMED**, that the Brunswick County Board of Commissioners supports the observance of Opioid Addiction Awareness during the weekend of April 27-29, 2018 by faith communities, individuals, families, groups and organizations within Brunswick County and the region to declare solidarity and encouragement through the common observance of constructive programs of prayer, providing resources and forgiveness to those afflicted with opioid substance abuse disorder, and seeking the development of adequate treatment within our society.

This the 19<sup>th</sup> day of March, 2018.

Frank Williams, Chairman  
Brunswick County Commissioners

Attest:  
Andrea White  
Clerk to the Board

4. **Board Appointment - Nursing Home & Adult Care Home Community Advisory Committee - District 1**  
Reappointed Ms. Holly Brenneman to the Nursing Home & Adult Care Home Community Advisory Committee, District 1, for a 3-year term expiring March 19, 2021.
5. **Clerk to the Board - Meeting Minutes**



# DRAFT

Approved the draft minutes for the February 19, 2018 Goals Workshop and the February 19, 2018 Regular Meeting.

6. **Clerk to the Board - Resolution Establishing the Regular Meeting Schedule for FY 2018-2019**

Approved a Resolution establishing the Regular Meeting Schedule for FY 2018-2019.

**RESOLUTION OF THE BRUNSWICK COUNTY BOARD OF COMMISSIONERS  
ESTABLISHING THE FY 2018-2019 REGULAR MEETING SCHEDULE**

**WHEREAS**, N.C.G.S. 153A-40, provides for a resolution establishing regular meeting dates of the Board of Commissioners.

**NOW, THEREFORE, BE IT RESOLVED** that the Brunswick County Board of Commissioners' establishes the FY 2018-2019 meeting schedule to include one Regular meeting to occur the first Monday of each month at 3:00 p.m. and one Regular meeting to occur the third Monday of each month at 6:00 p.m., excluding holidays as shown below, and that such meetings will be held in the David R. Sandifer County Administration Building, 30 Government Center Drive NE, Bolivia, NC, in the County Commissioners' Chambers. Special meetings will be scheduled as needed.

**REGULAR MEETING SCHEDULE**

July 16, 2018 at 6:00 p.m.	January 7, 2019 at 3:00 p.m.
August 6, 2018 at 3:00 p.m.	January 22, 2019 at 6:00 p.m.
August 20, 2018 at 6:00 p.m.	February 4, 2019 at 3:00 p.m.
September 17, 2018 at 6:00 p.m.	February 18, 2019 at 6:00 p.m.
October 1, 2018 at 3:00 p.m.	March 4, 2019 at 3:00 p.m.
October 15, 2018 at 6:00 p.m.	March 18, 2019 at 6:00 p.m.
November 5, 2018 at 3:00 p.m.	April 1, 2019 at 3:00 p.m.
December 3, 2018 at 3:00 p.m.	April 15, 2019 at 6:00 p.m.
December 17, 2018 at 6:00 p.m.	May 6, 2019 at 3:00 p.m.
	May 20, 2019 at 6:00 p.m.
	June 3, 2019 at 3:00 p.m.
	June 17, 2019 at 6:00 p.m.

Adopted this the 19<sup>th</sup> day of March, 2018.

Frank Williams, Chairman  
Brunswick County Board of Commissioners

ATTEST:  
Andrea White  
Clerk to the Board

7. **County Attorney - Easement Request**

Approved an easement to Piedmont Natural Gas Company to serve Verizon in the Leland Industrial Park.

8. **County Attorney - Russell Butts Heir Property to Surplus**

Declared a piece of property obtained by the County through tax foreclosure as surplus property to be placed on the County's website for possible future purchase.

9. **County Attorney - Deed of Dedication for Sunset Ridge Phase 4 Section 3**  
Accepted the Deed of Dedication for water and sewer infrastructure for Sunset Ridge, Phase 4, Section 3.
10. **Emergency Services - FY 2017 EMPG Supplemental Funding**  
Approved the FY 2017 Supplemental Emergency Management Performance Grant (EMPG) grant award and cost report for Brunswick County and authorized the Finance Director and Director of Emergency Services to sign the cost report associated with this grant.
11. **Engineering - Carolina Shores North Sewer SAD (29) - Contractor Final Adjusting Deductive Change Order**  
Approved the final adjusting change order with Carmichael Construction Company, Inc., for the Carolina Shores North Sewer SAD (29) project in the deductive amount of (\$82,573.42).
12. **Engineering - Hwy 74/76 Warehouse Fire Protection Water Main Construction Contract**  
Approved the Notice of Award to Carolina Civilworks, Inc. for the Hwy. 74/76 Warehouse Fire Protection Water Main in the amount of \$1,015,039.00 with subsequent execution of the construction contract upon the County Attorney's review and approval of the contract, pay and performance bonds, certificate of insurance, and E-Verify Affidavit.
13. **Finance - Fiscal Items**  
Approved Budget Amendments, Capital Project Ordinances and Fiscal Items of a routine nature presented on the consent agenda.
  - **LIEAP Energy Program Budget Amendment**  
Appropriated \$55,727 of additional Federal Low-Income Home Energy Assistance Funds for use in the Brunswick County LIEAP Program.
  - **Airport Grant 36244.58.10.3 and 36244.58.10.2 Grant Agreements, Resolution, Budget Amendment and Grant Ordinance.**  
Approved and authorized the chairman to sign the grant agreements and resolutions for Airport Grants 36244.58.10.3 in the amount of \$460,982 with a local match of \$51,221 and 36244.58.10.2 in the amount of \$2,000,000 with no local match. The grant and local match were approved on the February 5, 2018 Board of Commissioners meeting. NC Department of Transportation split the grant into two grants in order to simplify processing of reimbursements and paperwork due to the differing local match requirements. Transferred \$512,203 of funding to new airport grant 36244.58.10.3 to accurately reflect the changes from NCDOT-Aviation Division.
  - **Schools 2016 Bond Referendum Projects Budget Amendment and Project Ordinance**  
The Board of Education approved at their March 2, 2018 meeting and requested the Board of Commissioners to approve two transfers from the School Capital Funds held by the County for the benefit of the schools in the School Capital Reserves: (1) Transferred \$2,000,000 of Sales Tax Contingency and \$100,000 of Ad Valorem Contingency funds to the project for the Town Creek site work. This advanced funding will be reimbursed with the Phase 1 GO Bond issue and funds returned to the School Capital Reserves held by the County for the benefit of the Schools. (2) Transferred \$2,840,000 Ad Valorem Contingency to project for the Town Creek unanticipated code

work, unsuitable soils, grade adjustment, water pressure and gym/stage enlargement. Note that the \$2,840,000 is not advanced funding and will not be reimbursed from Phase 1 GO Bond issue.

- **Financial Reports for February 2018 (unaudited)**

Included are Summary Information for General and Enterprise Funds, key indicators of Revenues and Expenditures and Cash and Investments. All reports provided at: [www.brunswickcountync.gov/finance/reports](http://www.brunswickcountync.gov/finance/reports).

14. **GIS - Street Adoptions**

Approved first reading of the street names and set the date for the Public Hearing as April 16, 2018.

15. **Health Services - Communicable Disease Annual Report**

Reviewed and approved the 2017 Communicable Disease Annual Report.

16. **Health and Human Services - Health Services - FY18-19 State Consolidated Agreement Approval**

Reviewed and approved the consolidated agreement for FY18-19 between the State of North Carolina and Brunswick County Health Services.

17. **Health and Human Services - The Toner Exchange Contract Renewal**

Approved the renewal contract of \$25,587 per annum for three years with The Toner Exchange.

18. **Operation Services - Increase in Construction & Demolition Waste Disposal Transfer**

Approved the increase of Construction & Demolition waste transferred to the Sampson County Landfill to 75% of tonnage from the current 50%.

19. **Planning - Fee Deferral Agreement: Coastal Commons Senior Living Community Affordable Housing Development**

Adopted a resolution approving a fee deferral agreement related to the payment of County water and sewer fees to support the tax credit application for Coastal Commons Senior Living Community Affordable Housing Development.

**RESOLUTION APPROVING AN AGREEMENT DEFERRING UP TO \$150,000 IN COUNTY FEES RELATED TO WATER AND SEWER SERVICE FOR THE PROPOSED 'COASTAL COMMONS' PROJECT**

In consideration of the proposed 'Coastal Commons' senior living housing development located on Beach Drive (NC 179) on the mainland portion of the Ocean Isle Beach and within the Ocean Isle Beach Extraterritorial Jurisdiction (ETJ).

**WHEREAS**, the proposed 'Coastal Commons' senior living housing development project is submitting a full application under the 2018 Housing Tax Credit competition cycle; and

**WHEREAS**, Brunswick County is the fastest growing county in North Carolina (2016) and the southern portion of the county, especially senior aged population, is a major driver of the growth; and

**WHEREAS**, the need for affordable senior housing in Brunswick County, especially in the southern portion of the County, have historically been greatly under supplied; and

**WHEREAS**, the NC Office of Budget & Management population projections indicates significant population growth to continue, adding over 65,000 people by 2037; and

**WHEREAS**, the location of the proposed project is very suitable, with convenient access to shopping and other services. The Sunset Beach Town Council approved rezoning of the site to accommodate the project; and

**WHEREAS**, the project as proposed will assist in meeting the County's affordable housing goal; and

**WHEREAS**, on March 19, 2018 the Board of Commissioners approved a letter expressing unqualified support for the tax credit application for the project.

**RESOLVED**, the Commissioners of Brunswick County do hereby approve an agreement deferring County fees related to water and sewer service up to \$150,000 to be repaid over a twenty-year period with an interest rate of two (2) percent.

Approved this 19<sup>th</sup> day of March, 2018.

Frank Williams, Chairman  
Brunswick County Commissioners

Attest:  
Andrea White, Clerk to the Board

20. **Planning - Resolutions of Support for the NCDOT High Impact / Low Cost Projects**  
Adopted resolutions in support of the NCDOT High Impact / Low Cost Program funding three road improvement projects to improve public safety and mobility (Projects WBS #47783, WBS #47879, and WBS #80084).

**RESOLUTION SUPPORTING PROJECT WBS #47783 TO INSTALL A TRAFFIC SIGNAL  
AT US 17 AND THE SOUTHBOUND LEFTOVER LANE ONTO THE SOUTHERN  
INTERSECTION OF NC 87**

**WHEREAS**, the Brunswick County Board of Commissioners considers public safety one of its most important responsibilities; and

**WHEREAS**, the safe and efficient movement of traffic is a key element to public safety for residents and visitors; and

**WHEREAS**, the NC Department of Transportation has determined that Project WBS #47783 will have a high impact on residents and visitors; and

**WHEREAS**, Project WBS #47783 proposes to install a traffic signal at US 17 and the southbound leftover lane onto the southern intersection of NC 87 to improve traffic safety; and

**WHEREAS**, the cost of the improvements, estimated at \$145,000, will be funded by the State of North Carolina.

**NOW THEREFORE, BE IT RESOLVED**, that the Brunswick County Board of Commissioners hereby supports NCDOT High Impact / Low Cost Project WBS #47783 to install a traffic signal at the intersection of US 17 and NC 87, at an estimated cost of \$145,000, to be funded by the State of North Carolina.

Approved this 19<sup>th</sup> day of March, 2018.

# DRAFT

Frank Williams, Chairman  
Brunswick County Commissioners

Attest:  
Andrea White, Clerk to the Board

**RESOLUTION SUPPORTING PROJECT WBS #47879 TO INSTALL TRAFFIC SIGNALS  
AT THE INTERSECTIONS ON US 17 AT THE SOUTHBOUND LEFTOVER ONTO SR  
1184 (OCEAN ISLE BEACH ROAD) AND AT THE NORTHBOUND TO SOUTHBOUND U-  
TURN APPROXIMATELY 875 FEET NORTHEAST OF THE REFERENCED  
INTERSECTION**

**WHEREAS**, the Brunswick County Board of Commissioners considers public safety one of its most important responsibilities; and

**WHEREAS**, the safe and efficient movement of traffic is a key element to public safety for residents and visitors; and

**WHEREAS**, the NC Department of Transportation has determined that Project WBS #47879 will have a high impact on residents and visitors; and

**WHEREAS**, Project WBS #47879 proposes to install traffic signals at the intersections on US 17 at the southbound leftover onto SR 1184 (Ocean Isle Beach Road) and at the northbound to southbound U-turn approximately 875 feet northeast of the referenced intersection to improve traffic safety; and

**WHEREAS**, the cost of the improvements, estimated at \$345,000, will be funded by the State of North Carolina.

**NOW THEREFORE, BE IT RESOLVED**, that the Brunswick County Board of Commissioners hereby supports NCDOT High Impact / Low Cost Project WBS #47879 to install traffic signals at the intersections on US 17 at the southbound leftover onto SR 1184 (Ocean Isle Beach Road) and at the northbound to southbound U-turn approximately 875 feet northeast of the referenced intersection, at an estimated cost of \$345,000, to be funded by the State of North Carolina.

Approved this 19<sup>th</sup> day of March, 2018.

Frank Williams, Chairman  
Brunswick County Commissioners

Attest:  
Andrea White, Clerk to the Board

**RESOLUTION SUPPORTING PROJECT WBS #80084 TO REPAIR FLOODING ISSUES  
ON NC 133 (RIVER RD) NEAR THE INTERSECTION OF SR 1521 (FUNSTON ROAD SE),  
APPROXIMATELY 1-MILE IN EACH DIRECTION OF INTERSECTION**

**WHEREAS**, the Brunswick County Board of Commissioners considers public safety one of its most important responsibilities; and

**WHEREAS**, the safe and efficient movement of traffic is a key element to public safety for residents and visitors; and

**WHEREAS**, NC 133 is considered an evacuation route for the Brunswick Nuclear Plant; and

**WHEREAS**, the NC Department of Transportation has determined that Project WBS #80084 will have a high impact on residents and visitors; and

**WHEREAS**, Project WBS #80084 proposes to repair flooding issues on NC 133 (River Rd) near the intersection of SR 1521 (Funston Road SE), approximately 1-mile in each direction of intersection to improve traffic safety and traffic flow along NC 133; and

**WHEREAS**, the cost of the improvements, estimated at \$1,000,000, will be funded by the State of North Carolina.

**NOW THEREFORE, BE IT RESOLVED**, that the Brunswick County Board of Commissioners hereby supports NCDOT High Impact / Low Cost Project WBS #80084 to repair flooding issues on NC 133 (River Rd) near the intersection of SR 1521 (Funston Road SE), approximately 1-mile in each direction of intersection, at an estimated cost of \$1,000,000, to be funded by the State of North Carolina.

Approved this 19<sup>th</sup> day of March, 2018.

Frank Williams, Chairman  
Brunswick County Commissioners

Attest:  
Andrea White, Clerk to the Board

21. **Register of Deeds - Preservation of Record Books**  
Concurred and authorized the removal of records from the Register of Deed's office to the Kofile Technologies facility for a period of no more than 90 days from the approval of said Board.
22. **Tax - March 2018 Releases**  
Approved the March 2018 tax releases.

## **VI. PRESENTATION**

1. **Governing Body - Proposed Revisions to the Animal Control Ordinance (Commissioner Sykes)**  
Request that the Board of Commissioners consider proposed revisions to the Animal Control Ordinance.

Commissioner Sykes explained that the proposed resolution was a compromise that would protect personal property rights and assist the Sheriff's Office Animal Services in performing their duties. She further explained that the resolution would do away with the logging chains, choke collars and other devices that would harm the animal. She introduced Captain Tommy Tolley, Brunswick County Animal Protective Services, to provide comments.

Captain Tolley explained that the record shows how the Sheriff feels about animal welfare in Brunswick County and welcomed measures that would improve and provide officers with more tools to assist them with carrying out their duties.

Commissioner Sykes moved to accept the proposed revisions to the Animal Control Ordinance.

Chairman Williams asked for discussion.

Following a brief discussion, Chairman Williams called the question. The vote of approval was unanimous.

2. **Governing Body - Resolution to Request NCDEQ to Require Tenants of Fayetteville Works to Cease Operations that Result in the Production of Fluorochemical Compounds (Vice-Chairman Thompson)**

Request that the Board of Commissioners approve a Resolution requesting NCDEQ to require tenants of the Fayetteville Works site to cease operations that result in the production of fluorochemical compounds.

Vice-Chairman Thompson moved to approve a Resolution requesting that NCDEQ require the tenants of the Fayetteville Works site to cease operations that result in the production of fluorochemical compounds that Brunswick County is having to deal with in the public water system.

Chairman Williams asked for discussion.

Commissioner Forte asked that Vice-Chairman Thompson rescind the request for a resolution and instead, send a letter from the Chairman.

Following discussion, Vice-Chairman Thompson amended his motion to include the resolution, a letter, and a phone call to the Secretary of the North Carolina Department of Environmental Quality.

Chairman Williams called the question on the amended motion to include the resolution, a letter, and a phone call. The vote of approval was unanimous.

**RESOLUTION REQUESTING NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY TO REQUIRE TENANTS OF THE FAYETTEVILLE WORKS SITE TO CEASE OPERATIONS THAT RESULT IN THE PRODUCTION OF FLUOROCHEMICAL COMPOUNDS**

**WHEREAS**, Brunswick County Public Utilities furnishes water to the citizens of Brunswick County and municipalities; and

**WHEREAS**, tenants of the Fayetteville Works site have released, and continue to release, GenX and other fluorochemical compounds into the Cape Fear River from the manufacturing facility located in Fayetteville, North Carolina; and

**WHEREAS**, the Chemours company claims it trucks wastewater containing fluorochemicals off-site, but fluorochemical compounds continue to be detected at varying levels in the Cape Fear River and in Brunswick County's treated drinking water; and

**WHEREAS**, tenants of the Fayetteville Works site have repeatedly demonstrated that they are not capable of continuing operations at the facility in a manner that does not cause the release of GenX and other fluorochemical compounds into the Cape Fear River; and

**WHEREAS**, Brunswick County Public Utilities uses the Cape Fear River as source water for the majority of over 80,000 customers supplied through retail and wholesale service; and

# DRAFT

**WHEREAS**, the Northwest Water Treatment Plant, owned and operated by Brunswick County Public Utilities is unable to filter certain unregulated contaminants out of the drinking water; and

**WHEREAS**, the North Carolina Department of Environmental Quality (NCDEQ) Division of Water Resources is tasked with ensuring safe drinking water in accordance with federal requirements, issuing pollution control permits, monitoring permit compliance, evaluating environmental water quality and carrying out enforcement actions for violations of environmental regulations.

**NOW, THEREFORE, BE IT RESOLVED**, that the Brunswick County Board of Commissioners requests that NCDEQ immediately require all tenants of the Fayetteville Works site cease operations that result in the production of fluorochemical compounds due to their inability to operate without discharging fluorochemical compounds into the Cape Fear River.

This 19<sup>th</sup> day of March, 2018.

Frank Williams, Chairman  
Brunswick County Commissioners

Attest:  
Andrea White, Clerk to the Board

3. **Utilities - Draft of CDM Smith Engineering Report of Water Treatment Options for the Northwest Water Treatment Plant (John Nichols, Director of Public Utilities and Ann Hardy, County Manager)**

Request that the Board of Commissioners receive information from CDM Smith regarding preliminary water treatment options for the Northwest Water Treatment Plant (NWWTP), budgetary cost information for the NWWTP upgrades, initial reverse osmosis pilot testing data, and information regarding treatment goals.

Mr. Nichols explained that the Consultant, CDM Smith, has been very diligent in studying Brunswick County's water treatment options for the Northwest Water Treatment Plant. Within three months, they have completed a desktop analysis, set up a Reverse Osmosis (RO) Plant, collected data, and completed a preliminary report which will be presented to the Board at this meeting. He further explained that county staff is in agreement with the information and recommendations being presented, and that the recommendations are for Brunswick County's Northwest Water Treatment Plant only.

Mr. Reed Barton and Mr. Bill Dowbiggin presented the draft report to the Board. The report included a recommendation of Low Pressure Reverse Osmosis as the best solution for Brunswick County.

Mrs. Hardy reviewed potential water rates for a typical homeowner and for wholesale and industrial customers. She explained that the cost of the RO advance treatment, the plant expansion, and the raw waterline construction to meet the needs through approximately 2062 were taken into consideration, and that the County would still meet the debt service obligations that the County has with the bond trustees.

Commissioner Cooke briefly stepped out of the meeting at 7:55 p.m., unexcused, and returned to the meeting at 7:57 p.m.

No action was taken.



## VII. PUBLIC HEARING

Pursuant to notice duly advertised and posted, the Brunswick County Board of Commissioners conducted Public Hearings in the Commissioners' Chambers, David R. Sandifer Administration Building, County Government Center, Bolivia, North Carolina.

### 1. Planning - Rezoning Case Z-759 (Kirstie Dixon, Director of Planning)

Request that, after the Public Hearing, the Board of Commissioners approve First and Second Readings to amend the Official Unified Development Ordinance Zoning Map from R-6000 (High Density Residential) and C-LD (Commercial Low Density) to C-LD (Commercial Low Density) with an associated CAMA Land Use Plan Map from LDR (Low Density Residential) and MDR (Medium Density Residential) to Commercial (UDO-18-759).

Ms. Kirstie Dixon, Planning Director, explained that Rezoning Case Z-759 is a 67.34-acre tract consisting of four parcels. It is a conventional rezoning and is currently zoned R-6000 and C-LD with three parcels that are split-zoned. The applicant is requesting a rezoning to C-LD. Ms. Dixon further explained that the rezoning is not consistent with the Land Use Plan. The Land Use Plan has the parcels Medium Density Residential and Low Density Residential, therefore the applicant has also requested a Land Use Amendment.

### CALL TO ORDER

Chairman Williams opened the Public Hearing at 7:59 p.m.

### PUBLIC COMMENTS

Chairman Williams asked for questions from the Board. Hearing none, he asked for Public Comments. The following individuals spoke:

1. Mr. Robert Bloodworth, resident of Supply, requested information on the planned use for the property and access to the property.

Chairman Williams explained the responsibility of the Board with regard to zoning.

Ms. Dixon offered the opportunity for Mr. Bloodworth to speak with the applicant following the meeting and noted that information regarding access to the property was included in the Planning Board minutes.

2. Mr. Sammy Varnam, Applicant, explained that he bought the property and made the request so that the zoning would be consistent.

### ADJOURN

Chairman Williams closed the Public Hearing at 8:03 p.m.

### CONSISTENCY STATEMENT

(per N.C.G.S. 153A-341)

Description: Rezoning Case Z759

# DRAFT

The Brunswick County Board of Commissioners finds that the proposed zoning amendment is not consistent with the CAMA Land Use Plan (Comprehensive Plan) for the following reasons: The proposed zoning amendment is not consistent with the CAMA Land Use Plan; however, an amendment has been requested from LDR (Low Density Residential) and MDR (Medium Density Residential) to Commercial, and there are portions of some parcels currently classified as commercial.

The Board of Commissioners further finds that the proposed zoning amendment is reasonable and in the public interest for the following reasons: There were no objections to the zoning change; there are portions of some parcels currently zoned commercial and this will correct a split-zoning issue; and there is like zoning in the immediate area.

Therefore, on the basis of all the information provided including the foregoing, Chairman Williams moved to order approval of the Unified Development Ordinance Zoning Map Amendment with an associated CAMA Land Use Plan Map (UDO-18-759), First and Second Readings. The vote of approval was unanimous.

2. **Planning - UDO Text Amendment - Temporary Use Permits for Large Events - UDO-18-02 (Kirstie Dixon, Director of Planning)**

Request that, after the Public Hearing, the Board of Commissioners approve First and Second Readings to amend the requirements for Temporary Use Permits for Large Events (1,000 Guests or More) in the Unified Development Ordinance (UDO-18-02).

Ms. Kirstie Dixon, Planning Director, explained that as Brunswick County grows in population, requests for large events also grow. Large event requests include festivals, fundraisers, and concerts. Events with 1,000 or more guests are very complex and pose many challenges. They require a lot of coordination with county departments and many county resources. This text amendment will provide a clear and concise approval process for county staff and the applicant.

Commissioner Sykes briefly stepped out of the room, unexcused, at 8:10 p.m.

## **CALL TO ORDER**

Following questions and comments by the Board, Chairman Williams opened the Public Hearing at 8:10 p.m.

## **PUBLIC COMMENTS**

Chairman Williams asked for comments from the public. No one wished to speak.

## **ADJOURN**

Chairman Williams closed the Public Hearing at 8:11 p.m.

## **CONSISTENCY STATEMENT**

**(per N.C.G.S. 153A-341)**

**Description: Temporary Use Permits Text Amendment**

The Brunswick County Board of Commissioners finds that the proposed text amendment is consistent with the CAMA Land Use Plan (Comprehensive Plan) for the following reasons:

# DRAFT

The proposed text amendment is a modification to existing language to clarify large events of 1,000 guests or more.

The Board of Commissioners further finds that the proposed text amendment is reasonable and in the public interest for the following reasons: The proposed text amendment provides regulations to ensure the public's safety, health and welfare is protected.

Therefore, on the basis of all the information provided including the foregoing, Commissioner Forte moved to order approval of the Unified Development Ordinance (UDO-18-02) for Temporary Use Permits for Large Events, First and Second Readings. The vote of approval was unanimous (Commissioner Sykes was out of the room during the vote, unexcused, therefore her vote counts in the affirmative per Brunswick County Rules of Procedure Sec. 1-2-102.)

Commissioner Sykes returned to the meeting at 8:12 p.m.

3. **Planning - UDO Text Amendments - Solar Farm Requirements (Kirstie Dixon, Director of Planning)**

Request that, after the Public Hearing, the Board of Commissioners approve First and Second Readings to amend the solar farm requirements in the Unified Development Ordinance (UDO-18-01).

Ms. Kirstie Dixon, Planning Director, explained that this item was before the Board of Commissioners in November and feedback was received from the public during the Public Hearing. The Board recommended, at that time, to return the item to the Planning Board for further study. Following discussions and a second Public Hearing in February, the Planning Board recommends using the existing text amendment with the following changes: (1) eliminate the size limitation; (2) eliminate the 3-year update requirement, only requiring update upon change of ownership; (3) eliminate the improvement guarantee requirement (bonding); and (4) require a special use permit for solar farms and not by Limited Use standards.

## **CALL TO ORDER**

Following questions and comments by the Board, Chairman Williams opened the Public Hearing at 8:15 p.m.

## **PUBLIC COMMENTS**

Chairman Williams asked for Public Comments. The following individuals spoke:

1. Mr. Peter Key, resident of Oak Island, thanked that Board for reconsidering this amendment and expressed his desire for a bonding process.

## **ADJOURN**

Chairman Williams closed the Public Hearing at 8:16 p.m.

## **CONSISTENCY STATEMENT**

**(per N.C.G.S. 153A-341)**

**Description: Solar Farm Text Amendment**

# DRAFT

The Brunswick County Board of Commissioners finds that the proposed text amendment is consistent with the CAMA Land Use Plan (Comprehensive Plan) for the following reasons: The proposed text amendment only changes requirements for one use, thus creating no major impact.

The Board of Commissioners further finds that the proposed text amendment is reasonable and in the public interest for the following reasons: The proposed text amendment addresses public concerns and gives property owners discretion in using their property. The proposed use was also reviewed by the Board of Adjustment.

Therefore, on the basis of all the information provided including the foregoing, Commissioner Sykes moved to order approval of the Unified Development Ordinance (UDO-18-01) with regard to solar farm requirements, First and Second Readings. The vote of approval was unanimous.

Commissioner Forte stepped out of the room at 8:18 p.m., unexcused, and returned at 8:19 p.m.

## VIII. ADMINISTRATIVE REPORT

### 1. **Administration - Surplus Property Offers (Steve Stone, Deputy County Manager)**

Request that the Board of Commissioners consider offers that have been submitted for six surplus parcels.

Mr. Stone presented the following parcels:

<u>Parcel</u>	<u>Location</u>	<u>Size</u>	<u>Tax Value</u>	<u>Acquired</u>	<u>Cost</u>	<u>Bid</u>
17900004	Rustic Trail, Longwood	8.6 acres	\$17,460.00	9/20/2017	\$2,148.33	
1520000107	.6 mi W. Of Animal Srvc.	3.94 acres	\$15,600.00	9/20/2017	\$2,902.11	
00500015	Northwest	13.58 acres	\$42,720.00	3/27/2017	<u>\$2,455.58</u>	
					\$7,506.02	\$7,700.00

Commissioner Sykes moved to accept the bid of \$7,700.00 for Parcels 17900004, 1520000107, 00500015 as presented.

Chairman Williams asked for discussion. Hearing none, he called the question. The vote of approval was unanimous.

Mr. Stone presented the following parcels:

<u>Parcel</u>	<u>Location</u>	<u>Size</u>	<u>Tax Value</u>	<u>Acquired</u>	<u>Cost</u>	<u>Bid</u>
218AA132	688 Madeira Islands Dr., SW	.46 acre	\$15,000.00	3/27/2017	\$5,093.53	\$5,100.00
18400039	750 Turnpike Rd., SW	.95 acre	\$20,750.00	11/4/2013	\$12,358.55	\$8,000.00
0270002108	6510 Alston Tr., NE	.7 acre	\$7,680.00	5/23/2011	\$2,626.51	\$700.00

Following discussion, Chairman Williams moved to accept each bid as presented.

Chairman Williams asked for discussion on the motion. Hearing none, he called the question. The vote of approval was unanimous.

### 2. **Parks & Recreation - Submission for Public Access Grant to Develop Brunswick Waterway Park Phase 3 (Aaron Perkins, Director of Parks & Recreation)**

# DRAFT

Request that the Board of Commissioners approve the submission of a pre-application and grant application for a Public Access Grant for the Brunswick Waterway Park Phase 3.

Mr. Perkins explained that the Division of Coastal Management awards \$1 million each year to local governments for public access to coastal waterfronts on the east coast of North Carolina. Two grants have previously been submitted and awarded. The Public Access Grant for the Brunswick Waterway Park Phase 3 will require a 25% match (12.5% cash and 12.5% in-kind). The pre-submission for Phase 3 will ask for site preparation, a transit dock, boardwalk and trails, site furnishings, site elements, and project oversight. Mr. Perkins further explained that most of the items are an extension of the two previously approved grants.

Commissioner Cooke moved to approve the Public Access Grant submission as presented.

Chairman Williams asked for discussion.

Following a brief discussion. Chairman Williams called the question. The motion carried 4 to 1. (Ayes – Williams, Cooke, Sykes, Forte. Nays – Thompson)

## **VIII. OTHER BUSINESS/INFORMAL DISCUSSION**

Chairman Williams asked if there were any other items of business or discussion. No items were presented.

## **IX. ADJOURNMENT**

Commissioner Cooke moved to adjourn at 8:28 p.m. The vote of approval was unanimous.

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Frank Williams, Chairman  
Brunswick County Board of Commissioners

Attest:

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Andrea White, NCCCC  
Clerk to the Board



**Brunswick County Board of Commissioners**  
**ACTION AGENDA ITEM**  
**April 16, 2018**

**Action Item # V. - 6.**

Finance - Fiscal Items

**From:**

Julie A. Miller

**Issue/Action Requested:**

Request that the Board of Commissioners approve Budget Amendments, Capital Project Ordinances and Fiscal Items of a routine nature presented on the consent agenda.

**-Sunset Harbor Water Main Budget Amendment**

Transfer \$21,000 from water capital reserve undesignated to the Sunset Harbor Water Main project for payment and recording of two easements associated with the project.

**-Operation Services Insurance Proceeds Budget Amendment**

Appropriate insurance proceeds of \$32,904 for repair and maintenance equipment for lightning strike damages to elevator.

**-Schools 2016 Bond Referendum Project Budget Amendments and CPO Adjustment**

Adjustment is for the advanced funding of 2016 Bond Referendum Projects. For simplification in school project accounting, the budget amendment appropriates the anticipated GO debt proceeds for approved project advancements and returns funds advanced from School Reserves. The finance officer can pre-audit contracts for projects in the Capital Improvement Plan that will be funded with debt proceeds.

**-Schools 2016 Bond Referendum Project Budget Amendments and CPO**

Appropriates \$1,000,000 of GO Bond advance funding for the Technology Infrastructure Upgrades approved by the Board of Education as part of the Phase 1 GO Bond Projects.

**-Brunswick County Schools appropriation for school technology improvements**

The Board of Education approved at their last meeting utilizing \$900,000 of their fund balance they hold for school technology improvements.

**-Courthouse Project Budget Amendment**

Transfer \$25,000 of undesignated funds from county capital reserve to the courthouse project for site survey, geotechnical investigation and miscellaneous small administrative expenditures associated with the project.

**-West Brunswick Regional Capital and Replacement Budget Amendment**

Transfer \$100,635 of capital and replacement reserve funding designated for West Brunswick Regional Wastewater to the West budget for reimbursement of rewiring to headworks and Xylem Water for the Oak Island Repump Station pump repair.

**-Horticulture Program Revenue Budget Amendment**

Appropriate \$1,626 of horticulture program revenue for use in the horticulture program and for installation of a new fence at the greenhouse.

-Financial Reports for March 2018 (unaudited)

Included are Summary Information for General and Enterprise Funds, key indicators of Revenues and Expenditures and Cash and Investments. All reports provided at [://brunswickcountync.gov/finance/reports](http://brunswickcountync.gov/finance/reports)

**Background/Purpose of Request:**

**Fiscal Impact:**

Budget Amendment Required, Capital Project/Grant Ordinance Required, Pre-Audit Certification Required, Reviewed By Director of Fiscal Operations

**Approved By County Attorney:**

Yes

**County Manager's Recommendation:**

Recommend that the Board of Commissioners approve Budget Amendments, Capital Project Ordinances and Fiscal Items of a routine nature presented on the consent agenda.

**ATTACHMENTS:**

Description

- ☐ 20180416 Budget Amendment Sunset Harbor Water Main Reserve
- ☐ 20180416 Budget Amendment Sunset Harbor Water Main
- ☐ 20180416 CPO Sunset Harbor
- ☐ 20180416 Budget Amendment Elevator Repairs
- ☐ 20180416 CPO Brunswick County Schools Capital Project
- ☐ 20180416 Budget Amendment Bond Referendum Project Advanced Funding
- ☐ 20180416 Attach School BA approval for advanced funding debt proceeds
- ☐ 20180416 CPO Brunswick County Schools Bond Referendum Project
- ☐ 20180416 Budget Amendment Courthouse Renovation Reserve
- ☐ 20180416 Budget Amendment Courthouse Renovation
- ☐ 20180416 CPO Courthouse Renovation Project
- ☐ 20180416 Budget Amendment West Capital and Replacement
- ☐ 20180416 Budget Amendment West Capital and Replacement Reserve
- ☐ 20180416 Budget Amendment BCC Roof Replacement
- ☐ 20180416 Budget Amendment Horticulture Program Revenue
- ☐ March Monthly Financial Statements

Request Info	
Type	Budget Amendment
Description	Sunset Harbor Water Main Res
Justification	Board Meeting 4/16/2018-Transfer \$21,000 from water capital reserve undesignated to the Sunset Harbor Water Main project for payment and recording of two easements associated with the project.
Originator	Tiffany Rogers

Items						
Department	Object	Dept Desc	Object Desc	Amount	Incr/Decr	Dr/Cr
419800	464299	Interfund Trans Water Cap Rsv	Undesignated Funds	-21000	Decrease	Credit
419800	398661	Interfund Trans Water Cap Rsv	Trans Frm Water Fund	-21000	Decrease	Debit

Total	
Grand Total:	-42000



Request Info	
Type	Budget Amendment
Description	Sunset Harbor Water Main
Justification	Board Meeting 4/16/2018-Transfer \$21,000 from water capital reserve undesignated to the Sunset Harbor Water Main project for payment and recording of two easements associated with the project.
Originator	Tiffany Rogers

Items						
Department	Object	Dept Desc	Object Desc	Amount	Incr/Decr	Dr/Cr
418287	398661	Sunset Harbor Water Main	Trans Frm Water Fund	21000	Increase	Credit
418287	464002	Sunset Harbor Water Main	Construction	21000	Increase	Debit

Total	
Grand Total:	42000

**COUNTY OF BRUNSWICK, NORTH CAROLINA  
CAPITAL PROJECT ORDINANCE**

**Sunset Harbor Water Main  
(418287)**

Be it ordained by the Board of County Commissioners of Brunswick County that pursuant to Section 13.2 of the General Statutes of North Carolina, the following ordinance is hereby adopted:

Section 1. The following amounts are hereby appropriated in the Brunswick County Water Capital Projects Fund:

**Water Capital Projects Fund:**

Revenues:

Transfer from Water Fund	<u>91,000</u>
<b>Total Water Capital Project Revenues</b>	<b>\$ 91,000</b>

Expenditures:

Arch/Eng/Legal	70,000
Construction	<u>21,000</u>
<b>Total Water Capital Project Expenditures</b>	<b>\$ 91,000</b>

Section 2. It is estimated that the following revenues will be available in the Brunswick County Water Fund:

Current Funds Appropriated	\$ 91,000
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Section 3. The following amounts are hereby appropriated in the Brunswick County Water Fund:

Contribution to Capital Project Fund	\$ 91,000
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Section 4. This Capital Project Ordinance shall be entered into the minutes of the April 16, 2018 meeting of the Brunswick County Board of Commissioners.

Request Info	
Type	Budget Amendment
Description	Elevator Repairs
Justification	Board Meeting 4/16/18-Appropriate insurance reimbursements of \$32,904 to repair and maintenance equipment for lightning strike damages to elevator.
Originator	Tiffany Rogers

Items						
Department	Object	Dept Desc	Object Desc	Amount	Incr/Decr	Dr/Cr
104280	383913	Operation Services	Insurance Refund	32904	Increase	Credit
104280	435200	Operation Services	Repair and Maint - Equipment	32904	Increase	Debit

Total	
Grand Total:	65808

**COUNTY OF BRUNSWICK, NORTH CAROLINA**  
**CAPITAL PROJECT ORDINANCE**  
**Brunswick County Schools Capital Project**  
**(428006)**

Be it ordained by the Board of County Commissioners of Brunswick County that pursuant to Section 13.2 of the General Statutes of North Carolina, the following ordinance is hereby adopted:

Section 1. The following amounts are hereby appropriated in the Brunswick County Schools Capital Projects Fund:

**Brunswick County Schools Capital Project**

**Revenues:**

NC Education Lottery	7,082,039
Investment Earnings	9,907
Transfer from General Fund	28,668,999
Transfer from Special SCRS PRC495	3,628,226
Transfer SCRS PRC077	13,832,255
Fund Balance Appropriated	6,542,506
<b>Total School Capital Project Fund Revenues</b>	<b>\$ 59,763,932</b>

**Expenditures:**

PRC 495 Excess Ad Valorem	17,964,914
PRC 077 Local Option Sales Tax	28,513,681
GF Hold Harmless Medicaid Swap	372,871
Proc NC Education Lottery Expense	7,082,039
Transfer to General Fund	314,013
Ad Valorem Contingency	3,502,860
Sales Tax Contingency	2,013,554
<b>Total School Capital Project Fund Expenditures</b>	<b>\$ 59,763,932</b>

Section 2. It is estimated that the following revenues will be available in the Brunswick County General Fund:

Current Funds Appropriated	\$ 28,668,999
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Section 3. The following amounts are hereby appropriated in the Brunswick County General Fund:

Contribution to Capital Project Fund	\$ 28,668,999
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Section 4. This Capital Project Ordinance shall be entered into the minutes of the April 16, 2018 meeting of the Brunswick County Board of Commissioners.

Request Info	
Type	Budget Amendment
Description	Bond Revenue Infrastructure
Justification	Board Meeting 04/16/2018-Appropriate proceeds from GO Debt in the amount of \$1,000,000 for Technology Infrastructure Upgrades approved by the Brunswick County Board of Education on April 10, 2018.
Originator	Tiffany Rogers

Items						
Department	Object	Dept Desc	Object Desc	Amount	Incr/Decr	Dr/Cr
428217	391000	2016 Bond Referendum Projects	Proceeds Frm GO Debt	1000000	Increase	Credit
428217	464002	2016 Bond Referendum Projects	Construction	1000000	Increase	Debit

Total	
Grand Total:	2000000

# Capital

6

## BRUNSWICK COUNTY SCHOOLS BUDGET AMENDMENT

At a meeting held on the 10th day of April, 2018, the Brunswick County Board of Education passed the following resolution:  
*Be it resolved that the following amendments be made to the Budget Resolution for the fiscal year ending June 30, 2018.*

Budget Code	Description of Code	Expenditures	Revenues
4.9002.695.XXX 4.4110.695	Town Creek Elementary & Middle- Site Work, Increase Capacity Capital Fund Appropriation - From Ad Valorem Contingency	2,840,000.00	2,840,000.00
4.9002.695.XXX 4.4110.695	Town Creek Middle & Elementary- Site Work County Appropriation - Advance of Bond Proceeds	2,100,000.00	2,100,000.00
4.5110.695.462 4.4110.695	Technology Infrastructure Upgrades County Appropriation - Advance of Bond Proceeds	1,000,000.00	1,000,000.00
	Total:	5,940,000.00	5,940,000.00

### Explanation:

Ad Valorem Contingency- appropriation for Town Creek Middle and Elementary, multi-purpose addition, site work  
Brunswick County advance of Bond proceeds for Town Creek Middle School site work.  
Brunswick County advance of Bond proceeds for technology infrastructure upgrades.

Total Appropriation in Current Year Budget

33,914,758.79

**Increase (Decrease) of Amendment**

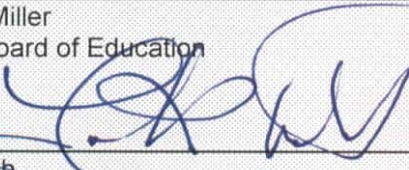
**5,940,000.00**

Total Appropriation in Current Amended Budget

39,854,758.79

Passed by majority vote of the Board of Education of Brunswick County on the 10th day of April, 2018.

  
Charles W. Miller  
Chairman, Board of Education

  
Leslie K. Tubb  
Secretary, Board of Education

We, the Board of Commissioners of Brunswick County, hereby approve the changes to the BCS Capital Outlay funds as presented.

Frank Williams  
Chairman, Board of Commissioners

Date



# Capital

## 7

### BRUNSWICK COUNTY SCHOOLS BUDGET AMENDMENT

At a meeting held on the 10th day of April, 2018, the Brunswick County Board of Education passed the following resolution:  
*Be it resolved that the following amendments be made to the Budget Resolution for the fiscal year ending June 30, 2018.*

Budget Code	Description of Code	Expenditures	Revenues
4.5110.600.462 4.4922.600.714	Technology Infrastructure Upgrades Local Fund Balance Appropriation - Transfer In	900,000.00	900,000.00
Total:		900,000.00	900,000.00

**Explanation:** To appropriate local fund balance transferred in for technology upgrades

Total Appropriation in Current Year Budget

38,154,758.79

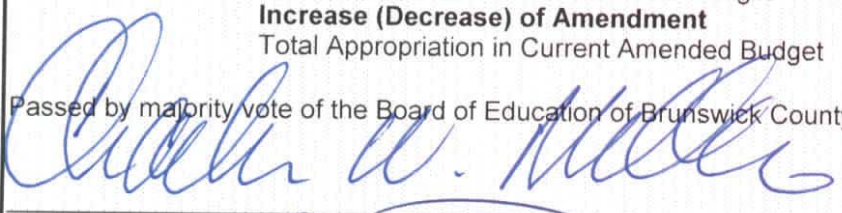
**Increase (Decrease) of Amendment**

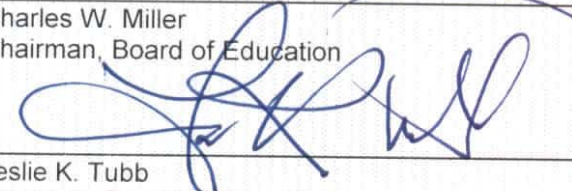
**900,000.00**

Total Appropriation in Current Amended Budget

39,054,758.79

Passed by majority vote of the Board of Education of Brunswick County on the 10th day of April, 2018.

  
Charles W. Miller  
Chairman, Board of Education

  
Leslie K. Tubb  
Secretary, Board of Education

We, the Board of Commissioners of Brunswick County, hereby approve the changes to the BCS Capital Outlay funds as presented.

Frank Williams  
Chairman, Board of Commissioners

Date

**COUNTY OF BRUNSWICK, NORTH CAROLINA**  
**CAPITAL PROJECT ORDINANCE**  
**Bond Referendum Projects**  
**(428217)**

Be it ordained by the Board of County Commissioners of Brunswick County that pursuant to Section 13.2 of the General Statutes of North Carolina, the following ordinance is hereby adopted:

Section 1. The following amounts are hereby appropriated in the Brunswick County Schools Capital Projects Fund:

**Bond Referendum Projects**

Revenues:

Proceeds from GO Debt	6,500,000
Transfer from General Fund	<u>2,840,000</u>
<b>Total School Capital Project Fund Revenues</b>	<b>\$ 9,340,000</b>

Expenditures:

Salary & Wages	150,000
Arch/Eng/Legal	2,900,000
Construction	<u>6,290,000</u>
<b>Total School Capital Project Fund Expenditures</b>	<b>\$ 9,340,000</b>

Section 2. It is estimated that the following revenues will be available in the Brunswick County General Fund:

Current Funds Appropriated	\$ 2,840,000
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Section 3. The following amounts are hereby appropriated in the Brunswick County General Fund:

Contribution to Capital Project Fund	\$ 2,840,000
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Section 4. This Capital Project Ordinance shall be entered into the minutes of the April 16, 2018 meeting of the Brunswick County Board of Commissioners.



Request Info	
Type	Budget Amendment
Description	Courthouse Renovation Reserve
Justification	Board Meeting 4/16/18-Transfer \$25,000 of undesignated funds from county capital reserve to the courthouse project for site survey, geotechnical investigation and miscellaneous small administrative expenditures associated with the project.
Originator	Tiffany Rogers

Department	Object	Dept Desc	Object Desc	Amount	Incr/Decr	Dr/Cr	
439801	464299	Interfund Trans Co Cap Reserve	Undesignated Funds	-25000	Decrease	Credit	
439801	398110	Interfund Trans Co Cap Reserve	Trans Frm General Fund	-25000	Decrease	Debit	

Total	
Grand Total:	-50000

Request Info	
Type	Budget Amendment
Description	Courthouse Renovation
Justification	Board Meeting 4/16/18-Transfer \$25,000 of undesignated funds from county capital reserve to the courthouse project for site survey, geotechnical investigation and miscellaneous small administrative expenditures associated with the project.
Originator	Tiffany Rogers

Items						
Department	Object	Dept Desc	Object Desc	Amount	Incr/Decr	Dr/Cr
438207	398110	Court House Renovation	Trans Frm General Fund	25000	Increase	Credit
438207	464001	Court House Renovation	Arch/Engnrg/Legal	25000	Increase	Debit

Total	
Grand Total:	50000

**COUNTY OF BRUNSWICK, NORTH CAROLINA**  
**CAPITAL PROJECT ORDINANCE**  
**Couthouse Renovation Project**  
**(438207)**

Be it ordained by the Board of County Commissioners of Brunswick County that pursuant to Section 13.2 of the General Statutes of North Carolina, the following ordinance is hereby adopted:

Section 1. The following amounts are hereby appropriated in the Brunswick County Capital Projects Fund:

**County Capital Projects Fund:**

Revenues:

Transfer from General Fund	<u>1,000,800</u>
<b>Total County Capital Project Revenues</b>	<b>\$ 1,000,800</b>

Expenditures:

Arch/Eng/Legal	<u>1,000,800</u>
<b>Total County Capital Project Expenditures</b>	<b>\$ 1,000,800</b>

Section 2. It is estimated that the following revenues will be available in the Brunswick County General Fund:

Current Funds Appropriated	\$ 1,000,800
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Section 3. The following amounts are hereby appropriated in the Brunswick County General Fund:

Contribution to Capital Project Fund	\$ 1,000,800
--------------------------------------	--------------

Section 4. This Capital Project Ordinance shall be entered into the minutes of the April 16, 2018 meeting of the Brunswick County Board of Commissioners.

Request Info	
Type	Budget Amendment
Description	West Capital and Replacement
Justification	Board Meeting 04/16/2018-Transfer \$100,635 of capital and replacement reserve funding designated for West Brunswick Regional Wastewater to the West budget for reimbursement of rewiring to headworks and Xylem Water for the Oak Island Repump Station pump repair.
Originator	Tiffany Rogers

Items						
Department	Object	Dept Desc	Object Desc	Amount	Incr/Decr	Dr/Cr
627320	398110	West Regional Wastewater	Trans Frm General Fund	100635	Increase	Credit
627320	435200	West Regional Wastewater	Repair and Maint - Equipment	100635	Increase	Debit

Total	
Grand Total:	201270

Request Info	
Type	Budget Amendment
Description	West Capital and Replacement Reserve
Justification	Board Meeting 04/16/2018-Transfer \$100,635 of capital and replacement reserve funding designated for West Brunswick Regional Wastewater to the West budget for reimbursement of rewiring to headworks and Xylem Water for the Oak Island Repump Station pump repair.
Originator	Tiffany Rogers

Items						
Department	Object	Dept Desc	Object Desc	Amount	Incr/Decr	Dr/Cr
449800	464339	Interfund Trans Wstwtr Cap Rsv	Wes Reg Capital and Replacmt	-100635	Decrease	Credit
449800	498062	Interfund Trans Wstwtr Cap Rsv	Trans To Wastewater Enterprise	100635	Increase	Debit

Total	
Grand Total:	0

Request Info	
Type	Budget Amendment
Description	BCC Roof Replacement
Justification	Board Meeting 04/16/2018-Transfer contingency funds of \$215,000 to Brunswick Community College for roof replacement costing \$415,000. The college is to use \$200,000 of their fund balance and the county will evaluate the Fund Balance derived from county fund at the end of the current fiscal year.
Originator	Tiffany Rogers

Items						
Department	Object	Dept Desc	Object Desc	Amount	Incr/Decr	Dr/Cr
109910	499100	Contingency	Contingency	-146810	Decrease	Credit
109910	499101	Contingency	Emergency Contingency	-68190	Decrease	Credit
105921	465300	Brunswick Community College	Capital Outlay-Education(920)	215000	Increase	Debit

Total	
Grand Total:	0

Request Info	
Type	Budget Amendment
Description	Horticulture Program Revenue
Justification	Board Meeting 4/16/2018-Appropriate \$1,626 of horticulture program revenue for use in the horticulture program and for installation of a new fence at the greenhouse.
Originator	Tiffany Rogers

Items						
Department	Object	Dept Desc	Object Desc	Amount	Incr/Decr	Dr/Cr
104950	335033	Cooperative Extension	Horticulture Program Fees	1626	Increase	Credit
104950	455000	Cooperative Extension	Cap Outlay-Equipment	874	Increase	Debit
104950	449954	Cooperative Extension	Horticulture Prog Expenditures	752	Increase	Debit

Total	
Grand Total:	3252

# **COUNTY OF BRUNSWICK NORTH CAROLINA**

***MONTHLY FINANCIAL STATEMENTS  
(UNAUDITED)***

***FOR THE PERIOD ENDED MARCH 31, 2018***





**COUNTY OF BRUNSWICK, NORTH CAROLINA**  
**Monthly Financial Statements**

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**COUNTY OF BRUNSWICK, NORTH CAROLINA**  
**Monthly Financial Statements**

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## **Summary Information for General and Enterprise Funds as of March 31, 2018:**

### **General Fund:**

- Total revenues for the General Fund are \$164.7 million for an increase of \$4.0 million or 2.5% over the same period in the prior year. Ad Valorem taxes have increased \$4.6 million or 4.0%, Deed Stamp excise taxes have increased \$0.6 million or 28.2% while sales tax has increased 9.4% or \$1.3 million. This increase is offset by daycare state revenues that have decreased 2.3 million or 85.1% under the same period in the prior year. This is a result of the state moving to direct paying the daycare providers. Total revenues collected are 90.6% of the amended budget for the fiscal year.
- Total expenditures for the General Fund are \$124.7 million and are 67.7% of the current budget. Total expenditures are more than the expenditures of the same period in the prior year by \$5.4 million or 4.5%. This is a result of a \$0.5 million onetime capital outlay purchase in environmental protection, \$1.9 million or 6.6% increase in public safety, and \$1.6 million or 5.5% increase in education which is driven by the increase in property tax. These increases are partially offset with an 85.1% day care expenditure decrease of \$2.3 million relating to the revenue decrease noted above. Debt service has also increased due to the early redemption of the 2018 maturity of the 2007B GO Bonds saving the county \$38.8 thousand.
- Net transfers to other funds are \$2.8 million compared to \$10.0 million transfers out for the same period of the prior year. The transfers were to fund various county capital projects.
- Revenues are more than expenditures and net transfers by \$37.7 million for the current period end compared to more than by \$31.4 million at the end of the same period of the prior year.

### **Water Fund:**

- Total revenues for the Water Fund increased 8.2% over the same period in the prior year to \$19.1 million. Wholesale water sales increased 11.1% or 0.4 million and industrial water sales increased \$0.3 million or 21.7% over the same period in the prior year mainly due to PPI rate change. Total revenues are 86.5% of the amended budget for the fiscal year.
- Total expenditures for the Water Fund are \$12.9 million and are 64.0% of current budget. Total expenditures as compared to the expenditures of the same period in the prior year increased minimally \$0.3 million or 2.2%.
- Net transfers to water capital projects of \$0.6 million decreased compared to transfers of \$5.7 million in the same period of the prior year. The transfers were to fund various water capital projects.
- Revenues are greater than expenditures and net transfers by \$5.6 million compared to less than by \$0.6 million in the same period of the prior year.

### **Wastewater Fund:**

- Total revenues for the Wastewater Fund increased 7.5% over the same period in the prior year to \$21.1 million. Retail wastewater sales slightly increased to \$7.4 million in comparison with the prior year of \$7.0 million while capital recovery revenue increased by \$0.8 million or 44.7%. Total revenues are 94.6% of the amended budget for the fiscal year.
- Total expenditures for the Wastewater Fund remained consistent with a minimal increase over the same period in the prior year to \$10.7 million. Total expenditures are 38.0% of the budget for the fiscal year.
- Net transfers from wastewater capital projects of \$0.8 million increased compared to net transfers out of \$0.4 million in the same period of the prior year. The transfers were to fund various wastewater capital projects.
- Revenues are more than expenditures and net transfers by \$11.2 million compared to more than expenditures by \$8.9 million in the same period of the prior year.

## COUNTY OF BRUNSWICK, NORTH CAROLINA

## BALANCE SHEET - GOVERNMENTAL FUNDS

MARCH 31, 2018

	Major Funds			Non Major	Total
	General	County Capital Project	Education Capital Project	Governmental Funds	Governmental Funds
<b>Assets:</b>					
Cash and cash equivalents/investments	\$ 111,425,631	\$ 19,147,192	\$ 9,945,057	\$ 2,017,564	\$ 142,535,444
Restricted cash and investments	4,145,549	-	169,022	-	4,314,571
Taxes receivable - net	4,764,370	-	-	-	4,764,370
Receivables - net	1,042,084	-	-	4,532	1,046,616
Other governmental agencies	430,226	56,802	-	-	487,028
Due from other funds	1,565	-	-	-	1,565
Prepaid expenditures	64,000	-	-	-	64,000
Total assets	<u>\$ 121,873,425</u>	<u>\$ 19,203,994</u>	<u>\$ 10,114,079</u>	<u>\$ 2,022,096</u>	<u>\$ 153,213,594</u>
<b>Liabilities:</b>					
Accounts payable and other liabilities	\$ 4,334,101	\$ -	\$ -	\$ 5,102	\$ 4,339,203
Due to other funds	-	-	-	1,565	1,565
Total liabilities	<u>4,334,101</u>	<u>-</u>	<u>-</u>	<u>6,667</u>	<u>4,340,768</u>
<b>Deferred Inflows of Resources:</b>	<u>6,196,078</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>6,196,078</u>
<b>Fund Balances:</b>					
Nonspendable	64,000	-	-	-	64,000
Restricted:					
Stabilization by State Statute	8,264,637	-	-	4,532	8,269,169
Restricted - other	4,062,946	-	169,022	2,012,462	6,244,430
Committed	214,566	19,203,995	9,945,057	-	29,363,618
Assigned	1,704,369	-	-	-	1,704,369
Unassigned	97,032,728	-	-	(1,565)	97,031,163
Total fund balances	<u>111,343,246</u>	<u>19,203,995</u>	<u>10,114,079</u>	<u>2,015,429</u>	<u>142,676,749</u>
Total liabilities, deferred inflow of resources and fund balances	<u>\$ 121,873,425</u>	<u>\$ 19,203,995</u>	<u>\$ 10,114,079</u>	<u>\$ 2,022,096</u>	<u>\$ 153,213,595</u>

## COUNTY OF BRUNSWICK, NORTH CAROLINA

STATEMENT OF REVENUES, EXPENDITURES AND CHANGES IN FUND  
BALANCES - GOVERNMENTAL FUNDS  
FOR THE PERIOD ENDED MARCH 31, 2018

	Major Funds			Non Major	Total
	General	County Capital Project	Education Capital Project	Governmental Funds	Governmental Funds
<b>Revenues:</b>					
Ad valorem taxes	\$ 119,162,103	\$ -	\$ -	\$ -	\$ 119,162,103
Local option sales taxes	14,736,888	-	-	-	14,736,888
Other taxes and licenses	4,112,335	-	-	-	4,112,335
Unrestricted intergovernmental revenues	2,831,859	-	-	-	2,831,859
Restricted intergovernmental revenues	10,883,316	603,923	-	734,120	12,221,359
Permits and fees	3,460,322	-	-	117,125	3,577,447
Sales and services	7,651,479	-	-	-	7,651,479
Investment earnings	307,708	72,764	37,115	6,443	424,030
Other	1,580,006	-	-	-	1,580,006
Total revenues	<u>164,726,016</u>	<u>676,687</u>	<u>37,115</u>	<u>857,688</u>	<u>166,297,506</u>
<b>Expenditures:</b>					
<b>Current:</b>					
General government	8,463,026	-	-	292,620	8,755,646
Public safety	30,274,162	500	-	446,019	30,720,681
Central services	10,693,865	-	-	-	10,693,865
Human services	18,311,605	-	-	-	18,311,605
Transportation	296,770	994,644	-	-	1,291,414
Environmental protection	11,901,848	-	-	-	11,901,848
Culture and recreation	3,192,022	4,426,397	-	-	7,618,419
Economic and physical development	4,290,722	9,379	-	-	4,300,101
Education	31,667,268	-	4,740,158	-	36,407,426
<b>Debt Service:</b>					
Principal retirement	4,128,292	-	-	-	4,128,292
Interest and fiscal charges	1,498,125	-	-	-	1,498,125
Total expenditures	<u>124,717,705</u>	<u>5,430,920</u>	<u>4,740,158</u>	<u>738,639</u>	<u>135,627,422</u>
<b>Revenues over (under) expenditures</b>	<u>40,008,311</u>	<u>(4,754,233)</u>	<u>(4,703,043)</u>	<u>119,049</u>	<u>30,670,084</u>
<b>Other Financing Sources (Uses):</b>					
Sale of capital assets	-	-	-	-	-
Transfers from other funds	10,510	1,731,388	1,049,290	9,642	2,800,830
Transfers to other funds	(2,790,320)	(10,510)	-	-	(2,800,830)
Issuance of long-term debt	505,057	-	-	-	505,057
Total other financing sources (uses)	<u>(2,274,753)</u>	<u>1,720,878</u>	<u>1,049,290</u>	<u>9,642</u>	<u>505,057</u>
<b>Net change in fund balance</b>	<u>37,733,558</u>	<u>(3,033,355)</u>	<u>(3,653,753)</u>	<u>128,691</u>	<u>31,175,141</u>
<b>Fund balance, beginning of year</b>	<u>73,609,688</u>	<u>22,237,350</u>	<u>13,767,832</u>	<u>1,886,738</u>	<u>111,501,608</u>
<b>Fund balance, end of year</b>	<u>\$ 111,343,246</u>	<u>\$ 19,203,995</u>	<u>\$ 10,114,079</u>	<u>\$ 2,015,429</u>	<u>\$ 142,676,749</u>

## COUNTY OF BRUNSWICK, NORTH CAROLINA

STATEMENT OF REVENUES, EXPENDITURES AND CHANGES IN FUND BALANCES -  
BUDGET AND ACTUAL - GENERAL FUND  
FOR THE PERIOD ENDED MARCH 31, 2018

	Original Budget	Final Budget	Actual	Variance Positive (Negative)
<b>Revenues:</b>				
Ad valorem taxes	\$ 117,785,618	\$ 117,785,618	\$ 119,162,103	\$ 1,376,485
Local option sales taxes	22,948,324	22,948,324	14,736,888	(8,211,436)
Other taxes and licenses	4,448,000	4,448,000	4,112,335	(335,665)
Unrestricted intergovernmental revenues	1,813,000	1,813,000	2,831,859	1,018,859
Restricted intergovernmental revenues	18,831,896	19,355,138	10,883,316	(8,471,822)
Permits and fees	3,727,654	3,846,072	3,460,322	(385,750)
Sales and services	10,022,889	10,137,889	7,651,479	(2,486,410)
Investment earnings	100,000	100,000	307,708	207,708
Other	1,171,265	1,387,120	1,580,006	192,886
Total revenues	<u>180,848,646</u>	<u>181,821,161</u>	<u>164,726,016</u>	<u>(17,095,145)</u>
<b>Expenditures:</b>				
<b>Current:</b>				
General government	12,252,362	12,108,564	8,463,026	3,645,538
Central services	14,792,753	15,855,655	10,693,865	5,161,790
Public safety	40,287,133	41,431,649	30,274,162	11,157,487
Transportation	154,730	386,068	296,770	89,298
Environmental protection	15,391,281	15,938,790	11,901,848	4,036,942
Economic and physical development	7,542,060	7,921,447	4,290,722	3,630,725
Human services	29,356,850	29,983,362	18,311,605	11,671,757
Education	42,273,921	42,273,921	31,667,268	10,606,653
Culture and recreation	4,434,525	4,458,934	3,192,022	1,266,912
<b>Debt Service:</b>				
Principal retirement	11,210,001	11,384,001	4,128,292	7,255,709
Interest and fiscal charges	2,608,448	2,608,448	1,498,125	1,110,323
Total expenditures	<u>180,304,064</u>	<u>184,350,839</u>	<u>124,717,705</u>	<u>59,633,134</u>
Revenues over (under) expenditures	<u>544,582</u>	<u>(2,529,678)</u>	<u>40,008,311</u>	<u>42,537,989</u>
<b>Other Financing Sources (Uses):</b>				
Issuance of long-term debt	-	505,057	505,057	-
Transfers from other funds	-	10,510	10,510	-
Transfers to other funds	(5,424,415)	(5,572,695)	(2,790,320)	2,782,375
Appropriated fund balance	<u>4,879,833</u>	<u>7,586,806</u>	<u>-</u>	<u>(7,586,806)</u>
Total other financing sources (uses)	<u>(544,582)</u>	<u>2,529,678</u>	<u>(2,274,753)</u>	<u>(4,804,431)</u>
<b>Net change in fund balances</b>	<u>\$ -</u>	<u>\$ -</u>	<u>37,733,558</u>	<u>\$ 37,733,558</u>
<b>Fund balance, beginning of year</b>			<u>73,609,688</u>	
<b>Fund balance, end of year</b>			<u>\$ 111,343,246</u>	

COUNTY OF BRUNSWICK, NORTH CAROLINA

**SCHEDULE OF REVENUES AND EXPENDITURES - BUDGET AND  
ACTUAL AND CHANGES IN FUND BALANCE - GENERAL FUND  
FOR THE PERIOD ENDED MARCH 31, 2018 AND THE YEAR ENDED JUNE 30, 2017  
WITH COMPARATIVE ACTUAL AMOUNTS FOR PRIOR YEAR**

	<u>Original Budget</u>	<u>Current Budget</u>	<u>March 31, 2018</u>	<u>Variance Positive (Negative)</u>	<u>% of Budget</u>	<u>June 30, 2017</u>	<u>March 31, 2017</u>
<b>Revenues:</b>							
<b>Ad Valorem Taxes:</b>							
Current year taxes	\$ 114,785,618	\$ 114,785,618	\$ 115,502,906	\$ 717,288	101%	\$ 115,195,517	\$ 111,399,125
Prior year taxes	2,300,000	2,300,000	2,768,317	468,317	120%	3,504,916	2,457,852
Penalties and interest	700,000	700,000	890,880	190,880	127%	1,119,593	743,603
	<u>117,785,618</u>	<u>117,785,618</u>	<u>119,162,103</u>	<u>1,376,485</u>	<u>101%</u>	<u>119,820,026</u>	<u>114,600,580</u>
<b>Local Option Sales Taxes:</b>							
Article 39 (1%)	9,581,330	9,581,330	6,206,752	(3,374,578)	65%	9,305,399	5,615,731
Article 40 (1/2%)	6,886,082	6,886,082	4,336,928	(2,549,154)	63%	6,791,631	4,036,613
Article 42 (1/2%)	6,480,912	6,480,912	4,193,208	(2,287,704)	65%	6,367,362	3,819,063
	<u>22,948,324</u>	<u>22,948,324</u>	<u>14,736,888</u>	<u>(8,211,436)</u>	<u>64%</u>	<u>22,464,392</u>	<u>13,471,407</u>
<b>Other Taxes and Licenses:</b>							
Scrap tire disposal fee	160,000	160,000	88,713	(71,287)	55%	214,717	132,360
Deed stamp excise tax	2,800,000	2,800,000	2,899,214	99,214	104%	3,263,574	2,261,693
Solid waste tax	48,000	48,000	29,109	(18,891)	61%	65,295	39,902
White goods disposal tax	40,000	40,000	57,877	17,877	145%	71,573	35,853
1% Occupancy Tax	1,400,000	1,400,000	1,037,422	(362,578)	74%	1,472,240	986,275
	<u>4,448,000</u>	<u>4,448,000</u>	<u>4,112,335</u>	<u>(335,665)</u>	<u>92%</u>	<u>5,087,399</u>	<u>3,456,083</u>
<b>Unrestricted Intergovernmental:</b>							
Medicaid hold harmless	1,500,000	1,500,000	2,684,673	1,184,673	179%	3,034,559	2,699,403
Beer and wine tax	248,000	248,000	-	(248,000)	0%	288,854	-
Jail fees	65,000	65,000	147,186	82,186	226%	175,518	116,526
	<u>1,813,000</u>	<u>1,813,000</u>	<u>2,831,859</u>	<u>1,018,859</u>	<u>156%</u>	<u>3,498,931</u>	<u>2,815,929</u>
<b>Restricted Intergovernmental:</b>							
State and federal grant	18,685,358	19,208,600	10,749,469	(8,459,131)	56%	20,789,689	13,988,791
ARRA federal grant	4,538	4,538	4,565	27	101%	6,080	6,080
Court facility fees	130,000	130,000	88,965	(41,035)	68%	158,607	102,819
ABC education requirement	-	-	10,205	10,205	na	6,746	6,746
ABC law enforcement services	2,000	2,000	7,289	5,289	364%	4,885	4,885
State drug tax	10,000	10,000	22,823	12,823	228%	48,345	32,814
	<u>18,831,896</u>	<u>19,355,138</u>	<u>10,883,316</u>	<u>(8,471,822)</u>	<u>56%</u>	<u>21,014,352</u>	<u>14,142,135</u>
<b>Permits and Fees:</b>							
Building inspection permits	1,950,000	2,068,418	1,879,611	(188,807)	91%	2,219,578	1,651,846
Recording Fees	750,000	750,000	597,870	(152,130)	80%	785,011	579,648
Fire inspection fees	50,000	50,000	75,297	25,297	151%	941	-
Concealed handgun permit	130,000	130,000	139,600	9,600	107%	203,675	159,975
Other permit and fees	847,654	847,654	767,944	(79,710)	91%	884,133	653,545
	<u>3,727,654</u>	<u>3,846,072</u>	<u>3,460,322</u>	<u>(385,750)</u>	<u>90%</u>	<u>4,093,338</u>	<u>3,045,014</u>
<b>Sales and Services:</b>							
Solid waste fees	2,100,000	2,215,000	1,718,775	(496,225)	78%	2,582,625	1,779,826
School resource officer reimb.	1,262,709	1,262,709	631,355	(631,354)	50%	1,237,950	618,975
Rents	13,930	13,930	12,100	(1,830)	87%	15,582	11,274
EMS Charges	3,800,000	3,800,000	2,972,796	(827,204)	78%	3,691,722	2,632,797
Public health user fees	779,500	779,500	647,424	(132,076)	83%	984,154	720,558
Sheriff animal prot. serv. fees	130,000	130,000	62,173	(67,827)	48%	91,241	66,505
Social services fees	65,400	65,400	50,792	(14,608)	78%	64,753	51,651
Public housing fees	43,800	43,800	2,761	(41,039)	6%	6,787	6,187
Tax collection fees	228,000	228,000	238,981	10,981	105%	239,938	226,231
Other sales and services	953,450	953,450	793,586	(159,864)	83%	1,168,941	924,825
Register of deeds	314,500	314,500	242,685	(71,815)	77%	324,631	237,708

COUNTY OF BRUNSWICK, NORTH CAROLINA

**SCHEDULE OF REVENUES AND EXPENDITURES - BUDGET AND  
ACTUAL AND CHANGES IN FUND BALANCE - GENERAL FUND  
FOR THE PERIOD ENDED MARCH 31, 2018 AND THE YEAR ENDED JUNE 30, 2017  
WITH COMPARATIVE ACTUAL AMOUNTS FOR PRIOR YEAR**

	<u>Original Budget</u>	<u>Current Budget</u>	<u>March 31, 2018</u>	<u>Variance Positive (Negative)</u>	<u>% of Budget</u>	<u>June 30, 2017</u>	<u>March 31, 2017</u>
<b>Sales and Services (continued):</b>							
Marriage licenses	55,000	55,000	37,606	(17,394)	68%	50,218	35,994
Recreation services	276,600	276,600	240,445	(36,155)	87%	264,574	220,363
	<u>10,022,889</u>	<u>10,137,889</u>	<u>7,651,479</u>	<u>(2,486,410)</u>	75%	<u>10,723,116</u>	<u>7,532,894</u>
<b>Investment earnings</b>	<u>100,000</u>	<u>100,000</u>	<u>307,708</u>	<u>207,708</u>	308%	<u>181,510</u>	<u>111,256</u>
<b>Other:</b>							
Tax refunds - sales and gas tax	1,100	1,100	752	(348)	68%	2,232	1,645
ABC bottles taxes	45,000	45,000	40,852	(4,148)	91%	59,338	36,908
Cnty Brd of Alcohol Control	24,000	24,000	12,000	(12,000)	50%	24,000	6,000
Contributions	8,500	16,320	42,554	26,234	261%	58,429	49,714
Other revenues	1,092,665	1,300,700	1,483,848	183,148	114%	1,956,401	1,473,490
	<u>1,171,265</u>	<u>1,387,120</u>	<u>1,580,006</u>	<u>192,886</u>	114%	<u>2,100,400</u>	<u>1,567,757</u>
<b>Total revenues</b>	<u>180,848,646</u>	<u>181,821,161</u>	<u>164,726,016</u>	<u>(17,095,145)</u>	91%	<u>188,983,464</u>	<u>160,743,055</u>
<b>Expenditures:</b>							
<b>General Government:</b>							
<b>Governing Body:</b>							
Salaries	190,893	183,748	141,662	42,086	77%	178,984	134,973
Fringe benefits	32,493	29,914	20,615	9,299	69%	30,241	20,502
Operating costs	61,850	61,850	42,067	19,783	68%	63,352	56,127
	<u>285,236</u>	<u>275,512</u>	<u>204,344</u>	<u>71,168</u>	74%	<u>272,577</u>	<u>211,602</u>
<b>County Administration:</b>							
Salaries	574,332	574,332	449,767	124,565	78%	529,553	401,211
Fringe benefits	173,479	173,479	128,846	44,633	74%	156,224	109,632
Operating costs	24,984	24,984	12,309	12,675	49%	16,920	11,208
	<u>772,795</u>	<u>772,795</u>	<u>590,922</u>	<u>181,873</u>	76%	<u>702,697</u>	<u>522,051</u>
<b>Human Resources:</b>							
Salaries	343,443	343,443	247,047	96,396	72%	308,965	241,972
Fringe benefits	126,106	126,106	83,966	42,140	67%	115,775	79,293
Operating costs	10,935	10,935	3,547	7,388	32%	5,743	5,087
	<u>480,484</u>	<u>480,484</u>	<u>334,560</u>	<u>145,924</u>	70%	<u>430,483</u>	<u>326,352</u>
<b>Finance:</b>							
Salaries	769,712	769,712	587,242	182,470	76%	748,812	573,880
Fringe benefits	259,942	259,942	192,866	67,076	74%	248,694	187,921
Operating costs	420,150	432,093	329,055	103,038	76%	367,763	326,588
	<u>1,449,804</u>	<u>1,461,747</u>	<u>1,109,163</u>	<u>352,584</u>	76%	<u>1,365,269</u>	<u>1,088,389</u>
<b>Tax Administration:</b>							
Salaries	2,299,162	2,299,162	1,720,263	578,899	75%	2,087,379	1,583,037
Fringe benefits	898,147	898,147	667,437	230,710	74%	840,057	609,920
Operating costs	1,298,487	1,298,487	514,696	783,791	40%	728,601	566,433
	<u>4,495,796</u>	<u>4,495,796</u>	<u>2,902,396</u>	<u>1,593,400</u>	65%	<u>3,656,037</u>	<u>2,759,390</u>
<b>County Attorney:</b>							
Salaries	302,476	302,476	244,781	57,695	81%	296,842	227,353
Fringe benefits	89,899	89,899	69,884	20,015	78%	86,830	65,692
Operating costs	188,700	188,700	97,772	90,928	52%	87,135	57,263
	<u>581,075</u>	<u>581,075</u>	<u>412,437</u>	<u>168,638</u>	71%	<u>470,807</u>	<u>350,308</u>



COUNTY OF BRUNSWICK, NORTH CAROLINA

SCHEDULE OF REVENUES AND EXPENDITURES - BUDGET AND  
ACTUAL AND CHANGES IN FUND BALANCE - GENERAL FUND  
FOR THE PERIOD ENDED MARCH 31, 2018 AND THE YEAR ENDED JUNE 30, 2017  
WITH COMPARATIVE ACTUAL AMOUNTS FOR PRIOR YEAR

	Original Budget	Current Budget	March 31, 2018	Variance Positive (Negative)	% of Budget	June 30, 2017	March 31, 2017
<b>Court Facilities:</b>							
Operating costs	256,955	256,955	165,824	91,131	65%	264,787	171,945
	<u>256,955</u>	<u>256,955</u>	<u>165,824</u>	<u>91,131</u>	65%	<u>264,787</u>	<u>171,945</u>
<b>Board of Elections:</b>							
Salaries	454,324	454,324	289,799	164,525	64%	496,073	419,962
Fringe benefits	127,791	133,543	92,618	40,925	69%	117,061	84,357
Operating costs	178,187	178,187	115,045	63,142	65%	241,255	233,886
Capital outlay	-	-	-	-	na	23,160	23,160
	<u>760,302</u>	<u>766,054</u>	<u>497,462</u>	<u>268,592</u>	65%	<u>877,549</u>	<u>761,365</u>
<b>Register of Deeds:</b>							
Salaries	686,570	686,570	495,783	190,787	72%	629,385	484,933
Fringe benefits	305,319	306,740	219,292	87,448	71%	288,869	208,363
Operating costs	1,778,026	1,778,026	1,530,843	247,183	86%	1,977,531	1,233,551
	<u>2,769,915</u>	<u>2,771,336</u>	<u>2,245,918</u>	<u>525,418</u>	81%	<u>2,895,785</u>	<u>1,926,847</u>
<b>Contingency:</b>							
Operating Costs	400,000	246,810	-	246,810	0%	-	-
Total general government	<u>12,252,362</u>	<u>12,108,564</u>	<u>8,463,026</u>	<u>3,645,538</u>	70%	<u>10,935,991</u>	<u>8,118,249</u>
<b>Central Services:</b>							
<b>Management Information Systems:</b>							
Salaries	1,053,266	1,056,266	817,843	238,423	77%	1,002,954	766,822
Fringe benefits	354,052	354,052	269,482	84,570	76%	335,781	248,851
Operating costs	1,129,125	1,293,231	532,310	760,921	41%	1,066,021	466,103
Capital outlay	95,000	381,180	249,032	132,148	65%	200,172	145,532
	<u>2,631,443</u>	<u>3,084,729</u>	<u>1,868,667</u>	<u>1,216,062</u>	61%	<u>2,604,928</u>	<u>1,627,308</u>
<b>Service Center:</b>							
Salaries	619,638	619,638	451,043	168,595	73%	572,397	432,067
Fringe benefits	247,560	247,820	175,345	72,475	71%	231,737	165,982
Operating costs	336,700	341,137	53,705	287,432	16%	247,747	(103,467)
Capital outlay	45,500	46,300	46,145	155	100%	143,060	50,425
	<u>1,249,398</u>	<u>1,254,895</u>	<u>726,238</u>	<u>528,657</u>	58%	<u>1,194,941</u>	<u>545,007</u>
<b>Engineering:</b>							
Salaries	370,682	370,682	276,988	93,694	75%	344,187	260,856
Fringe benefits	122,431	122,431	92,630	29,801	76%	114,010	83,048
Operating costs	74,330	74,330	19,852	54,478	27%	56,321	50,312
Capital outlay	31,000	31,000	30,589	411	99%	26,224	26,224
	<u>598,443</u>	<u>598,443</u>	<u>420,059</u>	<u>178,384</u>	70%	<u>540,742</u>	<u>420,440</u>
<b>Operation Services:</b>							
Salaries	2,215,541	2,215,541	1,603,019	612,522	72%	2,032,231	1,561,122
Fringe benefits	951,902	957,198	672,700	284,498	70%	886,150	641,117
Operating costs	3,121,506	3,579,371	2,218,671	1,360,700	62%	3,532,135	2,538,023
Capital outlay	323,500	299,982	298,492	1,490	100%	368,050	368,050
	<u>6,612,449</u>	<u>7,052,092</u>	<u>4,792,882</u>	<u>2,259,210</u>	68%	<u>6,818,566</u>	<u>5,108,312</u>
<b>Non-departmental:</b>							
Fringe benefits	2,986,897	2,951,130	2,217,906	733,224	75%	2,877,082	2,128,393
Operating costs	714,123	914,366	668,113	246,253	73%	735,390	804,426
	<u>3,701,020</u>	<u>3,865,496</u>	<u>2,886,019</u>	<u>979,477</u>	75%	<u>3,612,472</u>	<u>2,932,819</u>
Total central services	<u>14,792,753</u>	<u>15,855,655</u>	<u>10,693,865</u>	<u>5,161,790</u>	67%	<u>14,771,649</u>	<u>10,633,886</u>

COUNTY OF BRUNSWICK, NORTH CAROLINA

SCHEDULE OF REVENUES AND EXPENDITURES - BUDGET AND  
ACTUAL AND CHANGES IN FUND BALANCE - GENERAL FUND  
FOR THE PERIOD ENDED MARCH 31, 2018 AND THE YEAR ENDED JUNE 30, 2017  
WITH COMPARATIVE ACTUAL AMOUNTS FOR PRIOR YEAR

	Original Budget	Current Budget	March 31, 2018	Variance Positive (Negative)	% of Budget	June 30, 2017	March 31, 2017
<b>Public Safety:</b>							
<b>District Attorney:</b>							
Operating costs	53,000	53,000	13,939	39,061	26%	35,397	13,589
	53,000	53,000	13,939	39,061	26%	35,397	13,589
<b>Sheriff:</b>							
Salaries	9,352,779	9,361,424	7,185,464	2,175,960	77%	8,513,308	6,515,242
Fringe benefits	3,550,469	3,570,548	2,707,643	862,905	76%	3,179,479	2,348,307
Operating costs	2,007,646	2,372,082	1,778,991	593,091	75%	2,274,778	1,715,125
Capital outlay	590,731	974,650	925,423	49,227	95%	771,445	592,064
	15,501,625	16,278,704	12,597,521	3,681,183	77%	14,739,010	11,170,738
<b>Detention Center:</b>							
Salaries	4,132,113	4,132,113	3,121,377	1,010,736	76%	4,007,924	3,112,674
Fringe benefits	1,625,753	1,626,211	1,144,853	481,358	70%	1,524,686	1,144,564
Operating costs	2,360,397	2,376,142	1,552,124	824,018	65%	2,209,408	1,535,196
Capital outlay	226,290	347,359	21,719	325,640	6%	24,342	11,020
	8,344,553	8,481,825	5,840,073	2,641,752	69%	7,766,360	5,803,454
<b>Emergency Medical:</b>							
Salaries	5,051,285	5,051,285	3,767,661	1,283,624	75%	4,826,140	3,729,302
Fringe benefits	1,767,635	1,767,635	1,263,281	504,354	71%	1,643,511	1,215,073
Operating costs	1,409,448	1,426,726	1,074,806	351,920	75%	1,255,782	933,173
Capital outlay	589,000	674,746	198,897	475,849	29%	213,959	213,048
	8,817,368	8,920,392	6,304,645	2,615,747	71%	7,939,392	6,090,596
<b>Emergency Management:</b>							
Salaries	257,893	257,893	212,167	45,726	82%	312,106	273,720
Fringe benefits	80,734	81,264	65,934	15,330	81%	104,100	82,727
Operating costs	290,025	314,632	183,625	131,007	58%	321,750	179,734
Capital outlay	96,100	219,912	46,992	172,920	21%	23,915	-
	724,752	873,701	508,718	364,983	58%	761,871	536,181
<b>Other Agencies:</b>							
Fire districts	640,990	640,990	391,257	249,733	61%	783,663	587,747
Rescue Squads	318,500	330,000	170,750	159,250	52%	472,530	268,535
	959,490	970,990	562,007	408,983	58%	1,256,193	856,282
<b>Building/Fire Inspections and Central Permitting</b>							
Salaries	1,351,504	1,254,895	1,015,573	239,322	81%	1,236,670	922,598
Fringe benefits	497,242	458,883	319,254	139,629	70%	425,688	301,539
Operating costs	197,834	179,609	120,936	58,673	67%	114,469	84,609
Capital outlay	146,167	208,467	207,646	821	100%	102,992	74,935
	2,192,747	2,101,854	1,663,409	438,445	79%	1,879,819	1,383,681
<b>Central Communications:</b>							
Salaries	1,472,422	1,474,422	1,100,232	374,190	75%	1,386,432	1,081,970
Fringe benefits	584,734	589,284	423,130	166,154	72%	576,871	407,788
Operating costs	215,521	215,746	123,528	92,218	57%	130,672	89,962
Capital outlay	300,107	297,882	232,771	65,111	78%	48,570	48,570
	2,572,784	2,577,334	1,879,661	697,673	73%	2,142,545	1,628,290

COUNTY OF BRUNSWICK, NORTH CAROLINA

**SCHEDULE OF REVENUES AND EXPENDITURES - BUDGET AND  
ACTUAL AND CHANGES IN FUND BALANCE - GENERAL FUND  
FOR THE PERIOD ENDED MARCH 31, 2018 AND THE YEAR ENDED JUNE 30, 2017  
WITH COMPARATIVE ACTUAL AMOUNTS FOR PRIOR YEAR**

	<b>Original Budget</b>	<b>Current Budget</b>	<b>March 31, 2018</b>	<b>Variance Positive (Negative)</b>	<b>% of Budget</b>	<b>June 30, 2017</b>	<b>March 31, 2017</b>
<b>Animal Protective Services:</b>							
Salaries	546,714	546,714	416,180	130,534	76%	560,467	435,073
Fringe benefits	222,618	222,618	169,476	53,142	76%	222,176	166,731
Operating costs	277,190	330,225	245,511	84,714	74%	275,844	206,487
Capital outlay	74,292	74,292	73,022	1,270	98%	112,706	112,706
	<u>1,120,814</u>	<u>1,173,849</u>	<u>904,189</u>	<u>269,660</u>	<u>77%</u>	<u>1,171,193</u>	<u>920,997</u>
Total public safety	<u>40,287,133</u>	<u>41,431,649</u>	<u>30,274,162</u>	<u>11,157,487</u>	<u>73%</u>	<u>37,691,780</u>	<u>28,403,808</u>
<b>Transportation:</b>							
Cape Fear Regional Jetport	97,000	97,000	72,750	24,250	75%	97,000	72,750
Odell Williamson Mun. Air.	27,500	27,500	20,625	6,875	75%	27,500	20,625
Cape Fear Transp. Authority	30,230	30,230	30,230	-	100%	29,350	29,350
Brunswick Transit System	-	231,338	173,165	58,173	75%	225,953	168,041
Total transportation	<u>154,730</u>	<u>386,068</u>	<u>296,770</u>	<u>89,298</u>	<u>77%</u>	<u>379,803</u>	<u>290,766</u>
<b>Environmental Protection:</b>							
<b>Solid Waste:</b>							
Salaries	317,162	317,162	237,870	79,292	75%	284,499	222,952
Fringe benefits	129,872	129,872	94,719	35,153	73%	119,897	87,784
Operating costs	14,583,278	14,731,490	10,903,855	3,827,635	74%	14,003,259	10,361,345
Capital outlay	134,000	533,297	533,296	1	100%	74,885	74,885
	<u>15,164,312</u>	<u>15,711,821</u>	<u>11,769,740</u>	<u>3,942,081</u>	<u>75%</u>	<u>14,482,540</u>	<u>10,746,966</u>
<b>Other:</b>							
Forestry services	226,969	226,969	132,108	94,861	58%	188,513	126,128
Total environmental protection	<u>15,391,281</u>	<u>15,938,790</u>	<u>11,901,848</u>	<u>4,036,942</u>	<u>75%</u>	<u>14,671,053</u>	<u>10,873,094</u>
<b>Economic Development:</b>							
<b>Zoning/Solid Waste Enforcement:</b>							
Salaries	-	135,480	94,627	40,853	70%	-	-
Fringe benefits	-	55,606	37,096	18,510	67%	-	-
Operating costs	-	18,225	8,217	10,008	45%	-	-
	<u>-</u>	<u>209,311</u>	<u>139,940</u>	<u>69,371</u>	<u>67%</u>	<u>-</u>	<u>-</u>
<b>Planning:</b>							
Salaries	399,016	399,016	303,166	95,850	76%	502,386	391,877
Fringe benefits	137,487	137,487	100,141	37,346	73%	171,287	130,991
Operating costs	150,620	252,887	62,042	190,845	25%	167,115	126,629
	<u>687,123</u>	<u>789,390</u>	<u>465,349</u>	<u>324,041</u>	<u>59%</u>	<u>840,788</u>	<u>649,497</u>
<b>Cooperative Extension:</b>							
Salaries	301,981	342,285	205,521	136,764	60%	291,813	197,858
Fringe benefits	141,864	144,947	69,527	75,420	48%	109,042	59,410
Operating costs	113,633	123,800	71,901	51,899	58%	116,061	68,823
Capital outlay	-	3,829	-	3,829	0%	-	-
	<u>557,478</u>	<u>614,861</u>	<u>346,949</u>	<u>267,912</u>	<u>56%</u>	<u>516,916</u>	<u>326,091</u>
<b>Soil and Water Conservation:</b>							
Salaries	153,141	153,141	118,799	34,342	78%	149,222	115,299
Fringe benefits	59,228	59,228	44,983	14,245	76%	57,091	42,621
Operating costs	17,500	20,250	11,087	9,163	55%	16,071	12,679
	<u>229,869</u>	<u>232,619</u>	<u>174,869</u>	<u>57,750</u>	<u>75%</u>	<u>222,384</u>	<u>170,599</u>

COUNTY OF BRUNSWICK, NORTH CAROLINA

SCHEDULE OF REVENUES AND EXPENDITURES - BUDGET AND  
ACTUAL AND CHANGES IN FUND BALANCE - GENERAL FUND  
FOR THE PERIOD ENDED MARCH 31, 2018 AND THE YEAR ENDED JUNE 30, 2017  
WITH COMPARATIVE ACTUAL AMOUNTS FOR PRIOR YEAR

	Original Budget	Current Budget	March 31, 2018	Variance Positive (Negative)	% of Budget	June 30, 2017	March 31, 2017
<b>Public Housing Section 8:</b>							
Salaries	147,863	147,863	104,304	43,559	71%	136,979	102,195
Fringe benefits	58,147	58,147	42,901	15,246	74%	52,900	40,514
Operating costs	2,170,980	2,178,656	1,486,027	692,629	68%	1,916,791	1,453,446
	<u>2,376,990</u>	<u>2,384,666</u>	<u>1,633,232</u>	<u>751,434</u>	68%	<u>2,106,670</u>	<u>1,596,155</u>
<b>Economic Development:</b>							
Salaries	-	35,327	27,539	7,788	78%	-	-
Fringe benefits	-	2,695	2,107	588	78%	-	-
Operating costs	425,000	386,978	289,105	97,873	75%	-	(640)
	<u>425,000</u>	<u>425,000</u>	<u>318,751</u>	<u>106,249</u>	75%	<u>-</u>	<u>(640)</u>
<b>1% Occupancy Tax:</b>							
Operating costs	1,400,000	1,400,000	1,037,422	362,578	74%	1,472,240	986,275
<b>Other Economic Development:</b>							
Oak Island Beach Abatement & Renourishment	-	-	-	-	na	166,666	166,666
Holden Beach Special Obligation Bond	1,461,600	1,461,600	-	1,461,600	0%	-	-
Lockwood Folly & Shallotte Dredging	-	177,875	6,210	171,665	3%	140,000	-
Reserve for shoreline	404,000	226,125	168,000	58,125	74%	76,000	76,000
	<u>1,865,600</u>	<u>1,865,600</u>	<u>174,210</u>	<u>1,691,390</u>	9%	<u>382,666</u>	<u>242,666</u>
Total economic development	<u>7,542,060</u>	<u>7,921,447</u>	<u>4,290,722</u>	<u>3,630,725</u>	54%	<u>5,541,664</u>	<u>3,970,643</u>
<b>Human Services:</b>							
<b>Health:</b>							
<b>Administration:</b>							
Salaries	2,430,361	2,430,361	1,561,513	868,848	64%	2,341,582	1,797,142
Fringe benefits	1,262,670	1,262,670	862,241	400,429	68%	1,132,253	846,729
Operating costs	261,800	484,802	347,094	137,708	72%	197,874	155,288
Capital outlay	85,000	85,000	83,838	1,162	99%	-	-
	<u>4,039,831</u>	<u>4,262,833</u>	<u>2,854,686</u>	<u>1,408,147</u>	67%	<u>3,671,709</u>	<u>2,799,159</u>
<b>Communicable Diseases:</b>							
Operating costs	413,700	413,700	251,727	161,973	61%	336,799	279,143
<b>Adult Health Maintenance:</b>							
Operating costs	303,855	253,855	104,190	149,665	41%	384,936	85,852
<b>Senior Health</b>							
Salaries	50,736	50,736	42,385	8,351	84%	49,462	37,073
Fringe benefits	21,117	21,117	15,849	5,268	75%	20,400	15,231
Operating costs	3,835	3,835	2,672	1,163	70%	3,515	2,529
	<u>75,688</u>	<u>75,688</u>	<u>60,906</u>	<u>14,782</u>	80%	<u>73,377</u>	<u>54,833</u>
<b>Maternal and Child Health:</b>							
Salaries	362,805	362,805	271,620	91,185	75%	353,136	270,763
Fringe benefits	157,858	157,858	114,067	43,791	72%	151,671	114,546
Operating costs	605,940	612,110	333,905	278,205	55%	565,663	376,738
	<u>1,126,603</u>	<u>1,132,773</u>	<u>719,592</u>	<u>413,181</u>	64%	<u>1,070,470</u>	<u>762,047</u>

COUNTY OF BRUNSWICK, NORTH CAROLINA

SCHEDULE OF REVENUES AND EXPENDITURES - BUDGET AND  
ACTUAL AND CHANGES IN FUND BALANCE - GENERAL FUND  
FOR THE PERIOD ENDED MARCH 31, 2018 AND THE YEAR ENDED JUNE 30, 2017  
WITH COMPARATIVE ACTUAL AMOUNTS FOR PRIOR YEAR

	Original Budget	Current Budget	March 31, 2018	Variance Positive (Negative)	% of Budget	June 30, 2017	March 31, 2017
<b>Environmental Health:</b>							
Salaries	998,696	998,696	758,570	240,126	76%	907,276	684,863
Fringe benefits	353,248	353,248	260,261	92,987	74%	317,092	231,852
Operating costs	219,971	201,836	102,683	99,153	51%	187,867	110,948
Capital outlay	-	18,135	-	18,135	0%	66,080	38,739
	<u>1,571,915</u>	<u>1,571,915</u>	<u>1,121,514</u>	<u>450,401</u>	<u>71%</u>	<u>1,478,315</u>	<u>1,066,402</u>
Total health	<u>7,531,592</u>	<u>7,710,764</u>	<u>5,112,615</u>	<u>2,598,149</u>	<u>66%</u>	<u>7,015,606</u>	<u>5,047,436</u>
<b>Veterans' Services:</b>							
Salaries	141,180	141,180	100,128	41,052	71%	128,024	97,400
Fringe benefits	59,093	59,093	41,154	17,939	70%	52,601	39,580
Operating costs	14,985	17,985	7,375	10,610	41%	14,041	7,800
Total veterans' services	<u>215,258</u>	<u>218,258</u>	<u>148,657</u>	<u>69,601</u>	<u>68%</u>	<u>194,666</u>	<u>144,780</u>
<b>Social Services:</b>							
<b>Administration:</b>							
Salaries	6,976,135	6,976,135	5,064,311	1,911,824	73%	6,420,809	4,941,618
Fringe benefits	3,571,351	3,571,351	2,556,006	1,015,345	72%	3,330,892	2,440,809
Operating costs	2,901,602	3,019,189	2,084,422	934,767	69%	3,168,650	2,496,377
Capital outlay	225,000	225,000	172,677	52,323	77%	164,968	125,704
	<u>13,674,088</u>	<u>13,791,675</u>	<u>9,877,416</u>	<u>3,914,259</u>	<u>72%</u>	<u>13,085,319</u>	<u>10,004,508</u>
<b>Other Operating Costs:</b>							
Medical assistance	20,000	20,000	789	19,211	4%	7,455	7,535
Aid to the blind	5,910	5,910	5,361	549	91%	5,043	5,043
Adoption assistance	280,000	280,000	179,548	100,452	64%	238,273	177,295
Special assistance	470,000	470,000	293,705	176,295	62%	427,626	325,669
Foster care	950,000	950,000	271,753	678,247	29%	606,233	462,679
State foster home	335,000	335,000	178,147	156,853	53%	272,178	173,795
Special assistance	1,800	26,921	13,137	13,784	49%	-	-
Day care	3,546,054	3,546,054	397,021	3,149,033	11%	4,062,307	2,667,793
Special child adopt. assistance	-	173,745	54,888	118,857	32%	34,205	24,241
	<u>5,608,764</u>	<u>5,807,630</u>	<u>1,394,349</u>	<u>4,413,281</u>	<u>24%</u>	<u>5,653,320</u>	<u>3,844,050</u>
Total social services	<u>19,282,852</u>	<u>19,599,305</u>	<u>11,271,765</u>	<u>8,327,540</u>	<u>58%</u>	<u>18,738,639</u>	<u>13,848,558</u>
<b>Other Human Services:</b>							
Trillium Health Resources	250,443	250,443	125,216	125,227	50%	-	-
Brunswick Senior Resources	2,076,705	2,076,705	1,557,528	519,177	75%	1,650,000	1,237,500
Other human services	-	127,887	95,824	32,063	75%	130,089	97,076
	<u>2,327,148</u>	<u>2,455,035</u>	<u>1,778,568</u>	<u>676,467</u>	<u>72%</u>	<u>1,780,089</u>	<u>1,334,576</u>
Total human services	<u>29,356,850</u>	<u>29,983,362</u>	<u>18,311,605</u>	<u>11,671,757</u>	<u>61%</u>	<u>27,729,000</u>	<u>20,375,350</u>
<b>Education:</b>							
Public schools	37,298,995	37,298,995	27,974,250	9,324,745	75%	35,410,920	26,558,190
Public schools - capital outlay	782,496	782,496	586,872	195,624	75%	742,886	557,165
Community college	4,124,430	4,124,430	3,055,146	1,069,284	74%	3,868,761	2,912,821
Community college - cap. out.	68,000	68,000	51,000	17,000	75%	-	-
Total education	<u>42,273,921</u>	<u>42,273,921</u>	<u>31,667,268</u>	<u>10,606,653</u>	<u>75%</u>	<u>40,022,567</u>	<u>30,028,176</u>

COUNTY OF BRUNSWICK, NORTH CAROLINA

**SCHEDULE OF REVENUES AND EXPENDITURES - BUDGET AND  
ACTUAL AND CHANGES IN FUND BALANCE - GENERAL FUND  
FOR THE PERIOD ENDED MARCH 31, 2018 AND THE YEAR ENDED JUNE 30, 2017  
WITH COMPARATIVE ACTUAL AMOUNTS FOR PRIOR YEAR**

	<u>Original Budget</u>	<u>Current Budget</u>	<u>March 31, 2018</u>	<u>Variance Positive (Negative)</u>	<u>% of Budget</u>	<u>June 30, 2017</u>	<u>March 31, 2017</u>
<b>Culture and Recreation:</b>							
<b>Parks and Recreation:</b>							
<b>Administration:</b>							
Salaries	642,136	642,136	487,371	154,765	76%	587,275	454,011
Fringe benefits	191,792	191,792	143,648	48,144	75%	181,643	136,859
Operating costs	627,326	632,326	382,908	249,418	61%	520,625	378,165
Capital outlay	40,000	40,000	36,160	3,840	90%	706,301	244,801
	<u>1,501,254</u>	<u>1,506,254</u>	<u>1,050,087</u>	<u>456,167</u>	<u>70%</u>	<u>1,995,844</u>	<u>1,213,836</u>
<b>Maintenance:</b>							
Salaries	767,402	767,402	567,239	200,163	74%	715,644	556,830
Fringe benefits	305,925	305,925	226,763	79,162	74%	289,076	211,184
Operating costs	424,320	445,979	304,426	141,553	68%	451,780	246,689
Capital outlay	99,000	96,750	83,541	13,209	86%	72,085	48,451
	<u>1,596,647</u>	<u>1,616,056</u>	<u>1,181,969</u>	<u>434,087</u>	<u>73%</u>	<u>1,528,585</u>	<u>1,063,154</u>
Total Parks and Recreation	<u>3,097,901</u>	<u>3,122,310</u>	<u>2,232,056</u>	<u>890,254</u>	<u>71%</u>	<u>3,524,429</u>	<u>2,276,990</u>
<b>Brunswick County Library:</b>							
Salaries	743,196	743,196	557,953	185,243	75%	696,608	531,798
Fringe benefits	308,328	308,328	226,216	82,112	73%	291,509	214,617
Operating costs	285,100	285,100	175,797	109,303	62%	260,037	168,508
Capital outlay	-	-	-	-	na	19,513	19,513
	<u>1,336,624</u>	<u>1,336,624</u>	<u>959,966</u>	<u>376,658</u>	<u>72%</u>	<u>1,267,667</u>	<u>934,436</u>
Total culture and recreation	<u>4,434,525</u>	<u>4,458,934</u>	<u>3,192,022</u>	<u>1,266,912</u>	<u>72%</u>	<u>4,792,096</u>	<u>3,211,426</u>
<b>Debt Service:</b>							
Principal retirement	11,210,001	11,384,001	4,128,292	7,255,709	36%	11,295,000	1,700,000
Interest and fees	2,608,448	2,608,448	1,498,125	1,110,323	57%	3,024,355	1,726,453
Total debt service	<u>13,818,449</u>	<u>13,992,449</u>	<u>5,626,417</u>	<u>8,366,032</u>	<u>40%</u>	<u>14,319,355</u>	<u>3,426,453</u>
Total expenditures	<u>180,304,064</u>	<u>184,350,839</u>	<u>124,717,705</u>	<u>59,633,134</u>	<u>68%</u>	<u>170,854,958</u>	<u>119,331,851</u>
<b>Revenues over (under) expenditures</b>	<u>544,582</u>	<u>(2,529,678)</u>	<u>40,008,311</u>	<u>42,537,989</u>	<u>-1582%</u>	<u>18,128,506</u>	<u>41,411,204</u>
<b>Other Financing Sources (Uses):</b>							
Issuance of long-term debt	-	505,057	505,057	-	100%	-	-
<b>Transfers From Other Funds:</b>							
Transfer from county capital project fund	-	10,510	10,510	-	100%	-	-
<b>Transfers To Other Funds:</b>							
Transfer to county capital projects fund	(1,592,750)	(1,731,388)	(1,731,388)	-	100%	(10,925,406)	(9,020,245)
Transfer to grant projects funds	-	(9,642)	(9,642)	-	100%	-	-
Transfer to school capital projects fund	(3,831,665)	(3,831,665)	(1,049,290)	2,782,375	27%	(5,958,284)	(964,173)
	<u>(5,424,415)</u>	<u>(5,572,695)</u>	<u>(2,790,320)</u>	<u>2,782,375</u>	<u>50%</u>	<u>(16,883,690)</u>	<u>(9,984,418)</u>

COUNTY OF BRUNSWICK, NORTH CAROLINA

SCHEDULE OF REVENUES AND EXPENDITURES - BUDGET AND  
ACTUAL AND CHANGES IN FUND BALANCE - GENERAL FUND  
FOR THE PERIOD ENDED MARCH 31, 2018 AND THE YEAR ENDED JUNE 30, 2017  
WITH COMPARATIVE ACTUAL AMOUNTS FOR PRIOR YEAR

	<u>Original Budget</u>	<u>Current Budget</u>	<u>March 31, 2018</u>	<u>Variance Positive (Negative)</u>	<u>% of Budget</u>	<u>June 30, 2017</u>	<u>March 31, 2017</u>
<b>Budgetary Financing Sources (Uses):</b>							
Appropriated fund balance	<u>4,879,833</u>	<u>7,586,806</u>	<u>-</u>	<u>(7,586,806)</u>	0%	<u>-</u>	<u>-</u>
Total other financing sources (uses)	<u>(544,582)</u>	<u>2,529,678</u>	<u>(2,274,753)</u>	<u>(4,804,431)</u>	-90%	<u>(16,883,690)</u>	<u>(9,984,418)</u>
<b>Net change in fund balance</b>	<b>\$ <u>-</u></b>	<b>\$ <u>-</u></b>	<b>37,733,558</b>	<b>\$ <u>37,733,558</u></b>		<b>1,244,816</b>	<b>31,426,786</b>
<b>Fund balance, beginning of year</b>			<u>73,609,688</u>			<u>72,364,872</u>	<u>72,364,872</u>
<b>Fund balance, end of year</b>			<u>\$ 111,343,246</u>			<u>\$ 73,609,688</u>	<u>\$ 103,791,658</u>

## COUNTY OF BRUNSWICK, NORTH CAROLINA

**SCHEDULE OF REVENUES AND EXPENDITURES**  
**BUDGET TO ACTUAL - COUNTY CAPITAL PROJECTS FUND**  
**FROM INCEPTION AND FOR THE PERIOD ENDED MARCH 31, 2018**

	Project Budget	Actual		
		Prior Years	Current Year	Total to Date
<b>Revenues:</b>				
Restricted intergovernmental-NC Dept. of Transportation	\$ 23,094,058	\$ 16,500,651	\$ 603,923	\$ 17,104,574
Restricted intergovernmental-NC Parks & Rec. Trust Fund	1,609,854	859,354	-	859,354
Investment earnings	144,268	222,925	72,764	295,689
Performance bonds	4,213,721	4,213,721	-	4,213,721
Other	694,962	639,049	-	639,049
Total revenues	<u>29,756,863</u>	<u>22,435,700</u>	<u>676,687</u>	<u>23,112,387</u>
<b>Expenditures:</b>				
<b>General Government:</b>				
Court House Renovation	<u>975,800</u>	<u>-</u>	<u>-</u>	<u>-</u>
<b>Public Safety:</b>				
Sheriff's Firing Range	<u>2,551,865</u>	<u>2,551,365</u>	<u>500</u>	<u>2,551,865</u>
<b>Environmental protection:</b>				
Future Capital Projects	<u>8,767,000</u>	<u>-</u>	<u>-</u>	<u>-</u>
<b>Economic Development:</b>				
Avalon	3,922,845	3,902,956	9,379	3,912,335
Springlake at Maritime Shores	<u>274,585</u>	<u>-</u>	<u>-</u>	<u>-</u>
	<u>4,197,430</u>	<u>3,902,956</u>	<u>9,379</u>	<u>3,912,335</u>
<b>Cultural and recreation:</b>				
OIB Park Improvements	5,209,712	159,085	155,019	314,104
Town Creek Park Improvements	5,194,682	5,194,682	-	5,194,682
Waccamaw Park Improvements	3,700,717	3,676,495	15,106	3,691,601
Smithville Park Improvements	5,913,666	1,519,825	3,249,304	4,769,129
Holden Beach Park Improvements	525,583	-	18,479	18,479
Leland Senior Center	2,839,996	2,839,995	-	2,839,995
District 1 Senior Center	2,403,714	832,331	988,489	1,820,820
Future Capital Projects	<u>702,741</u>	<u>-</u>	<u>-</u>	<u>-</u>
	<u>26,490,811</u>	<u>14,222,413</u>	<u>4,426,397</u>	<u>18,648,810</u>
<b>Transportation:</b>				
Airport Improvements	<u>24,464,108</u>	<u>18,542,383</u>	<u>994,644</u>	<u>19,537,027</u>
<b>Education:</b>				
Future Capital Projects	<u>2,051,905</u>	<u>-</u>	<u>-</u>	<u>-</u>
<b>Other:</b>				
Future Capital Projects	<u>991,233</u>	<u>-</u>	<u>-</u>	<u>-</u>
Total expenditures	<u>70,490,152</u>	<u>39,219,117</u>	<u>5,430,920</u>	<u>44,650,037</u>
<b>Revenues over (under) expenditures</b>	<u>(40,733,289)</u>	<u>(16,783,417)</u>	<u>(4,754,233)</u>	<u>(21,537,650)</u>
<b>Other Financing Sources (Uses):</b>				
Appropriated fund balance	8,470,593	-	-	-
Transfer from general fund	34,252,135	32,520,750	1,731,388	34,252,138
Transfer to general fund	<u>(1,989,439)</u>	<u>(1,989,439)</u>	<u>(10,510)</u>	<u>(1,999,949)</u>
Total other financing sources (uses)	<u>40,733,289</u>	<u>30,531,311</u>	<u>1,720,878</u>	<u>32,252,189</u>
<b>Net change in fund balance</b>	<u>\$ -</u>	<u>\$ 13,747,894</u>	<u>(3,033,355)</u>	<u>\$ 10,714,539</u>
<b>Fund balance, beginning of year</b>			<u>22,237,350</u>	
<b>Fund balance, end of year</b>			<u>\$ 19,203,995</u>	



## COUNTY OF BRUNSWICK, NORTH CAROLINA

**SCHEDULE OF REVENUES AND EXPENDITURES**  
**BUDGET TO ACTUAL - EDUCATION CAPITAL PROJECTS FUND**  
**FROM INCEPTION AND FOR THE PERIOD ENDED MARCH 31, 2018**

		Actual		
	Project Budget	Prior Years	Current Year	Total to Date
<b>Revenues:</b>				
NC Public Education Lottery	\$ 7,082,039	\$ 7,092,797	\$ -	\$ 7,092,797
Investment earnings	1,199,342	1,352,633	36,672	1,389,305
Investment earnings-debt proceeds	-	2,506	443	2,949
Total revenues	<u>8,281,381</u>	<u>8,447,936</u>	<u>37,115</u>	<u>8,485,051</u>
<b>Expenditures:</b>				
Brunswick County Schools	66,089,919	45,849,954	4,739,008	50,588,962
Brunswick Community College	<u>31,665,911</u>	<u>31,522,340</u>	<u>1,150</u>	<u>31,523,490</u>
Total expenditures	<u>97,755,830</u>	<u>77,372,294</u>	<u>4,740,158</u>	<u>82,112,452</u>
<b>Revenues over (under) expenditures</b>	(89,474,449)	(68,924,358)	(4,703,043)	(73,627,401)
<b>Other Financing Sources (Uses):</b>				
Transfer from general fund	48,969,480	45,977,314	1,049,290	47,026,604
Transfer to general fund	(314,013)	(314,013)	-	(314,013)
Premium on bonds issued	476,476	476,476	-	476,476
Debt financing issued	33,800,000	30,000,000	-	30,000,000
Appropriated fund balance	<u>6,542,506</u>	<u>-</u>	<u>-</u>	<u>-</u>
Total other financing sources (uses)	<u>89,474,449</u>	<u>76,139,777</u>	<u>1,049,290</u>	<u>77,189,067</u>
<b>Net change in fund balance</b>	<u>\$ -</u>	<u>\$ 7,215,419</u>	(3,653,753)	<u>\$ 3,561,666</u>
<b>Fund balance, beginning of year</b>			<u>13,767,832</u>	
<b>Fund balance, end of year</b>			<u>\$ 10,114,079</u>	

## COUNTY OF BRUNSWICK, NORTH CAROLINA

COMBINING BALANCE SHEET - NON MAJOR SPECIAL REVENUE GOVERNMENTAL FUNDS  
FOR THE PERIOD ENDED MARCH 31, 2018

	Emergency Telephone System Fund	Grant Project	ROD- Technology Enhancement Fund	Total
<b>Assets:</b>				
Cash and cash equivalents/investments	1,132,367	-	885,197	2,017,564
Receivables, net	4,532	-	-	4,532
Total assets	<u>1,136,899</u>	<u>-</u>	<u>885,197</u>	<u>2,022,096</u>
<b>Liabilities:</b>				
Accounts payable and other liabilities	-	-	5,102	5,102
Due to other funds	-	1,565	-	1,565
Total liabilities	<u>-</u>	<u>1,565</u>	<u>5,102</u>	<u>6,667</u>
<b>Fund Balance:</b>				
Restricted - other	1,132,367	-	880,095	2,012,462
Unassigned	-	(1,565)	-	(1,565)
Total fund balances	<u>1,136,899</u>	<u>(1,565)</u>	<u>880,095</u>	<u>2,015,429</u>
Total liabilities, deferred inflow of resources and fund balances	<u>\$ 1,136,899</u>	<u>\$ -</u>	<u>\$ 885,197</u>	<u>\$ 2,022,096</u>

## COUNTY OF BRUNSWICK, NORTH CAROLINA

COMBINING STATEMENT OF REVENUES, EXPENDITURES  
AND CHANGES IN FUND BALANCE  
NON MAJOR SPECIAL REVENUE GOVERNMENTAL FUNDS  
FOR THE PERIOD ENDED MARCH 31, 2018

	Emergency Telephone System Fund	Grant Project	ROD- Technology Enhancement Fund	Total
<b>Revenues:</b>				
Restricted intergovernmental	\$ 521,616	\$ 212,504	\$ -	\$ 734,120
Permits and fees	-	-	117,125	117,125
Investment earnings	3,547	-	2,896	6,443
Total revenues	<u>525,163</u>	<u>212,504</u>	<u>120,021</u>	<u>857,688</u>
<b>Expenditures:</b>				
General government	-	214,069	78,551	292,620
Public safety	446,019	-	-	446,019
Total expenditures	<u>446,019</u>	<u>214,069</u>	<u>78,551</u>	<u>738,639</u>
<b>Revenues over (under) expenditures</b>	79,144	(1,565)	41,470	119,049
<b>Other Financing Sources:</b>				
Transfers from general fund	<u>-</u>	<u>9,642</u>	<u>-</u>	<u>9,642</u>
<b>Net change in fund balances</b>	79,144	8,077	41,470	128,691
<b>Fund balance, beginning of year</b>	<u>1,057,755</u>	<u>(9,642)</u>	<u>838,625</u>	<u>1,886,738</u>
<b>Fund balance, end of year</b>	<u>\$ 1,136,899</u>	<u>\$ (1,565)</u>	<u>\$ 880,095</u>	<u>\$ 2,015,429</u>

## COUNTY OF BRUNSWICK, NORTH CAROLINA

**SCHEDULE OF REVENUES AND EXPENDITURES - BUDGET AND  
ACTUAL AND CHANGES IN FUND BALANCE - EMERGENCY TELEPHONE SYSTEM FUND  
FOR THE PERIOD ENDED MARCH 31, 2018 AND THE YEAR ENDED JUNE 30, 2017**

	<u>Budget</u>	<u>March 31, 2018</u>	<u>Variance Positive (Negative)</u>	<u>June 30, 2017</u>	<u>March 31, 2017</u>
<b>Revenues:</b>					
Restricted intergovernmental	\$ 782,423	\$ 521,616	\$ (260,807)	\$ 710,611	\$ 414,523
Investment earnings	-	3,547	3,547	1,695	1,001
Total revenues	<u>782,423</u>	<u>525,163</u>	<u>(257,260)</u>	<u>712,306</u>	<u>415,524</u>
<b>Expenditures:</b>					
Operating costs	730,673	295,818	434,855	440,611	342,353
Capital outlay	<u>601,750</u>	<u>150,201</u>	<u>451,549</u>	-	-
Total expenditures	<u>1,332,423</u>	<u>446,019</u>	<u>886,404</u>	<u>440,611</u>	<u>342,353</u>
<b>Revenues over (under) expenditures</b>	(550,000)	79,144	629,144	271,695	73,171
<b>Other Financing Sources (Uses):</b>					
Appropriated fund balance	<u>550,000</u>	-	<u>(550,000)</u>	-	-
<b>Net change in fund balance</b>	<u>\$ -</u>	79,144	<u>\$ 79,144</u>	271,695	73,171
<b>Fund balance, beginning of year</b>		<u>1,057,755</u>		<u>786,060</u>	<u>786,060</u>
<b>Fund balance, end of year</b>		<u>\$ 1,136,899</u>		<u>\$ 1,057,755</u>	<u>\$ 859,231</u>

## COUNTY OF BRUNSWICK, NORTH CAROLINA

**SCHEDULE OF REVENUES AND EXPENDITURES - BUDGET TO  
ACTUAL - GRANT PROJECT FUND  
FROM INCEPTION AND FOR THE PERIOD ENDED MARCH 31, 2018**

		<b>Actual</b>		
	<b>Project Authorization</b>	<b>Prior Years</b>	<b>Current Year</b>	<b>Total to Date</b>
<b>Revenues:</b>				
Restricted intergovernmental	\$ 1,196,753	\$ 703,956	\$ 212,504	\$ 916,460
Total revenues	<u>1,196,753</u>	<u>703,956</u>	<u>212,504</u>	<u>916,460</u>
<b>Expenditures:</b>				
Courts Adult Drug Court	231,395	219,289	-	219,289
SAMHSA	<u>975,000</u>	<u>484,667</u>	<u>214,069</u>	<u>698,736</u>
Total expenditures	<u>1,206,395</u>	<u>703,956</u>	<u>214,069</u>	<u>918,025</u>
<b>Revenues over (under) expenditures</b>	(9,642)	-	(1,565)	(1,565)
<b>Other Financing Sources (Uses):</b>				
Transfers from general fund	<u>9,642</u>	<u>-</u>	<u>9,642</u>	<u>9,642</u>
<b>Net change in fund balance</b>	<u>\$ -</u>	<u>\$ -</u>	8,077	<u>\$ 8,077</u>
<b>Fund balance, beginning of year</b>			<u>(9,642)</u>	
<b>Fund balance, end of year</b>			<u>\$ (1,565)</u>	

## COUNTY OF BRUNSWICK, NORTH CAROLINA

**SCHEDULE OF REVENUES AND EXPENDITURES - BUDGET AND  
ACTUAL AND CHANGES IN FUND BALANCE -  
REGISTER OF DEEDS TECHNOLOGY ENHANCEMENT FUND  
FOR THE PERIOD ENDED MARCH 31, 2018 AND THE YEAR ENDED JUNE 30, 2017**

	<b>Budget</b>	<b>March 31, 2018</b>	<b>Variance Positive (Negative)</b>	<b>June 30, 2017</b>	<b>March 31, 2017</b>
<b>Revenues:</b>					
Permits and fees	\$ 159,000	\$ 117,125	\$ (41,875)	\$ 156,779	\$ 115,663
Investment earnings	1,300	2,896	1,596	1,756	1,103
Total revenues	<u>160,300</u>	<u>120,021</u>	<u>(40,279)</u>	<u>158,535</u>	<u>116,766</u>
<b>Expenditures:</b>					
General government	<u>209,791</u>	<u>78,551</u>	<u>131,240</u>	<u>131,310</u>	<u>77,964</u>
<b>Revenues over (under) expenditures</b>	<u>(49,491)</u>	<u>41,470</u>	<u>90,961</u>	<u>27,225</u>	<u>38,802</u>
<b>Other Financing Sources (Uses):</b>					
Appropriated fund balance	<u>49,491</u>	<u>-</u>	<u>(49,491)</u>	<u>-</u>	<u>-</u>
<b>Net change in fund balance</b>	<u>\$ -</u>	<u>41,470</u>	<u>\$ 41,470</u>	<u>27,225</u>	<u>38,802</u>
<b>Fund balance, beginning of year</b>		<u>838,625</u>		<u>811,400</u>	<u>811,400</u>
<b>Fund balance, end of year</b>		<u>\$ 880,095</u>		<u>\$ 838,625</u>	<u>\$ 850,202</u>

## COUNTY OF BRUNSWICK, NORTH CAROLINA

COMBINING BALANCE SHEET - WATER FUND (NON-GAAP)  
MARCH 31, 2018

	<b>Water Fund</b>	<b>Water Capital Projects</b>	<b>Total</b>
<b>Current Assets:</b>			
Cash, cash equivalents and investments	\$ 27,572,058	\$ 5,452,451	\$ 33,024,509
Restricted cash	3,184,130	-	3,184,130
Receivables and special assessments, net	2,242,268	-	2,242,268
Due from other governmental agencies	184,347	8,090	192,437
Inventories	1,405,964	-	1,405,964
Total current assets	<u>34,588,767</u>	<u>5,460,541</u>	<u>40,049,308</u>
<b>Current Liabilities:</b>			
Accounts payable and other liabilities	269,175	37,354	306,529
Customer deposits	1,863,410	-	1,863,410
Interest payable	275,467	-	275,467
Current portion of debt	1,324,810	-	1,324,810
Total current liabilities	<u>3,732,862</u>	<u>37,354</u>	<u>3,770,216</u>
<b>Expendable net position</b>	<b>30,855,905</b>	<b>5,423,187</b>	<b>36,279,092</b>
<b>Noncurrent Items:</b>			
Non-depreciable capital assets	6,511,944	-	6,511,944
Depreciable capital assets, net	150,038,000	-	150,038,000
Deferred outflow	1,086,412	-	1,086,412
Pension liability	(1,165,767)	-	(1,165,767)
Compensated absences	(362,090)	-	(362,090)
Other post-employment benefits	(4,351,734)	-	(4,351,734)
Non-current portion of debt	(23,275,830)	-	(23,275,830)
Deferred inflow	(206,701)	-	(206,701)
Total net position	<u>\$ 159,130,139</u>	<u>\$ 5,423,187</u>	<u>\$ 164,553,326</u>

## COUNTY OF BRUNSWICK, NORTH CAROLINA

**SCHEDULE OF REVENUES AND EXPENDITURES - BUDGET AND ACTUAL - WATER SYSTEM  
 OPERATING FUND (NON-GAAP)  
 FOR THE PERIOD ENDED MARCH 31, 2018 AND THE YEAR ENDED JUNE 30, 2017  
 WITH COMPARATIVE ACTUAL AMOUNTS FOR THE PRIOR YEAR**

	<u>Original Budget</u>	<u>Current Budget</u>	<u>March 31, 2018</u>	<u>Variance Positive (Negative)</u>	<u>% of Budget</u>	<u>June 30, 2017</u>	<u>March 31, 2017</u>
<b>Revenues:</b>							
User charges	\$ 21,244,250	\$ 21,388,600	\$ 18,400,416	\$ (2,988,184)	86%	\$ 22,676,369	\$ 16,920,775
Restricted intergovernmental	-	216,000	216,000	-	100%	52,684	-
Investment earnings	30,000	30,000	94,764	64,764	316%	48,375	30,196
Other	<u>475,669</u>	<u>475,669</u>	<u>420,197</u>	<u>(55,472)</u>	88%	<u>903,742</u>	<u>738,622</u>
Total revenues	<u>21,749,919</u>	<u>22,110,269</u>	<u>19,131,377</u>	<u>(2,978,892)</u>	87%	<u>23,681,170</u>	<u>17,689,593</u>
<b>Expenditures:</b>							
Salaries	4,619,624	4,673,778	3,465,079	1,208,699	74%	4,377,828	3,394,770
Fringe benefits	2,045,360	2,049,202	1,473,710	575,492	72%	1,839,538	1,350,049
Operating expenditures	6,814,283	7,195,821	4,658,978	2,536,843	65%	6,507,737	4,665,479
Repairs and maintenance	1,547,706	1,900,990	1,442,542	458,448	76%	1,514,528	1,284,373
Capital outlay	1,855,500	2,013,826	934,718	1,079,108	46%	1,542,206	985,735
<b>Debt Service:</b>							
Principal	1,179,150	1,179,150	276,765	902,385	23%	1,146,444	267,646
Interest	<u>1,072,793</u>	<u>1,072,793</u>	<u>606,570</u>	<u>466,223</u>	57%	<u>1,106,861</u>	<u>628,527</u>
Total expenditures	<u>19,134,416</u>	<u>20,085,560</u>	<u>12,858,362</u>	<u>7,227,198</u>	64%	<u>18,035,142</u>	<u>12,576,579</u>
<b>Revenues over (under) expenditures</b>	2,615,503	2,024,709	6,273,015	4,248,306	310%	5,646,028	5,113,014
<b>Other Financing Sources (Uses):</b>							
Transfer to water capital project fund	(2,615,503)	(2,542,507)	(635,000)	1,907,507	25%	(5,715,725)	(5,715,725)
Appropriated net positon	-	517,798	-	(517,798)	0%	-	-
Total other fin. sources (uses)	<u>(2,615,503)</u>	<u>(2,024,709)</u>	<u>(635,000)</u>	<u>1,389,709</u>	31%	<u>(5,715,725)</u>	<u>(5,715,725)</u>
<b>Revenues and other financing sources over (under) expenditures and other financing uses</b>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 5,638,015</u>	<u>\$ 5,638,015</u>		<u>\$ (69,697)</u>	<u>\$ (602,711)</u>



## COUNTY OF BRUNSWICK, NORTH CAROLINA

**SCHEDULE OF REVENUES AND EXPENDITURES - BUDGET TO ACTUAL -  
WATER CAPITAL PROJECT FUNDS (NON-GAAP)  
FROM INCEPTION AND FOR THE PERIOD ENDED MARCH 31, 2018**

		Actual		
	Project Budget	Prior Year	Current Year	Total to Date
<b>Revenues:</b>				
Restricted intergovernmental revenue	\$ 381,655	\$ 381,655	\$ -	\$ 381,655
Investment earnings	-	92,376	22,445	114,821
Assessments	-	39,495	-	39,495
Penalties and interest assessments		13,229	-	13,229
Other	500,000	-	65,000	65,000
Total revenues	881,655	526,755	87,445	614,200
<b>Expenditures:</b>				
Southeast Water Tank	65,000	50,550	-	50,550
NCDOT Hwy 211 Expansion	391,155	383,055	(3,045)	380,010
Aquifer storage recovery project	495,079	483,853	11,223	495,076
FY16 Water Mains Top 7 and Apollo	1,905,000	342,093	271,808	613,901
211 Water Plant Expansion	3,718,867	3,384,421	334,445	3,718,866
Middleton Road Water Main	1,132,700	943,920	-	943,920
US 74/76 Fire Protection	600,000	86,373	22,827	109,200
Gilbert Road Water Main	1,045,000	61,885	535,229	597,114
Bailey Road Project	9,600	7,200	1,440	8,640
Carolina Shores North	64,600	8,455	53,154	61,609
Raw Water Mains Project	850,000	-	279,457	279,457
Sunset Harbor Water Main	70,000	-	47,310	47,310
NW Plant Treatment Expansion 12MGD	599,600	-	-	-
Total expenditures	10,946,601	5,751,805	1,553,848	7,305,653
<b>Revenues over (under) expenditures</b>	(10,064,946)	(5,225,050)	(1,466,403)	(6,691,453)
<b>Other Financing Sources (Uses):</b>				
Transfers from water fund	11,139,926	10,504,933	634,999	11,139,932
Transfers to water fund	(812,770)	(812,770)	-	(812,770)
Future capital projects	(2,045,707)	-	-	-
Appropriated fund balance	1,783,497	-	-	-
Total other financing sources (uses)	10,064,946	9,692,163	634,999	10,327,162
<b>Revenues and other financing sources over (under) expenditures and other financing uses</b>	\$ -	\$ 4,467,113	\$ (831,404)	\$ 3,635,709

## COUNTY OF BRUNSWICK, NORTH CAROLINA

COMBINING BALANCE SHEET - WASTEWATER FUND (NON-GAAP)  
MARCH 31, 2018

	Wastewater Fund	Wastewater Capital Projects	Total
<b>Current Assets:</b>			
Cash and cash equivalents/investments	\$ 22,180,685	\$ 2,817,391	\$ 24,998,076
Restricted cash	8,644,328	-	8,644,328
Receivables and special assessments, net	6,319,779	-	6,319,779
Due from other governmental agencies	210,808	6,266	217,074
Inventories	343,912	-	343,912
Total current assets	<u>37,699,512</u>	<u>2,823,657</u>	<u>40,523,169</u>
<b>Current Liabilities:</b>			
Accounts payable and other liabilities	152,067	-	152,067
Interest payable	957,545	-	957,545
Prepaid fees	932,275	-	932,275
Current portion of debt	10,265,373	-	10,265,373
Total current liabilities	<u>12,307,260</u>	<u>-</u>	<u>12,307,260</u>
<b>Expendable net position</b>	<b>25,392,252</b>	<b>2,823,657</b>	<b>28,215,909</b>
<b>Noncurrent Items:</b>			
Non-depreciable capital assets	3,933,974	-	3,933,974
Depreciable capital assets, net	220,838,534	-	220,838,534
Deferred outflow	1,927,951	-	1,927,951
Pension liability	(628,441)	-	(628,441)
Compensated absences	(184,107)	-	(184,107)
Other post-employment benefits	(2,091,915)	-	(2,091,915)
Non-current portion of debt	(97,784,742)	-	(97,784,742)
Deferred inflow	(145,131)	-	(145,131)
Total net position	<u>\$ 151,258,375</u>	<u>\$ 2,823,657</u>	<u>\$ 154,082,032</u>

## COUNTY OF BRUNSWICK, NORTH CAROLINA

**SCHEDULE OF REVENUES AND EXPENDITURES - BUDGET AND  
ACTUAL - WASTEWATER FUND (NON-GAAP)  
FOR THE PERIOD ENDED MARCH 31, 2018 AND THE YEAR ENDED JUNE 30, 2017  
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE PRIOR YEAR**

	<u>Original Budget</u>	<u>Current Budget</u>	<u>March 31, 2018</u>	<u>Variance Positive (Negative)</u>	<u>% of Budget</u>	<u>June 30, 2017</u>	<u>March 31, 2017</u>
<b>Revenues:</b>							
User charges	\$ 21,747,828	\$ 22,167,828	\$ 20,792,237	\$ (1,375,591)	94%	\$ 24,403,102	\$ 18,996,589
ARRA interest subsidy	119,378	119,378	120,086	708	101%	146,215	146,215
Special assessments	20,000	20,000	79,116	59,116	396%	498,079	295,055
Investment earnings	25,000	25,000	83,709	58,709	335%	41,918	26,750
Restricted intergovernmental	-	-	-	-	na	117,264	-
Other	61,900	61,900	93,219	31,319	151%	131,309	106,288
Total revenues	<u>21,974,106</u>	<u>22,394,106</u>	<u>21,168,367</u>	<u>(1,225,739)</u>	95%	<u>25,337,887</u>	<u>19,570,897</u>
<b>Expenditures:</b>							
Salaries	2,583,419	2,583,419	1,898,062	685,357	73%	2,394,170	1,818,767
Fringe benefits	1,108,072	1,108,072	748,539	359,533	68%	978,834	714,985
Operating expenditures	3,938,302	4,620,974	2,783,894	1,837,080	60%	3,902,121	2,335,603
Repairs and maintenance	1,683,880	1,933,238	1,235,842	697,396	64%	1,960,702	1,263,924
Capital outlay	3,046,600	4,077,889	1,114,501	2,963,388	27%	1,792,245	1,086,942
<b>Debt Service:</b>							
Principal	9,840,550	9,840,550	864,821	8,975,729	9%	9,564,223	843,870
Interest	4,045,972	4,045,972	2,086,253	1,959,719	52%	4,348,595	2,247,976
Total expenditures	<u>26,246,795</u>	<u>28,210,114</u>	<u>10,731,912</u>	<u>17,478,202</u>	38%	<u>24,940,890</u>	<u>10,312,067</u>
<b>Revenues over (under) expenditures</b>	(4,272,689)	(5,816,008)	10,436,455	16,252,463	-179%	396,997	9,258,830
<b>Other Financing Sources (Uses):</b>							
Transfer to wastewater capital project	-	(634,012)	(634,012)	-	100%	(1,104,946)	(1,104,946)
Transfer from wastewater capital project	1,380,000	1,497,536	1,445,452	(52,084)	97%	922,405	674,350
Appropriated net position	2,892,689	4,952,484	-	(4,952,484)	0%	-	-
Total other fin. sources (uses)	<u>4,272,689</u>	<u>5,816,008</u>	<u>811,440</u>	<u>(5,004,568)</u>	14%	<u>(182,541)</u>	<u>(430,596)</u>
<b>Revenues and other financing sources over (under) expenditures and other financing uses</b>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 11,247,895</u>	<u>\$ 11,247,895</u>		<u>\$ 214,456</u>	<u>\$ 8,828,234</u>

## COUNTY OF BRUNSWICK, NORTH CAROLINA

**SCHEDULE OF REVENUES AND EXPENDITURES - BUDGET AND ACTUAL  
WASTEWATER CAPITAL PROJECT FUNDS (NON-GAAP)  
FROM INCEPTION AND FOR THE PERIOD ENDED MARCH 31, 2018**

		Actual		
	Project Budget	Prior Years	Current Year	Total to Date
Revenues:				
Restricted intergovernmental revenue	\$ 63,951	\$ -	\$ 6,150	\$ 6,150
Assessments	557,053	557,052	-	557,052
SAD interest and penalties	99,017	102,512	-	102,512
Investment earnings	90,716	99,209	20,138	119,347
West Brunswick Regional WWTP Southport Contribution	2,654,400	-	-	-
Total revenues	3,465,137	758,773	26,288	785,061
Expenditures:				
Carolina Shores N. Sewer SAD	2,051,000	1,197,530	696,935	1,894,465
2016 Enterprise Funded Main Extension	893,185	594,268	232,288	826,556
NCDOT Hwy 211 Expansion	88,351	-	75,581	75,581
WBRWWTF Expansion Southport	2,630,000	-	292,977	292,977
Total expenditures	5,662,536	1,791,798	1,297,781	3,089,579
Revenues over (under) expenditures	(2,197,399)	(1,033,025)	(1,271,493)	(2,304,518)
Other Financing Sources (Uses):				
Transfer from wastewater fund	5,958,360	5,324,351	634,012	5,958,363
Transfer to wastewater fund	(5,408,599)	(3,911,063)	(1,445,452)	(5,356,515)
Future capital projects	(2,532,958)	-	-	-
Appropriated fund balance	4,180,596	-	-	-
Total other financing sources (uses)	2,197,399	1,413,288	(811,440)	601,848
Revenues and other financing sources over (under) expenditures and other financing uses	\$ -	\$ 380,263	\$ (2,082,933)	\$ (1,702,670)

## COUNTY OF BRUNSWICK, NORTH CAROLINA

**SCHEDULE OF REVENUES AND EXPENDITURES - FINANCIAL PLAN AND ACTUAL AND  
 CHANGES IN NET POSITION - WORKERS' COMPENSATION INTERNAL SERVICE FUND (NON-GAAP)  
 FOR THE PERIOD ENDED MARCH 31, 2018 AND THE YEAR ENDED JUNE 30, 2017  
 WITH COMPARATIVE ACTUAL AMOUNTS FOR THE PRIOR YEAR**

	<u>Budget</u>	<u>March 31, 2018</u>	<u>Variance Positive (Negative)</u>	<u>June 30, 2017</u>	<u>March 31, 2017</u>
<b>Revenues:</b>					
Charges for services	\$ 980,000	\$ 735,000	\$ (245,000)	\$ 958,893	\$ 653,541
Investment earnings	-	8,872	8,872	5,354	3,360
Total revenues	<u>980,000</u>	<u>743,872</u>	<u>(236,128)</u>	<u>964,247</u>	<u>656,901</u>
<b>Expenditures:</b>					
Premiums	<u>980,000</u>	<u>914,264</u>	<u>65,736</u>	<u>1,215,042</u>	<u>764,922</u>
<b>Revenues over (under) expenditures</b>	<u>\$ -</u>	<u>(170,392)</u>	<u>\$ (170,392)</u>	<u>(250,795)</u>	<u>(108,021)</u>
<b>Net positon, beginning of year</b>		<u>1,858,611</u>		<u>2,109,406</u>	<u>2,109,406</u>
<b>Net positon, end of year</b>		<u>\$ 1,688,219</u>		<u>\$ 1,858,611</u>	<u>\$ 2,001,385</u>

## COUNTY OF BRUNSWICK, NORTH CAROLINA

**SCHEDULE OF REVENUES AND EXPENDITURES - FINANCIAL PLAN AND  
 ACTUAL AND CHANGES IN NET POSITION - HEALTH INTERNAL SERVICE FUND (NON-GAAP)  
 FOR THE PERIOD ENDED MARCH 31, 2018 AND THE YEAR ENDED JUNE 30, 2017  
 WITH COMPARATIVE ACTUAL AMOUNTS FOR THE PRIOR YEAR**

	<u>Budget</u>	<u>March 31, 2018</u>	<u>Variance Positive (Negative)</u>	<u>June 30, 2017</u>	<u>March 31, 2017</u>
<b>Revenues:</b>					
Charges for services-health premiums	\$ 12,204,568	\$ 9,303,017	\$ (2,901,551)	\$ 12,220,775	\$ 8,724,980
Investment earnings	-	12,673	12,673	4,670	2,876
Total revenues	<u>12,204,568</u>	<u>9,315,690</u>	<u>(2,888,878)</u>	<u>12,225,445</u>	<u>8,727,856</u>
<b>Expenditures:</b>					
Administration fees	1,379,056	1,177,432	201,624	1,347,021	1,116,182
Premiums	<u>10,825,512</u>	<u>6,605,415</u>	<u>4,220,097</u>	<u>9,286,430</u>	<u>6,249,587</u>
Total expenditures	<u>12,204,568</u>	<u>7,782,847</u>	<u>4,421,721</u>	<u>10,633,451</u>	<u>7,365,769</u>
<b>Revenues over (under) expenditures</b>	<u>\$ -</u>	<u>1,532,843</u>	<u>\$ 1,532,843</u>	<u>1,591,994</u>	<u>1,362,087</u>
<b>Net positon, beginning of year</b>		<u>2,722,073</u>		<u>1,130,079</u>	<u>1,130,079</u>
<b>Net positon, end of year</b>		<u>\$ 4,254,916</u>		<u>\$ 2,722,073</u>	<u>\$ 2,492,166</u>

## **Cash and Investments**

A Summary of Cash and Investments is presented on the Brunswick County Government website as of March 31, 2018. It reports that the County had \$214.7 million of unrestricted cash and investments in all funds including those accruing for outside agencies that the county performs collections plus \$1.8 million of capital project restricted cash from debt proceeds. All cash and investments are earning an average yield of 0.56%.

**BRUNSWICK COUNTY**  
**SUMMARY OF CASH AND INVESTMENTS**  
**AS OF MARCH 31, 2018**

	<b>Purchase Date</b>	<b>Maturity Date</b>	<b>Book Value</b>	<b>Total Book Value</b>	<b>% of Portfolio</b>	<b>Yield</b>
<b>Unrestricted Cash and Investments</b>						
Checking & Petty Cash						
Petty Cash			\$ 6,200			0.00%
BB&T			47,873,837			0.00%
Finistar			4,349,054			0.95%
Total Checking & Petty Cash				\$ 52,229,091	24%	
Money Markets / Savings						
BB&T Money Rate Savings			82,827,198			0.30%
First Bank Preferred Savings			10,380,026			0.05%
SunTrust Money Market			5,017,555			0.04%
Total Money Markets / Savings				\$ 98,224,780	45%	
Certificates of Deposit / CDARS						
First Bank	3/28/18	6/28/18	10,043,697			1.45%
Total Certificates of Deposit / CDARS				\$ 10,043,697	5%	
NC Capital Management Trust - Government Portfolio				\$ 50,930,687	24%	1.39%
NC Capital Management Trust - Term Portfolio				\$ 3,320,454	2%	1.64%
<b>Total Unrestricted Cash and Investments</b>				<b>\$ 214,748,710</b>		
<b>Restricted Cash and Investments</b>						
Bond Proceeds & Debt Reserve Fund						
NC Capital Management Trust-Term Portfolio			\$ -		0%	1.64%
PNC Bank Money Market			169,022		0%	0.36%
BB&T General Fund Restricted						
Restricted for Revaluation			214,566		0%	0.00%
Restricted for Holden Beach Debt			1,448,520		1%	0.00%
<b>Total Restricted Cash and Investments</b>				<b>\$ 1,832,108</b>		
<b>Grand Total All Cash and Investments</b>				<b>\$ 216,580,818</b>	<b>100%</b>	<b>0.56%</b>

**Cash Balances:**

General Fund	\$ 111,427,195
County Capital Reserve Fund	12,683,166
School Capital Projects Fund	8,566,473
Water Fund	29,435,465
Water Capital Reserve Fund	1,667,932
Wastewater Fund	22,180,698
Wastewater Capital Reserve Fund	2,962,901



## **Key Indicators of Revenues and Expenditures**

Presented on the Brunswick County Government website are charts with actual history, current month actual and annual budget information for major revenues and expenditures in both the enterprise and general funds.

**County of Brunswick**  
**Ad Valorem and Motor Vehicle Tax Revenues**

<b>PRIOR YEARS AD VALOREM TAX REVENUE</b>									
Month	ACTUAL 2012-13	ACTUAL 2013-14	ACTUAL 2014-15	ACTUAL 2015-16	ACTUAL 2016-17	ANNUAL BUDGET 2017-18	ACTUAL 2017-18	YTD actual % change of prior YTD actual	% of ANNUAL BUDGET
July	457,840	1,256,406	758,897	546,345	305,329		377,089	24%	
Aug	399,728	501,329	471,098	438,769	324,296		420,293	30%	
Sept	266,185	502,872	399,058	870,663	262,164		419,816	60%	
Oct	292,645	421,702	410,936	267,307	208,607		207,830	0%	
Nov	248,011	316,382	213,082	204,432	207,774		235,025	13%	
Dec	1,904,275	338,695	300,926	391,210	46,595		203,220	336%	
Jan	230,649	312,188	376,046	381,705	305,760		189,817	-38%	
Feb	167,225	355,871	347,468	301,199	427,181		337,199	-21%	
Mar	275,890	570,368	324,430	362,693	370,146		378,028	2%	
Apr	242,239	283,020	247,162	278,448	296,216				
May	165,586	83,586	322,131	248,619	260,659				
June	149,701	241,223	235,646	207,251	490,189				
Total	4,799,974	5,183,642	4,406,880	4,406,880	3,504,916	2,300,000	2,768,317		120%

<b>CURRENT YEAR AD VALOREM TAX REVENUE</b>									
Month	ACTUAL 2012-13	ACTUAL 2013-14	ACTUAL 2014-15	ACTUAL 2015-16	ACTUAL 2016-17	ANNUAL BUDGET 2017-18	ACTUAL 2017-18	YTD actual % change of prior YTD actual	% of ANNUAL BUDGET
July	-	799	91,495	102,981	141,121		5,141,356	3543%	
Aug	5,865,472	8,707,554	12,444,754	12,440,150	15,853,299		14,003,220	-12%	
Sept	6,580,323	5,541,480	7,147,245	7,799,492	6,433,818		6,763,894	5%	
Oct	4,914,568	11,630,956	9,419,597	9,641,217	9,896,672		17,631,294	78%	
Nov	25,044,634	18,349,557	19,462,971	21,420,290	23,944,507		17,678,530	-26%	
Dec	23,101,828	31,604,019	26,197,571	33,684,730	24,416,021		20,728,131	-15%	
Jan	29,003,518	19,539,928	23,411,002	15,517,607	23,377,586		26,045,100	11%	
Feb	2,198,917	1,983,679	1,880,768	1,937,509	2,086,134		2,100,604	1%	
Mar	1,077,504	1,484,285	931,336	811,691	957,399		928,997	-3%	
Apr	709,455	707,868	633,707	496,119	466,309				
May	413,072	634,497	363,995	326,905	341,102				
June	349,907	378,750	502,170	278,132	560,206				
Total	99,259,199	100,563,372	102,486,610	104,456,823	108,474,174	108,723,118	111,021,126		102%

<b>CURRENT YEAR MOTOR VEHICLE TAX REVENUE</b>									
Month	ACTUAL 2012-13	ACTUAL 2013-14	ACTUAL 2014-15	ACTUAL 2015-16	ACTUAL 2016-17	ANNUAL BUDGET 2017-18	ACTUAL 2017-18	YTD actual % change of prior YTD actual	% of ANNUAL BUDGET
July	223,725	250,462	1,329	327	506		-	-100%	
Aug	285,109	335,146	443,434	504,052	603,352		611,857	1%	
Sept	256,375	363,619	448,554	486,317	657,269		652,753	-1%	
Oct	323,507	539,012	438,527	464,133	579,331		542,846	-6%	
Nov	346,899	631,605	427,930	543,146	507,568		544,226	7%	
Dec	346,089	675,575	369,797	383,693	471,246		499,198	6%	
Jan	353,080	438,622	390,589	452,656	464,226		501,030	8%	
Feb	303,272	419,377	387,576	477,267	523,460		557,142	6%	
Mar	304,625	445,421	348,382	465,452	485,610		572,728	18%	
Apr	354,820	428,462	476,849	560,194	654,797				
May	346,020	440,145	472,594	575,935	550,623				
June	289,770	964,880	912,555	1,117,769	1,223,355				
Total	3,733,289	5,932,325	5,118,117	6,030,941	6,721,343	6,062,500	4,481,780		74%

**County of Brunswick  
Local Option Sales Tax Revenues**

<b>ARTICLE 39 SALES TAX REVENUE 1% (POINT OF DELIVERY) (100000-323100)</b>									
	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ANNUAL BUDGET	ACTUAL	YTD actual % change of prior YTD actual	% of ANNUAL BUDGET
Month	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2017-18		
July	803,743	864,797	927,776	969,548	986,394		1,049,718	6%	
Aug	912,847	978,703	1,090,562	1,093,465	1,224,865		1,289,737	5%	
Sept	754,001	845,474	877,367	938,050	952,042		978,445	3%	
Oct	663,615	634,429	654,852	596,241	752,088		864,937	15%	
Nov	432,817	489,457	628,065	604,948	635,873		767,798	21%	
Dec	504,025	493,127	549,081	561,448	626,293		698,356	12%	
Jan	348,981	282,246	527,514	585,079	436,031		558,342	28%	
Feb	422,989	455,363	484,029	497,550	613,865				
Mar	533,035	478,740	377,571	603,870	588,222				
Apr	612,526	650,547	668,922	742,268	815,552				
May	559,487	667,921	708,546	756,471	837,814				
June	588,366	701,324	759,421	778,076	833,600				
Total	7,136,430	7,542,128	8,253,706	8,727,014	9,302,639	9,581,330	6,207,333		65%
<b>ARTICLE 40 SALES TAX REVENUE 1/2% (PER CAPITA) 30% RESTRICTED FOR SCHOOL CAPITAL OUTLAY OR DEBT SERVICE (100000-323201,323202)</b>									
	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ANNUAL BUDGET	ACTUAL	YTD actual % change of prior YTD actual	% of ANNUAL BUDGET
Month	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2017-18		
July	468,237	481,169	539,117	564,929	594,375		631,075	6%	
Aug	422,864	441,069	481,408	541,745	517,985		596,047	15%	
Sept	418,782	433,388	496,279	502,456	577,305		597,606	4%	
Oct	393,726	437,655	469,753	514,691	551,928		614,008	11%	
Nov	379,858	371,215	494,179	481,606	544,444		562,350	3%	
Dec	422,206	450,740	479,879	509,491	583,254		636,108	9%	
Jan	444,135	503,442	583,174	619,735	667,322		699,734	5%	
Feb	359,348	373,047	447,406	444,943	477,316				
Mar	421,635	414,833	434,593	466,949	512,277				
Apr	438,597	454,513	457,599	564,837	625,842				
May	419,110	424,744	488,986	560,378	588,735				
June	445,822	488,672	526,413	547,458	550,848				
Total	5,034,320	5,274,487	5,898,786	6,319,219	6,791,631	6,886,082	4,336,928		63%
<b>ARTICLE 42 SALES TAX REVENUE 1/2% (POINT OF DELIVERY) (APPROXIMATELY 60% RESTRICTED FOR SCHOOL CAPITAL OUTLAY OR DEBT SERVICE) (100000-323301, 323302)</b>									
	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ANNUAL BUDGET	ACTUAL	YTD actual % change of prior YTD actual	% of ANNUAL BUDGET
Month	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2017-18		
July	502,448	537,381	581,833	609,693	631,292		673,530	7%	
Aug	535,526	571,290	634,883	657,139	711,398		766,949	8%	
Sept	464,542	513,379	547,394	576,690	610,962		631,968	3%	
Oct	415,766	419,073	441,243	430,066	514,766		588,455	14%	
Nov	310,259	333,777	436,317	423,295	464,016		527,365	14%	
Dec	355,269	361,268	397,148	412,136	471,285		522,056	11%	
Jan	294,265	285,268	420,617	459,158	415,344		482,885	16%	
Feb	299,134	319,156	356,907	363,409	430,959				
Mar	368,542	342,823	305,250	417,515	430,745				
Apr	408,598	431,872	442,236	512,728	569,042				
May	379,092	430,202	469,765	515,232	566,462				
June	399,234	464,929	504,945	519,548	551,091				
Total	4,732,676	5,010,418	5,538,538	5,896,609	6,367,362	6,480,912	4,193,208		65%

Note: Sales Taxes are 2 months behind in reporting.

**County of Brunswick  
Water Fund Revenues**

<b>WATER RETAIL SALES REVENUE (617110-371316)</b>									
	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ANNUAL BUDGET	ACTUAL	YTD actual % change of prior YTD actual	% of ANNUAL BUDGET
Month	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2017-18		
July	418,130	433,653	472,746	467,682	474,405		469,373	-1%	
Aug	577,604	481,540	504,895	533,018	585,205		598,346	2%	
Sept	503,003	477,751	412,334	506,507	552,130		509,091	-8%	
Oct	409,503	407,578	384,997	419,248	455,542		436,731	-4%	
Nov	366,357	357,419	346,005	353,122	356,558		400,272	12%	
Dec	344,872	291,933	315,884	357,715	358,875		401,470	12%	
Jan	288,985	280,966	287,734	289,804	326,617		330,727	1%	
Feb	271,325	305,950	295,333	318,297	322,884		424,539	31%	
Mar	305,555	297,023	280,290	307,249	318,405		338,275	6%	
Apr	233,898	269,782	293,877	302,211	317,943				
May	312,834	337,877	341,737	379,472	407,205				
June	399,474	446,465	396,615	448,286	481,962				
Total	4,431,540	4,387,937	4,332,447	4,682,610	4,957,731	5,000,000	3,908,824		78%

<b>IRRIGATION REVENUE (617110-371319)</b>									
	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ANNUAL BUDGET	ACTUAL	YTD actual % change of prior YTD actual	% of ANNUAL BUDGET
Month	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2017-18		
July	200,399	197,151	266,584	242,180	274,655		303,891	11%	
Aug	270,576	196,228	297,464	328,242	391,161		364,814	-7%	
Sept	320,100	224,623	203,919	378,978	402,057		341,474	-15%	
Oct	195,873	250,146	195,247	281,554	312,823		245,944	-21%	
Nov	171,975	186,010	160,249	159,040	170,875		230,786	35%	
Dec	95,241	91,803	111,853	92,834	79,215		194,433	145%	
Jan	31,610	29,503	31,659	30,866	53,423		75,964	42%	
Feb	18,136	19,242	10,667	17,443	17,281		42,193	144%	
Mar	12,015	13,548	8,336	10,977	23,304		26,984	16%	
Apr	13,193	10,547	12,325	20,209	33,613				
May	42,880	43,131	47,160	91,362	111,147				
June	113,021	239,965	99,971	255,276	294,456				
Total	1,485,016	1,501,897	1,445,433	1,908,962	2,164,010	1,700,000	1,826,483		107%

<b>WATER WHOLESALE REVENUE (617110-371317)</b>									
	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ANNUAL BUDGET	ACTUAL	YTD actual % change of prior YTD actual	% of ANNUAL BUDGET
Month	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2017-18		
July	502,222	531,159	645,432	571,447	549,891		502,369	-9%	
Aug	736,692	566,561	610,893	726,527	662,991		739,238	12%	
Sept	483,513	511,239	597,231	571,125	593,390		580,350	-2%	
Oct	394,070	455,344	369,057	419,668	467,518		439,291	-6%	
Nov	375,118	391,254	382,248	372,683	315,869		468,542	48%	
Dec	281,076	260,217	298,588	278,846	329,525		415,210	26%	
Jan	262,906	242,557	308,352	271,780	271,848		461,637	70%	
Feb	278,801	297,924	240,348	243,372	293,671		254,055	-13%	
Mar	265,305	256,865	291,032	258,696	257,119		297,083	16%	
Apr	227,953	264,528	253,284	298,786	315,449				
May	282,064	303,736	330,963	347,571	381,741				
June	410,953	567,502	373,695	423,069	723,529				
Total	4,500,673	4,648,887	4,701,123	4,783,570	5,162,541	4,740,000	4,157,775		88%

**County of Brunswick  
Water Fund Revenues**

<b>WATER INDUSTRIAL REVENUE (617110-371318)</b>									
	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ANNUAL BUDGET	ACTUAL	YTD actual % change of prior YTD actual	% of ANNUAL BUDGET
Month	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2017-18		
July	235,758	252,870	245,698	206,044	193,363		171,810	-11%	
Aug	291,644	230,404	241,408	198,496	176,628		242,014	37%	
Sept	251,772	235,556	287,677	223,590	177,912		227,218	28%	
Oct	230,252	231,204	226,273	183,414	141,672		208,907	47%	
Nov	234,277	233,080	225,491	153,158	153,071		213,605	40%	
Dec	203,477	188,651	220,541	126,460	140,427		181,314	29%	
Jan	223,740	200,044	221,210	199,431	156,917		209,780	34%	
Feb	221,223	232,927	148,278	177,624	144,230		145,744	1%	
Mar	261,605	193,946	192,828	194,456	163,680		162,151	-1%	
Apr	211,697	206,743	169,595	179,557	153,967				
May	196,254	216,485	172,665	173,827	125,676				
June	239,597	211,501	141,691	173,052	126,581				
Total	2,801,296	2,633,410	2,493,355	2,189,109	1,854,124	1,994,000	1,762,543		88%

<b>WATER BASE SERVICE CHARGE REVENUE (617110-371308)</b>									
	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ANNUAL BUDGET	ACTUAL	YTD actual % change of prior YTD actual	% of ANNUAL BUDGET
Month	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2017-18		
July	381,461	391,615	403,355	451,901	470,153		487,562	4%	
Aug	383,403	393,144	440,343	451,462	475,932		489,608	3%	
Sept	381,503	391,943	440,074	453,419	476,892		490,840	3%	
Oct	382,386	394,427	442,108	454,580	476,516		493,066	3%	
Nov	385,726	396,791	442,353	455,559	475,832		494,282	4%	
Dec	385,373	395,498	443,726	464,316	477,375		495,252	4%	
Jan	386,229	395,498	445,019	463,597	480,043		496,679	3%	
Feb	386,997	399,527	445,701	465,506	481,021		498,450	4%	
Mar	387,056	398,697	446,642	468,084	483,538		501,888	4%	
Apr	387,607	399,271	448,227	469,366	482,955				
May	389,914	401,832	449,771	469,402	485,236				
June	399,806	413,286	498,348	490,097	506,112				
Total	4,637,462	4,771,529	5,345,667	5,557,289	5,771,605	5,861,000	4,447,627		76%

<b>WATER TAPS AND CONNECTION REVENUE (617180-371305)</b>									
	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ANNUAL BUDGET	ACTUAL	YTD actual % change of prior YTD actual	% of ANNUAL BUDGET
Month	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2017-18		
July	20,552	32,072	70,982	88,015	79,919		83,631	5%	
Aug	15,150	38,414	54,383	63,122	73,809		104,621	42%	
Sept	30,974	40,036	55,302	79,297	69,412		81,193	17%	
Oct	27,034	42,683	53,756	60,271	60,061		91,599	53%	
Nov	22,145	29,320	42,257	57,337	77,525		99,482	28%	
Dec	19,234	28,621	56,457	50,315	59,843		54,196	-9%	
Jan	33,630	25,201	53,973	68,391	63,308		74,470	18%	
Feb	53,149	34,179	55,395	58,684	88,268		65,659	-26%	
Mar	41,370	38,347	62,467	61,178	89,333		143,953	61%	
Apr	39,756	39,113	66,169	88,286	76,900				
May	29,745	41,012	87,408	62,668	86,057				
June	155,376	42,744	57,354	89,289	88,308				
Total	488,116	431,742	715,903	826,853	912,743	828,100	798,804		96%

**County of Brunswick  
Water Fund Revenues**

<b>WATER CAPITAL RECOVERY REVENUE (619100-371404)</b>									
	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ANNUAL BUDGET	ACTUAL	YTD actual % change of prior YTD actual	% of ANNUAL BUDGET
Month	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2017-18		
July	36,494	69,729	75,945	175,282	82,430		82,749	0%	
Aug	36,803	68,885	61,056	107,350	87,643		120,522	38%	
Sept	55,673	74,043	56,609	80,372	137,586		114,051	-17%	
Oct	62,911	92,640	35,619	100,031	53,152		83,126	56%	
Nov	60,584	35,813	90,854	80,907	89,642		128,155	43%	
Dec	53,463	59,986	71,145	67,996	49,323		40,491	-18%	
Jan	76,170	46,944	77,802	68,194	53,168		70,156	32%	
Feb	132,565	61,353	78,674	83,303	80,368		43,033	-46%	
Mar	60,294	83,280	75,081	55,590	83,957		142,979	70%	
Apr	84,220	56,385	86,006	103,546	191,678				
May	47,460	116,924	106,117	72,757	110,980				
June	232,116	71,878	65,310	131,407	89,349				
Total	938,752	837,859	880,218	1,126,735	1,109,276	688,000	825,262		120%

<b>WATER TRANSMISSION LINE REVENUE (619800-371309)</b>									
	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ANNUAL BUDGET	ACTUAL	YTD actual % change of prior YTD actual	% of ANNUAL BUDGET
Month	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2017-18		
July	12,295	23,386	27,391	42,850	29,279		34,402	17%	
Aug	10,666	20,169	26,404	35,126	24,946		42,390	70%	
Sept	18,697	25,030	23,378	27,267	31,882		42,063	32%	
Oct	21,484	22,223	20,420	24,152	26,858		33,713	26%	
Nov	20,505	14,943	36,383	26,653	37,187		52,512	41%	
Dec	17,955	19,097	28,184	22,399	25,429		23,427	-8%	
Jan	18,736	19,156	28,812	28,002	25,978		28,493	10%	
Feb	29,327	20,860	30,550	25,571	35,550		24,480	-31%	
Mar	22,098	26,789	23,460	21,952	36,122		53,897	49%	
Apr	28,057	24,074	24,169	34,849	28,496				
May	16,164	31,109	35,214	21,459	30,911				
June	79,793	28,029	27,254	48,349	29,625				
Total	295,776	274,866	331,619	358,629	362,263	232,000	335,377		145%

**County of Brunswick  
Wastewater Fund Revenues**

<b>WASTEWATER RETAIL SALES REVENUE (627210-371405)</b>									
	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ANNUAL BUDGET	ACTUAL	YTD actual % change of prior YTD actual	% of ANNUAL BUDGET
Month	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2017-18		
July	539,086	612,855	707,249	735,074	791,640		805,054	2%	
Aug	580,699	651,146	733,867	779,627	874,819		933,343	7%	
Sept	559,178	644,679	693,713	772,094	837,178		835,710	0%	
Oct	531,074	633,320	673,713	706,281	773,191		813,375	5%	
Nov	521,592	620,631	662,220	686,159	735,391		792,739	8%	
Dec	515,480	605,584	649,668	724,587	753,597		801,946	6%	
Jan	513,818	600,756	648,827	700,776	739,484		778,549	5%	
Feb	511,834	617,577	651,892	705,035	740,280		835,392	13%	
Mar	528,669	623,293	640,679	712,260	747,301		776,766	4%	
Apr	527,052	612,980	652,947	708,854	744,239				
May	557,639	642,475	678,940	737,235	765,249				
June	652,400	762,420	709,781	868,150	834,436				
Total	6,538,521	7,627,716	8,103,496	8,836,132	9,336,805	9,300,000	7,372,874		79%

<b>WASTEWATER TAPS &amp; CONNECTIONS REVENUE (627220-371402)</b>									
	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ANNUAL BUDGET	ACTUAL	YTD actual % change of prior YTD actual	% of ANNUAL BUDGET
Month	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2017-18		
July	67,500	126,160	88,000	114,000	76,350		108,000	41%	
Aug	89,000	90,600	93,000	97,000	152,000		133,000	-13%	
Sept	76,760	60,000	100,000	73,000	84,450		95,750	13%	
Oct	32,005	113,949	84,000	57,000	95,775		185,275	93%	
Nov	60,000	100,000	101,550	104,000	136,000		210,480	55%	
Dec	60,000	60,166	69,000	80,000	109,000		84,000	-23%	
Jan	76,000	96,000	84,000	108,400	117,775		113,840	-3%	
Feb	96,000	157,000	172,000	119,375	164,450		97,250	-41%	
Mar	88,000	84,000	80,000	100,000	103,050		276,486	168%	
Apr	71,970	112,000	88,000	134,320	104,000				
May	93,000	132,000	126,990	69,000	110,545				
June	76,000	77,000	132,700	82,625	189,500				
Total	886,235	1,208,875	1,219,240	1,138,720	1,442,895	1,520,000	1,304,081		86%

<b>WASTEWATER CAPITAL RECOVERY REVENUE (629100-371404)</b>									
	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ANNUAL BUDGET	ACTUAL	YTD actual % change of prior YTD actual	% of ANNUAL BUDGET
Month	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2017-18		
July	71,201	153,583	94,139	454,950	185,127		219,750	19%	
Aug	80,333	75,250	153,639	240,374	131,836		402,208	205%	
Sept	41,766	94,337	130,597	132,623	183,719		337,302	84%	
Oct	99,441	100,250	157,250	156,607	205,927		268,123	30%	
Nov	103,889	48,306	162,973	125,525	270,061		392,249	45%	
Dec	76,222	55,555	122,639	94,524	154,451		186,084	20%	
Jan	90,085	105,889	153,833	172,304	196,396		218,124	11%	
Feb	339,167	67,805	168,764	150,635	214,802		134,813	-37%	
Mar	64,306	112,512	115,639	139,552	233,802		411,900	76%	
Apr	141,306	128,139	105,250	218,469	210,136				
May	76,373	134,384	201,306	246,595	205,427				
June	142,945	113,439	93,309	337,635	214,635				
Total	1,327,033	1,189,449	1,659,338	2,469,793	2,406,319	600,000	2,570,553		428%

**County of Brunswick  
Wastewater Fund Revenues**

<b>WASTEWATER TRANSMISSION LINE FEES (629800-371309)</b>									
Month	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ANNUAL BUDGET	ACTUAL	YTD actual % change of prior YTD actual	% of ANNUAL BUDGET
	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2017-18		
July	21,742	47,864	24,714	106,434	60,709		69,520	15%	
Aug	20,639	24,084	47,884	74,794	44,611		104,289	134%	
Sept	13,922	31,444	42,534	50,210	59,236		107,773	82%	
Oct	28,957	32,421	51,087	50,872	66,644		75,363	13%	
Nov	34,632	17,104	79,326	44,845	83,049		122,632	48%	
Dec	25,409	17,855	38,881	31,511	47,819		52,692	10%	
Jan	27,030	25,410	51,281	54,659	67,463		68,707	2%	
Feb	35,095	19,601	56,259	44,213	68,932		49,027	-29%	
Mar	15,437	36,729	33,217	44,521	77,931		133,296	71%	
Apr	43,759	36,827	30,753	70,828	61,376				
May	23,460	41,109	63,105	49,882	61,474				
June	23,315	31,815	35,773	109,443	68,211				
Total	313,396	362,264	554,814	732,212	767,455	200,000	783,299		392%



**County of Brunswick**  
**Water and Wastewater Number of Customers**

<b>NUMBER OF WATER RETAIL CUSTOMERS</b>							
Month	ACTUAL 2012-13	ACTUAL 2013-14	ACTUAL 2014-15	ACTUAL 2015-16	ACTUAL 2016-17	ACTUAL 2017-18	Change
July	34,488	34,990	36,146	37,165	38,912	40,199	98
Aug	34,521	35,107	36,272	37,303	39,036	40,345	146
Sept	34,362	35,219	36,379	37,398	39,155	40,518	173
Oct	34,328	35,400	36,431	37,418	39,238	40,581	63
Nov	34,377	35,455	36,524	38,133	39,338	40,758	177
Dec	34,485	35,500	36,607	38,209	39,466	40,908	150
Jan	34,512	35,545	36,679	38,318	39,573	40,982	74
Feb	34,652	35,615	36,737	38,415	39,690	41,094	112
Mar	34,719	35,663	36,828	38,448	39,736		
Apr	34,823	35,819	36,910	38,587	39,894		
May	34,913	35,902	37,046	38,704	39,998		
June	34,984	36,028	37,112	38,760	40,101		
Average	34,597	35,520	36,639	38,072	39,511	40,673	993

<b>NUMBER OF WASTEWATER RETAIL CUSTOMERS</b>							
Month	ACTUAL 2012-13	ACTUAL 2013-14	ACTUAL 2014-15	ACTUAL 2015-16	ACTUAL 2016-17	ACTUAL 2017-18	Change
July	10,667	12,415	13,855	14,556	15,862	16,695	116
Aug	10,756	12,467	14,009	14,632	15,878	16,758	63
Sept	10,663	12,677	14,036	14,682	15,940	16,908	150
Oct	10,712	12,859	14,092	14,708	16,014	17,017	109
Nov	10,738	13,108	14,143	15,269	16,070	17,026	9
Dec	11,081	13,234	14,192	15,357	16,157	17,193	167
Jan	11,156	13,364	14,237	15,382	16,235	17,241	48
Feb	11,310	13,470	14,325	15,460	16,295	17,300	59
Mar	11,516	13,544	14,378	15,498	16,371		
Apr	11,685	13,608	14,450	15,593	16,506		
May	11,965	13,743	14,468	15,651	16,537		
June	12,142	13,841	14,514	15,847	16,579		
Average	11,199	13,194	14,225	15,220	16,204	17,017	721



**Brunswick County Board of Commissioners**  
**ACTION AGENDA ITEM**  
**April 16, 2018**

**From:**  
Julie A. Miller

**Action Item # V. - 7.**  
Finance - Resolution for Electronic Payments and Purchasing Policy Update

**Issue/Action Requested:**

Request that the Board of Commissioners approve a Resolution Authorizing the County of Brunswick to Engage in Electronic Payments and a purchasing policy update for compliance with Federal law and standards.

**Background/Purpose of Request:**

The 2015 legislature modified GS 159-28 (d2) (local governments) to allow the Local Government Commission (LGC) to adopt rules to address the execution of the pre-audit and disbursement process related to electronic transactions for local government. The new pre-audit and disbursement rules were effective as of November 1, 2017, and exist as part of the North Carolina Administrative Code (20NCAC 03.0409 and 20 NCAC 03.0410).

As part of the requirement to take advantage of pre-audit certificate exemption on electronic obligations the governing board shall adopt a resolution authorizing the county to engage in electronic payments as defined by G.S 159-28 or G.S 115C-441.

Purchasing policy update is to meet the Uniform Guidance Procurement Standard to include the statement "Contracts funded with federal grant funds shall be procured in a manner that is in compliance with all applicable Federal laws, policies, and standards as well as state law and local policies".

**Fiscal Impact:**

Reviewed By Director of Fiscal Operations

**Approved By County Attorney:**

Yes

**County Manager's Recommendation:**

Recommend that the Board of Commissioners approve a Resolution Authorizing the County of Brunswick to Engage in Electronic Payments and a purchasing policy update for compliance with Federal law and standards.

**ATTACHMENTS:**

Description

- ☐ Resolution Authorizing the County to Engage in Electronic Payments
- ☐ Contract and Purchasing Policy

*County of Brunswick*  
*Office of the County Commissioners*



**RESOLUTION AUTHORIZING THE COUNTY OF BRUNSWICK TO ENGAGE IN  
ELECTRONIC PAYMENTS AS DEFINED BY G.S. 159-28 OR G.S. 115C-441**

**WHEREAS**, it is the desire of the Board of Commissioners that the County of Brunswick is authorized to engage in electronic payments as defined by G.S. 159-28 or G.S. 115C-441; and

**WHEREAS**, it is the responsibility of the Finance Officer, who is appointed by and serves at the pleasure of the Board of Commissioners, to adopt a written policy outlining procedures for pre-auditing obligations that will be incurred by electronic payments as required by NC Administrative Code 20 NCAC 03 .0409; and

**WHEREAS**, it is the responsibility of the Finance Officer, who is appointed by and serves at the pleasure of the Board of Commissioners, to adopt a written policy outlining procedures for disbursing public funds by electronic transaction as required by NC Administrative Code 20 NCAC 03 .0410.

**NOW, THEREFORE, BE IT RESOLVED**, by the Board of Commissioner of the County of Brunswick:

- Section 1.** Authorizes the County of Brunswick to engage in electronic payments as defined by G.S. 159-28 or G.S. 115C-441;
- Section 2.** Authorizes the Finance Officer to adopt a written policy outlining procedures for pre-auditing obligations that will be incurred by electronic payments as required by NC Administrative Code 20 NCAC 03 .0409;
- Section 3.** Authorizes the Finance Officer to adopt a written policy outlining procedures for disbursing public funds by electronic transaction as required by NC Administrative Code 20 NCAC 03 .0410; and

This the 16<sup>th</sup> day of April, 2018.

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Frank Williams, Chairman  
Brunswick County Commissioners

Attest:

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Andrea White, NCCCC  
Clerk to the Board

## **BRUNSWICK COUNTY**

### **CONTRACT AND PURCHASING POLICY**

#### **I. FORMAL BID (N.C.G.S. 143-129)**

- A. Contracts and purchases that require the use of formal bid procedures are those for:
  - 1. Non-Federally funded construction or repair work requiring the estimated expenditure of \$500,000 or more
  - 2. Federally funded construction or repair work requiring the estimated expenditure of \$150,000 or more
  - 3. Purchase or lease-purchase of apparatus, supplies, materials or equipment requiring an estimated expenditure of \$90,000 or more
  - 4. Exceptions as included in G.S. 143-129
- B. Minimum number of bids required
  - 1. Three competitive bids are required for construction and/or repairs only
  - 2. If three bids are not received, then re-advertise and the contract may be awarded with one bid
- C. All formal bids shall be procured through the Assistant County Manager's office and approved by the Board of Commissioners. In order to prepare formal bid packages for construction and/or repair as well as apparatus, supplies, materials and/or equipment, a written request and supporting information must be submitted at least thirty days prior to the advertisement of bids

#### **II. INFORMAL BID (N.C.G.S. 143-131)**

- A. Contracts and purchase that require the use of informal bid procedures are as follows:
  - 1. Construction and/or repair work requiring the estimated expenditure of any amount up to \$499,999
  - 2. Construction and/or repair work requiring the estimated expenditure of \$30,000 to \$499,999 shall require the approval of the Board of Commissioners in compliance with N.C.G.S. 143-131 (b).
  - 3. Apparatus, supplies, materials and/or equipment requiring the estimated expenditure of any amount up to \$89,999
- B. Minimum number of bids required
  - 1. Three telephone/facsimile/email quotes are required and must be properly documented on the electronic requisition with a copy provided to the finance department for expenditures of \$5,000 or more. For expenditures of any amount up to \$4,999 three telephone/facsimile/email quotes are required and must be properly documented and maintained within the department's records. The department's records of quotes are subject to audit. Non-responsive submissions do not qualify as a quote.
  - 2. If three quotes cannot be obtained, a full explanation must be submitted to the Assistant County Manager's Office.

### **III. PURCHASE ORDERS**

- A. All obligations of the County must be supported by an official purchase order with the following exceptions:
  - 1. Salaries and wages
  - 2. Fringe benefits
  - 3. Travel and registration expenditures
  - 4. Telephone and Utilities
  - 5. Postage
  - 6. Payments for appropriations to non-profit entities, public schools, community college
  - 7. Debt Service Payments
  - 8. Advertisements In local newspapers
  - 9. Services authorized by County Coroner
  - 10. Beneficiary payments to Social Services Recipients
  - 11. Social Services payments to medical transportation providers
  - 12. Animal Services payments for veterinary service providers
  - 13. Payments made to or on behalf of beneficiaries of the Public Housing Section 8 program
  - 14. County Credit Card Purchases
  - 15. Other as periodically determined by the Finance Officer/Assistant County Manager
  - 16. Small obligations of less than \$5,000 under the following conditions
    - a. Non-reoccurring expenditures (i.e. dues, subscriptions, services)
    - b. An unencumbered balance is available for obligation
    - c. Shall be supported with properly executed original invoice
    - d. Any abuse/misuse as determined by the Finance Officer/Assistant County Manager of the small obligation procedure shall cause it to be discontinued for that respective department
- B. All recurring/blanket obligations must be supported by an official purchase order in accordance with all sections of this policy
  - 1. The dollar amount of any single item under a blanket purchase order shall not exceed \$5,000
- C. Emergency purchase orders may be issued on a case by case basis in accordance with all sections of this policy

### **IV. ELECTRONIC PAYMENTS**

- A. In order for electronic transactions to qualify for an exemption from the pre-audit requirements in G.S. 159-28(d1), the disbursement must be in compliance with the rules adopted by the Local Government Commission as detailed below:
  - a. The amount claimed is payable
  - b. There is a budget, project, or grant ordinance appropriation authorizing the expenditure
  - c. The monies remain within the appropriation to cover the amount that is due during the current fiscal year if accounted for in the budget ordinance, or to cover the entire amount if accounted for in a project or grant ordinance
  - d. The unit has sufficient cash to cover the payment

**V. ARCHITECTURAL/ENGINEERING/CONSULTANTS**

- A. All architectural, engineering and consultant services shall be procured through the office of the Assistant County Manager in accordance with the terms of this policy and applicable general statutes.

**VI. CONTRACTS**

- A. All contracts that obligate the County for funds must contain a preaudit certification, signed by the Finance Officer and supported by a purchase order. A contract may require action by the Board of County Commissioners, subsequently requiring the Chairman of the Board's signature along with the County Attorney's review and pre-audit certification by the Finance Officer. Contracts must be delivered to the County Manager, Finance Officer and County Attorney for review. Before execution, all contracts will be checked for compliance with the Local Government Budget and Fiscal Control Act.
- B. All contracts and purchases of \$5,000 more, except those requiring the approval of the Board of Commissioners in Section I and Section II. (2.) Require the approval of the Assistant County Manager.
- C. Contracts funded with federal grant funds shall be procured in a manner that is in compliance with all applicable Federal laws, policies, and standards as well as state law and local policies.

**VII. PRE-AUDIT CERTIFICATION**

- A. Except as otherwise provided by law, no obligation may be incurred by the County unless the budget resolution includes an appropriation authorizing the obligation and an unencumbered balance remains in the appropriation sufficient to pay in the current fiscal year the sums obligated by the transaction for the current fiscal year.
- B. If an obligation is reduced to a written contract or written agreement requiring the payment of money, or is evidenced by a written purchase order for supplies and materials, the written contract, agreement, or purchase order shall include on its face a certificate stating that the instrument has been preaudited to assure compliance with that law. The finance officer or any employee authorized by the Finance Officer shall sign the certificate, which will take substantially the following form:

“This instrument has been preaudited in the manner required by the Local Government Budget and Fiscal Control Act.

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*(Date)*

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*(Signature of Finance Officer)*

- C. No pre-audit certificate is required for (1) an obligation, or a document related to the obligation, that has been approved by the Local Government Commission; (2) payroll expenditures, including employee benefits; or (3) electronic payments, as specified in rules adopted by the Local Government Commission.
- D. An obligation incurred in violation of the requirements of state law as specified in this policy is invalid and may not be enforced. The Finance officer shall establish procedures in accordance with any rules adopted by the Local Government Commission to assure compliance with statutory requirements and this policy.

**VIII. PURCHASE FROM BRUNSWICK COUNTY BUSINESSES**

- A. Each department shall take appropriate steps to purchase from Brunswick County businesses, whenever possible, in accordance with all sections of this policy

**IX. VIOLATION OF POLICY**

- A. Any employee who knowingly violates the provisions of this policy shall be subject to disciplinary action in accordance with the Brunswick County Personnel Policy and may be held personally responsible for obligations incurred as set forth in N.C.G.S. 153-28

**Adopted this 16th day of April, 2018.**

**BRUNSWICK COUNTY BOARD OF COMMISSIONERS**

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**Frank L. Williams, Chairman**  
**Board of Commissioners**

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**Andrea White**  
**Clerk to the Board of Commissioners**

	Budgetary Appropriation Required	Approval Level County	Type of Competition	County Attorney Approval of Contract or Agreement	Finance Officer Pre-audit	Assistant County Manager Approval of Bid Process	County Issued Purchase Order	Documentation of Bids/Informal Quotes
Construction or Repair \$500,000 or more	Yes	Commissioners	Formal Bids	Yes	Yes	Yes	Yes	Finance
Federally funded construction or or Repair \$150,000 to \$499,999	Yes	County Commissioners	Formal Bids	Yes	Yes	Yes	Yes	Finance
Non-Federally funded construction or or Repair \$150,000 to \$499,999	Yes	County Commissioners	3 Informal Quotes	Yes	Yes	Yes	Yes	Finance
Purchases, services or lease-purchase of apparatus, supplies, materials or equipment requiring expenditure of \$90,000 or more	Yes	County Commissioners	Formal Bids	Yes	Yes	Yes	Yes	Finance
Construction or Repair \$30,000 to \$499,999	Yes	County Commissioners	3 Informal Quotes	Yes	Yes	Yes	Yes	Finance
Construction or Repair \$5,000 to \$29,999	Yes	Asst. County Manager	3 Informal Quotes	Yes	Yes	Yes	Yes	Finance
Purchases, services or lease-purchase of apparatus, supplies, materials or equipment requiring expenditure \$5,000 to \$89,999	Yes	Asst. County Manager	3 Informal Quotes	Yes	Yes	Yes	Yes	Finance
Construction or Repair \$1 to \$4,999	Yes	Department Head	Price Comparison	No	At Payment	No	No	Department
Purchase or lease-purchase of apparatus, supplies, materials or equipment requiring expenditure \$1 to \$4,999	Yes	Department Head	Price Comparison	No	At Payment	No	No	Department

Construction or repair work **for a project** expected to exceed \$499,999 follows the formal bidding rules outlined above for purchases of **\$500,000** or more

Construction or repair work **for a federally funded project** expected to exceed \$149,999 follows the formal bidding rules outlined above for federally funded purchases of **\$150,000 to \$499,999**

Construction or repair work **for a non-federally funded project** expected to exceed \$149,999 but less than \$499,999 follow the informal bidding rules outlined above for non-federally funded purchases of **\$150,000 to \$499,999**.

Construction or repair work **for a project** expected to exceed \$4,999 but less than \$150,000 follow the informal bidding rules outlined above for purchases of \$5,000 to \$199,999.

**Purchases** or services provided by a single vendor **within a fiscal year** expected to exceed \$89,999 follow the formal bidding rules outlined above for purchases of \$90,000 or more

Purchases or services provided by a single vendor **within a fiscal year** expected to exceed **\$4,999** but less than \$90,000 follows the informal bidding rules outlined above for purchases of \$5,000 to \$89,999

Purchases, services, construction or repair work of less than \$5,000 require the department to maintain documentation of receiving 3 price comparisons with payment submitted as a small invoice (no purchase order required)

A single purchase of \$5,000 or more may not be made on a blanket purchase order





**Brunswick County Board of Commissioners**  
**ACTION AGENDA ITEM**  
**April 16, 2018**

**From:**  
David Stanley

**Action Item # V. - 8.**  
Health and Human Services - Public Housing: Execution of  
Annual Civil Rights Certification

**Issue/Action Requested:**

Request that the Board of Commissioners review and execute the Annual Civil Rights Certification for the Public Housing Agency.

**Background/Purpose of Request:**

The Department of Housing and Urban Development (HUD) requires that each qualified public housing agency submit a Civil Rights Certification to the local HUD office annually. The form certifies that the Public Housing Agency will conform with the Title VI of the Civil Rights Act of 1964, the Fair Housing Act, section 504 of the Rehabilitation Act of 1973, and Title II of the Americans with Disabilities Act of 1990. Staff recommends the Board of Commissioners review and execute the Annual Civil Rights Certification for the Public Housing Program.

**Fiscal Impact:**

Reviewed By Director of Fiscal Operations

**Approved By County Attorney:**

Yes

**Advisory Board Recommendation:**

Not Applicable.

**County Manager's Recommendation:**

Recommend that the Board of Commissioners review and execute the Annual Civil Rights Certification for the Public Housing Agency.

**ATTACHMENTS:**

Description

- ☐ PH Civil Rights Certification 2018

**Civil Rights Certification**  
**(Qualified PHAs)**

U.S. Department of Housing and Urban Development  
Office of Public and Indian Housing  
OMB Approval No. 2577-0226  
Expires 02/29/2016

**Civil Rights Certification**

**Annual Certification and Board Resolution**

*Acting on behalf of the Board of Commissioners of the Public Housing Agency (PHA) listed below, as its Chairman or other authorized PHA official, I approve the submission of the 5-Year PHA Plan for the PHA of which this document is a part, and make the following certification and agreements with the Department of Housing and Urban Development (HUD) in connection with the submission of the public housing program of the agency and implementation thereof:*

The PHA certifies that it will carry out the public housing program of the agency in conformity with title VI of the Civil Rights Act of 1964, the Fair Housing Act, section 504 of the Rehabilitation Act of 1973, and title II of the Americans with Disabilities Act of 1990, and will affirmatively further fair housing by examining their programs or proposed programs, identifying any impediments to fair housing choice within those program, addressing those impediments in a reasonable fashion in view of the resources available and working with local jurisdictions to implement any of the jurisdiction's initiatives to affirmatively further fair housing that require the PHA's involvement and by maintaining records reflecting these analyses and actions.

\_\_\_\_\_  
PHA Name

\_\_\_\_\_  
PHA Number/HA Code

\_\_\_\_\_  
I hereby certify that all the information stated herein, as well as any information provided in the accompaniment herewith, is true and accurate. **Warning:** HUD will prosecute false claims and statements. Conviction may result in criminal and/or civil penalties. (18 U.S.C. 1001, 1010, 1012; 31 U.S.C. 3729, 3802)

\_\_\_\_\_  
Name of Authorized Official

\_\_\_\_\_  
Title

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date



**Brunswick County Board of Commissioners**  
**ACTION AGENDA ITEM**  
**April 16, 2018**

**Action Item # V. - 9.**

Operation Services - New Landfill Schedule

**From:**

Stephanie Lewis, Operation Services  
Director

**Issue/Action Requested:**

Request that the Board of Commissioners approve the recommended new schedule for the Brunswick County Landfill and start date of Monday April 30, 2018.

**Background/Purpose of Request:**

The BC Landfill has seen an increase in traffic congestion over the past few years and has received requests from commercial customers to extend the hours that the landfill is open. Currently, the landfill is open for the public from 8 am until 4 pm Monday through Saturday. Two employees currently work a flex schedule while the majority work 8 am to 4:30 pm, one employee starts work at 7:30 am in order to start serving customers by 8 am and one employee works until 5 pm to close the landfill. Frequently, commercial customers are waiting for the landfill to open and sometimes complain that the landfill closes too early.

The recommended new landfill schedule is a 10 hour work day 4 days per week that the employees would rotate. This would allow the landfill to be open to the public from 7:30 am until 5 pm Monday through Friday and 7:30 am until 12 pm on Saturday. Employees would work 7 am until 5:30 pm Monday through Friday and 7 am until 12:30 pm on Saturday. This new schedule can be accomplished within the current budget and with the same or possibly less overtime.

**Fiscal Impact:**

Reviewed By Director of Fiscal Operations

**Approved By County Attorney:**

Yes

**County Manager's Recommendation:**

Recommend that the Board of Commissioners approve the recommended new schedule for the Brunswick County Landfill and start date of Monday April 30, 2018.



**Brunswick County Board of Commissioners**  
**ACTION AGENDA ITEM**  
**April 16, 2018**

**From:**  
Mark Trull

**Action Item # V. - 10.**

Sheriff's Office - Amended School Resource Officer's Contract  
For Detective Assignment

**Issue/Action Requested:**

Request that the Board of Commissioners approve an amendment to the School Resource Officer's contract with Brunswick County Schools for the additional assignment of one detective.

**Background/Purpose of Request:**

On June 6, 2017 the Sheriff's Office and the County entered into an agreement to provide 20 School Resource Officers. In addition to the 20 SRO's provided by the Sheriff's Office, the amendment to the contract is to assign a detective the school system as well. The school system's financial obligation will increase for the remaining fiscal year with a beginning base salary plus benefits of \$66,472.

**Fiscal Impact:**

Budget Amendment Required, Reviewed By Director of Fiscal Operations

Budget amendment increases School Resource Officer Reimbursement \$27,698 for expenditure of salary and benefits remaining in the current fiscal year.

**Approved By County Attorney:**

Yes

**County Manager's Recommendation:**

Recommend that the Board of Commissioners approve an amendment to the School Resource Officer's contract with Brunswick County Schools for the additional assignment of one detective.

**ATTACHMENTS:**

Description

- ☐ Amended SRO Contract
- ☐ 20180416 Budget Amendment SRO Detective

**AMENDMENT OF  
SCHOOL RESOURCE OFFICER AGREEMENT  
FOR  
BRUNSWICK COUNTY SCHOOLS  
AND  
BRUNSWICK COUNTY SHERIFF'S OFFICE**

THIS AMENDMENT OF THE SCHOOL RESOURCE OFFICER AGREEMENT (this "Amendment") is made and entered into this \_\_\_\_ day of April 2018 by and between BRUNSWICK COUNTY SCHOOLS, THE BRUNSWICK COUNTY SHERIFF'S OFFICE, AND BRUNSWICK COUNTY.

**RECITALS**

A. The parties entered into the original School Resource Officer Agreement on June 6, 2017 (the "Agreement").

B. The parties agree that an amendment to the agreement would allow for a greater benefit to the security of Brunswick County Schools.

**AGREEMENT**

NOW, THEREFORE, in consideration of the Recitals, the mutual covenants, and agreements set forth herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties add this additional paragraph as follows:

2.8 In addition to the twenty School Resource Officers in this agreement, the Brunswick County Sheriff's Office will provide a Detective to serve Brunswick County Schools. The agreed upon rate for a detective for fiscal year 2017-2018 is \$66,472.00. The annual rate as stated in Paragraph 2.3 shall increase by the same.

EXCEPT AS HEREIN STATED, all other terms and conditions of the Agreement remain in effect.

**REMAINDER OF PAGE LEFT BLANK INTENTIONALLY**

**SIGNATURE PAGES FOLLOW**

IN WITNESS WHEREOF, this Amendment of the School Resource Officer Agreement is executed and delivered on behalf of the undersigned by their duly authorized representatives as of the date first set forth above.

By: \_\_\_\_\_  
Less Tubb, Superintendent  
Brunswick County Schools

By: \_\_\_\_\_  
Charlie Miller, Chairperson  
Brunswick County Board of Education

By: \_\_\_\_\_  
John Ingram, Sheriff  
County of Brunswick, North Carolina

By: \_\_\_\_\_  
Frank Williams, Chairperson  
Brunswick County Commissioners

This instrument has been pre-audited in the manner required by the school budget and fiscal control act.

By: \_\_\_\_\_  
Freyja Cahill, CPA, Finance Officer Brunswick County Schools

Request Info	
Type	Budget Amendment
Description	SRO Detective
Justification	Board Meeting 04/16/2018-Appropriate School Resource Officer Reimbursement for the one additional SRO-Detective for the remainder of the current fiscal year.
Originator	Tiffany Rogers

Items						
Department	Object	Dept Desc	Object Desc	Amount	Incr/Decr	Dr/Cr
104310	383960	Sheriff's Office	School Resource Officer Reimb	27698	Increase	Credit
104310	412100	Sheriff's Office	Salary and Wages-Regular	19857	Increase	Debit
104310	418100	Sheriff's Office	FICA	1519	Increase	Debit
104310	418200	Sheriff's Office	Retirement	2659	Increase	Debit
104310	418300	Sheriff's Office	Health Insurance	3555	Increase	Debit
104310	418306	Sheriff's Office	Life Insurance	42	Increase	Debit
104310	418400	Sheriff's Office	Disability and Long-Term Ins	66	Increase	Debit

Total	
Grand Total:	55396



**Brunswick County Board of Commissioners**  
**ACTION AGENDA ITEM**  
**April 16, 2018**

**Action Item # V. - 11.**

**From:** Tax Administration - April 2018 Releases  
Jeffery P Niebauer

**Issue/Action Requested:**

Request that the Board of Commissioners approve the April 2018 tax releases.

**Background/Purpose of Request:**

Approval of the tax releases for April 2018. A summary of the releases is listed below.

**County** real property release value \$688,478 (7 releases)

**Smithville** real property release value \$248,038 (5 releases)

**County** VTS March 2018 release value \$324,808 (28 releases)

**Smithville** VTS March 2018 release value \$73,668 (6 releases)

**Belville** VTS March 2018 release value \$14,500 (1 release)

**Boiling Spring Lakes** VTS March 2018 release value \$7,288 (1 release)

**Leland** VTS March 2018 release value \$68,105 (4 releases)

**Oak Island** VTS March 2018 \$64,063 (5 releases)

**Shallotte** VTS March 2018 \$20,730 (1 release)

**St James** VTS March 2018 release value \$9,925 (1 release)

**Southport** VTS March 2018 \$9,605 (1 release)

For information purposes only

**Northwest** fire district \$250 (1 release)

**Southport** fire district \$472.50 (5 releases)

**Supply** fire district \$125.00 (1 release)

**Fiscal Impact:**

Reviewed By Director of Fiscal Operations

**Approved By County Attorney:**

Yes

**County Manager's Recommendation:**

Recommend that the Board of Commissioners approve the April 2018 tax releases.

**ATTACHMENTS:**

Description

- ☐ Tax Releases for April 2018
- ☐ Motor Vehicle Release VTS April 2018 Processed March 2018 (NCDMV Tax & Tag)



▣ Fire Fee Releases for April 2018 (For information purposes only)

## Tax Releases April 2018

### Appraisal RELEASES

Release Number	Release Date	Tax Payer Name	Bill Number (Year)	Account Number	City	Parcel Number	Township	Amount Released	Value Released	Release Reason
046844	3/20/2018	HARRISON EMMA J	60849 (2017)	35578630	Brunswick County	2210004602		\$230.71-C \$19.03-SM	\$47,570.00	Improvement removed from property
046846	3/20/2018	HARRISON EMMA J	59662 (2016)	35578630	Brunswick County	2210004602		\$230.71-C \$19.03-SM	\$47,570.00	Improvement removed from property
046848	3/20/2018	HARRISON EMMA J	59176 (2015)	35578630	Brunswick County	2210004602		\$230.71-C \$19.03-SM	\$47,570.00	Improvement removed from property
046850	3/20/2018	HARRISON EMMA J	58456 (2014)	35578630	Brunswick County	2210004602		\$233.04-C \$21.07-SM	\$52,664.00	Improvement removed from property
046852	3/20/2018	HARRISON EMMA J	58058 (2013)	35578630	Brunswick County	2210004602		\$233.04-C \$21.07-SM	\$52,664.00	Improvement removed from property
046854	3/20/2018	CP BRUNSWICK LLC	32300 (2017)	10082864	Brunswick County	022GJ009		\$1526.00-C	\$314,640.00	Did not own January 1
046856	3/22/2018	POOLE RAYMOND W ETUX JANET M	111576 (2017)	54043030	Brunswick County	184NA084		\$610.13-C	\$125,800.00	Duplicate listing

## Release Category Codes

### Release Code Release Type

BHI	BALD HEAD ISLAND
BEL	BELVILLE
BSL	BOILING SPRING LAKES
BOL	BOLIVIA
CAL	CALABASH
CS	CAROLINA SHORES
CAS	CASWELL BEACH
C	COUNTY
HB	HOLDEN BEACH
INT	INTEREST
LSM	LATE LIST SMITHVILLE
LELLL	LELAND LATE LIST
LBLL	LONG BEACH LATE LIST
NAVLL	NAVASSA LATE LIST
NWLL	NORTHWEST LATE LIST
OILL	OAK ISLAND LATE LIST
OIBLL	OCEAN ISLE BEACH LATE LIST
SAD25	SAD 25

### Release Code Release Type

BHILL	BALH HEAD ISLAND LATE LIST
BELLL	BELVILLE LATE LIST
BSLLL	BOILING SPRING LAKES LATE LIST
BOLLL	BOLIVIA LATE LIST
CALLL	CALABASH LATE LIST
CSLL	CAROLINA SHORES LATE LIST
CASLL	CASWELL BEACH LATE LIST
FF	FIRE FEE
HBLL	HOLDEN BEACH LATE LIST
LL	LATE LIST PENALTY
LEL	LELAND
LB	LONG BEACH
NAV	NAVASSA
NW	NORTHWEST
OI	OAK ISLAND
OIB	OCEAN ISLE BEACH
SAD24	SAD 24
SAD27	SAD 27

## Release Category Codes

Release Code	Release Type
--------------	--------------

SAD28	SAD 28
SCLL	SANDY CREEK LATE LIST
SHA	SHALLOTTE
SM	SMITHVILLE HOSPITAL
SPLL	SOUTHPORT LATE LIST
SJ	ST JAMES
SB	SUNSET BEACH
T	TOTAL TAX
VARLL	VARNAMTOWN LATE LIST
YPLLL	YAUPON BEACH LAST LIST

Release Code	Release Type
--------------	--------------

SC	SANDY CREEK
SBSD	SE BRUNSWICK SAN DIST
SHALL	SHALLOTTE LATE LIST
SP	SOUTHPORT
SAD	SPECIAL ASSESSMENT DISTRICT
SJLL	ST JAMES LATE LIST
SBLL	SUNSET BEACH LATE LIST
VAR	VARNAMTOWN
YP	YAUPON BEACH

# VTS RELEASES PROCESSED MARCH 2018

Adjustment #	Abstract #	Name-Last, First, Middle	Tag #	Year	Make	B- Val	New Value	Diff.	City	Twp.	Override %	Override Value	Override Status	Acquisition Cost	Acquisition Year	Dep Sch	Exempt Type	Notes	Date	Code	Code Description
666702	36596583	HATCHER HANSON REGINALD	CJ29114	2015	HOME	10,184	500	9,684	14	3	%	500						HOMEMADE 8' TL ADJ TO \$500 RESIDUAL	03/06/18	15	TEC Value Issue
666043	14172203	BROWN KIM ALLEN	OKISHAG	2009	CHEV	5,700	4,275	1,425	14	3	25%	4,275	PERM					TOTALLOSS REBUILT ADJ TO 75% GOOD	03/05/18	12	High Mileage/Condition
664854	40842404	BODANI TRISTAN ANGELIE	TPP5184	2015	CHEV	19,495	-	19,495									MILITARY	HOR-MD ETS 2/18/20	03/01/18	4	Military Exempt
665327	41238665	KINSTLE CHRISTOPHER BLACKWELL	TPH3123	2014	FORD	20,730	-	20,730	22								MILITARY	HOR-FL ETS 9/17/18	03/02/18	4	Military Exempt
665363	41013497	HANCOCK JOHN ROBERT	CH59834	2003	MAGT	500	-	500	31								MILITARY	HOR-NJ	03/06/18	4	Military Exempt
665368	40886891	WESSELL ARTHUR EDWARD	CK15168	2016	CAON	10,660	1,055	9,605	21	3				\$ 1,199	2015	B-20		ADJ TO BOS LOWES RECEIPT 2015=\$1,199	03/06/18	15	TEC Value Issue
662382	36533609	FETTA THOMAS MICHAEL	CJ55405	2015	WELS	10,720	1,756	8,964	14	3				\$ 1,995	2015	B-20		ADJ TO BOS 2015=\$1,995	03/06/18	15	TEC Value Issue
664896	40424602	SOMERSETT DONALD KEVIN	ALD1965	2018	CHRY	43,290	33,326	9,964				33,326						ADJ TO RMV SALES 2017=\$35,080 DEP @5%	03/06/18	15	TEC Value Issue
661563	41095670	BRUNSWICK COUNTY ECONOMIC D	TPP6838	2012	TOYT	8,200	-	8,200									CHARITABLE		03/06/18	17	Charitable
661561	41095554	BRUNSWICK COUNTY ECONOMIC D	TPP6837	2015	CHEV	27,900	-	27,900									CHARITABLE		03/02/18	17	Charitable
665349	4725941	PARKER KRISTA LEANN	TPP6796	2009	TOYT	7,690	3,845	3,845										ODOMETER RECORDED ON TITLE 308,277	03/06/18	12	High Mileage/Condition
667254	40624321	IVY GEORGE WAYNE	CK15582	2013	HOME	7,310	851	6,459				851						OVERVALUED UL TL (PICS ATTACHED)	03/07/18	15	TEC Value Issue
667089	36761520	KINDBERG PIETER GORDON	DDL1202	2015	CHEV	19,830	-	19,830	14	3							MILITARY	HOR-OH	03/07/18	4	Military Exempt
668381	41412462	PARSONS JOHN RICHARD	CK34579	2016	STAC	10,660	500	10,160				500						ADJ TO BOS 2018=\$500	03/12/18	15	TEC Value Issue
668694	40959358	ROBERTS MICHAEL JOSEPH	PHX6538	2011	BMW	3,500	-	3,500									MILITARY	HOR-WA	03/12/18	4	Military Exempt
668843	41442670	GREEN LEWIS CUMAG	EAK8050	2012	HOND	14,500	-	14,500	25								MILITARY	HOR-CA	03/13/18	4	Military Exempt
673444	41608335	BLAIR STEPHANIE LYNN	DAISY22	2016	HOND	38,870	-	38,870	31								MILITARY	HOR-VA	03/26/18	4	Military Exempt
671940	30442791	ROBERTSON REVOCABLE LIVING TR	PCF8186	2006	TOYT	6,780	5,085	1,695	31		75%	5,085	PERM					TOTALLOSS REBUILT ADJ TO 75% GOOD	03/21/18	12	High Mileage/Condition
671870	41372310	STANLEY JOHN EDWARD	CK34578	2018	HOME	14,820	1,350	13,470				1,350						8X12 HOMEMADE TL ADJ TO \$100 PER FT AND \$150 PER AXLE	03/28/18	15	TEC Value Issue
671922	41524865	CATON RAYMOND	CK15185	2014	CAON	8,170	882	7,288	20					\$ 1,038	2014	B-20		ADJ TO BOS 2014=\$1,038	03/28/18	15	TEC Value Issue
669834	39970678	PILOTO JESSE BO	TPM9301	2003	FORD	3,970	-	3,970									MILITARY	HOR-FL	03/28/18	4	Military Exempt
674067	40464627	MURRAY TODD L	DDL1134	2017	CHEV	27,040	-	27,040	31								MILITARY	HOR-NY	03/28/18	4	Military Exempt
670814	40651083	PILOTO JESSE BO	PCL4179	2011	JEEP	16,610	-	16,610									MILITARY	HOR-FL	03/28/18	4	Military Exempt
670818	41387035	LAWS MARGARET ELIZABETH	PHX7478	2008	HYUN	7,320	6,149	1,171										STATE INSPECTION MILEAGE 177,741	03/28/18	12	High Mileage/Condition
670823	30457341	IDOL MICHAEL PAGUE	CH59516	2005	KAUF	3,231	513	2,718				513						UL TL ADJ \$100 PER FT AND \$150 PER AXLE DEP @5%	03/28/18	15	TEC Value Issue
670831	41018710	DEW PAMELA WATKINS	ABP9066	2011	ACURA	19,880	16,750	3,130				16,750						BOS 2018 =\$16,750	03/28/18	1	Adjusted per Purchase Price
675108	41458614	SEYLER JOSHUA LEONARD	CK34585	2016	CONT	10,660	735	9,925	29					\$ 799	2016	B-20		ADJ TO BOS	03/29/18	15	TEC Value Issue
675183	34986431	NISKI ADAM RICHARD	BKN2788	2015	TOYT	24,160	-	24,160	14	3							MILITARY	HOR-NV	03/29/18	4	Military Exempt

## APRIL 2018 Fire Fee RELEASES

Release Number	Release Date	Tax Payer Name	Bill Number (Year)	Account Number	City	Parcel Number	Township	Amount Released	Value Released	Release Reason
046845	3/20/2018	HARRISON EMMA J	60849 (2017)	35578630	Brunswick County	2210004602	SMITHVILLE	\$112.50-SPF	\$0.00	Improvement removed from property
046847	3/20/2018	HARRISON EMMA J	59662 (2016)	35578630	Brunswick County	2210004602	SMITHVILLE	\$90.00-SPF	\$0.00	Improvement removed from property
046849	3/20/2018	HARRISON EMMA J	59176 (2015)	35578630	Brunswick County	2210004602	SMITHVILLE	\$90.00-SPF	\$0.00	Improvement removed from property
046851	3/20/2018	HARRISON EMMA J	58456 (2014)	35578630	Brunswick County	2210004602	SMITHVILLE	\$90.00-SPF	\$0.00	Improvement removed from property
046853	3/20/2018	HARRISON EMMA J	58058 (2013)	35578630	Brunswick County	2210004602	SMITHVILLE	\$90.00-SPF	\$0.00	Improvement removed from property
046855	3/20/2018	CP BRUNSWICK LLC	32300 (2017)	10082864	Brunswick County	022GJ009	TOWN CREEK	\$250.00-NWF	\$0.00	Did not own January 1
046857	3/22/2018	POOLE RAYMOND W ETUX JANET M	111576 (2017)	54043030	Brunswick County	184NA084	LOCKWOOD FOLLY	\$125.00-SUF	\$0.00	Duplicate listing

## Release Category Codes

### Release Code Release Type

BHI	BALD HEAD ISLAND
BEL	BELVILLE
BSL	BOILING SPRING LAKES
BOL	BOLIVIA
CAL	CALABASH
CS	CAROLINA SHORES
CAS	CASWELL BEACH
C	COUNTY
HB	HOLDEN BEACH
INT	INTEREST
LSM	LATE LIST SMITHVILLE
LELL	LELAND LATE LIST
LBLL	LONG BEACH LATE LIST
NAVLL	NAVASSA LATE LIST
NWLL	NORTHWEST LATE LIST
OILL	OAK ISLAND LATE LIST
OIBLL	OCEAN ISLE BEACH LATE LIST
SAD25	SAD 25

### Release Code Release Type

BHILL	BALH HEAD ISLAND LATE LIST
BELLL	BELVILLE LATE LIST
BSLLL	BOILING SPRING LAKES LATE LIST
BOLLL	BOLIVIA LATE LIST
CALLL	CALABASH LATE LIST
CSLL	CAROLINA SHORES LATE LIST
CASLL	CASWELL BEACH LATE LIST
FF	FIRE FEE
HBLL	HOLDEN BEACH LATE LIST
LL	LATE LIST PENALTY
LEL	LELAND
LB	LONG BEACH
NAV	NAVASSA
NW	NORTHWEST
OI	OAK ISLAND
OIB	OCEAN ISLE BEACH
SAD24	SAD 24
SAD27	SAD 27

## Release Category Codes

Release Code	Release Type
--------------	--------------

SAD28	SAD 28
SCLL	SANDY CREEK LATE LIST
SHA	SHALLOTTE
SM	SMITHVILLE HOSPITAL
SPLL	SOUTHPORT LATE LIST
SJ	ST JAMES
SB	SUNSET BEACH
T	TOTAL TAX
VARLL	VARNAMTOWN LATE LIST
YPLLL	YAUPON BEACH LAST LIST

Release Code	Release Type
--------------	--------------

SC	SANDY CREEK
SBSD	SE BRUNSWICK SAN DIST
SHALL	SHALLOTTE LATE LIST
SP	SOUTHPORT
SAD	SPECIAL ASSESSMENT DISTRICT
SJLL	ST JAMES LATE LIST
SBLL	SUNSET BEACH LATE LIST
VAR	VARNAMTOWN
YP	YAUPON BEACH





**Brunswick County Board of Commissioners**  
**ACTION AGENDA ITEM**  
**April 16, 2018**

**From:**  
John Nichols, P.E.

**Action Item # V. - 12.**

Utilities - NCDOT Infrastructure Agreement Ocean Isle Beach Roundabout Project

**Issue/Action Requested:**

Request that the Board of Commissioners approve the infrastructure agreement with the North Carolina Department of Transportation (NCDOT), after review by County Legal, in the amount of \$139,050 for utility work completed as part of the NCDOT Ocean Isle Beach Roundabout Roadway Project.

**Background/Purpose of Request:**

In the spring of 2017, Brunswick County staff became aware of an NCDOT roadway project in Ocean Isle Beach that was coincident with a planned force main relocation project by Brunswick County the following year. To avoid a situation whereby the NCDOT would build the roadway project and the County would then relocate a force main the following year and impact the newly constructed roadway, Brunswick County staff and NCDOT staff worked together to include the force main relocations within the NCDOT project. The work was competitively bid and the total cost to the County after completion of the project is \$139,050. The actual costs are higher than the \$115,000 previously estimated in June 2017 for design and construction prior to the project being bid. Brunswick County staff recommends entering into an agreement with the NCDOT to pay for County infrastructure in the amount of \$139,050.

**Fiscal Impact:**

Budget Amendment Required, Pre-Audit Certification Required, Reviewed By Director of Fiscal Operations  
Budget amendment appropriates an additional \$24,050 in Reimbursement Revenue for project expenditures.

**Approved By County Attorney:**

Yes

**Advisory Board Recommendation:**

Not Applicable

**County Manager's Recommendation:**

Recommend that the Board of Commissioners approve the infrastructure agreement with the North Carolina Department of Transportation (NCDOT), after review by County Legal, in the amount of \$139,050 for utility work completed as part of the NCDOT Ocean Isle Beach Roundabout Roadway Project.

**ATTACHMENTS:**

Description

- ☐ Utilities - Utility Construction Agreement NCDOT - Attach 1
- ☐ 20180416 Budget Amendment NCDOT OIB Roadway Project

NORTH CAROLINA  
BRUNSWICK COUNTY

**UTILITY CONSTRUCTION AGREEMENT (UCA)**

DATE: 2/20/2018

NORTH CAROLINA DEPARTMENT OF  
TRANSPORTATION

Project: SS-4903BR

AND

WBS Elements: 44315.3.1

BRUNSWICK COUNTY

THIS AGREEMENT is made and entered into on the last date executed below, by and between the North Carolina Department of Transportation, an agency of the State of North Carolina, hereinafter referred to as the "Department" and the Brunswick County, hereinafter referred to as the "County";

**WITNESSETH:**

WHEREAS, the Department has prepared and adopted plans to make certain street and highway improvements under Project SS-4903BR, in Brunswick County, said plans consists of Highway 179 at Highway 904/ SR 1184 in Ocean Isle Beach; Brunswick County; said project having a right-of-way width as shown on the project plans on file with the Department's office in Raleigh, North Carolina; and,

WHEREAS, the parties hereto wish to enter into an agreement for certain utility work to be performed by the Department's construction contractor with full reimbursement by the County for the costs thereof as hereinafter set out.

NOW, THEREFORE, it is agreed as follows:

1. The Department shall place provisions in the construction contract for Project SS-4903BR Brunswick County, for the contractor to adjust and relocate sewer lines. Said work shall be accomplished in accordance with project special provisions attached hereto as Exhibit "A", cost estimate attached hereto as Exhibit "B" and the plan sheets attached hereto as Exhibit "C".
2. The County shall be responsible for sewer lines cost as shown on the attached Exhibit "C". The estimated cost to the County is \$139,050.00 as shown on the attached Exhibit "B". It is understood by both parties that this is an estimated cost and is subject to change. The County shall reimburse the Department for said costs as follows:

- A. Upon completion of the highway work, the Department shall submit an itemized invoice to the County for costs incurred. Billing will be based upon the actual bid prices and actual quantities used.
  - B. Reimbursement shall be made by the County in one final payment within sixty (60) days of said invoice.
  - C. If the County does not pay said invoice within sixty (60) days of the date of the invoice, the Department shall charge interest on any unpaid balance at a variable rate of the prime plus (1%) in accordance with G.S. 136-27.3.
  - D. Said interest rate shall be set upon final execution of the Agreement by the Department. The County will be notified of the set interest rate by the Department's approval letter upon receipt of the fully executed agreement.
  - E. Any cost incurred due to additional utility work requested by the County after award of the construction contract, shall be solely the responsibility of the County. The County shall reimburse the Department 100% of the additional utility cost.
3. Upon the satisfactory completion of the relocations and adjustments of the utility lines covered under this Agreement, the County shall assume normal maintenance operations to the said utility lines. Upon completion of the construction of the highway project, the County shall release the Department from any and all claims for damages in connection with adjustments made to its utility lines; and, further, the County shall release the Department of any future responsibility for the cost of maintenance to said utility lines. Said releases shall be deemed to be given by the County upon completion of construction of the project and its acceptance by the Department from its contractor unless the County notifies the Department, in writing, to the contrary prior to the Department's acceptance of the project.
4. It is further agreed that the following provisions shall apply regarding the utilities covered in this Agreement.
- A. The County obligates itself to service and to maintain its facilities to be retained and installed over and along the highway within the Department's right-of-way limits in accordance with the mandate of the North Carolina General Statutes and such other laws, rules, and regulations as have been or may be validly enacted or adopted, now or hereafter.

- B. If at any time the Department shall require the removal of or changes in the location of the encroaching facilities which are being relocated at the County's expense, the County binds itself, its successors and assigns, to promptly remove or alter said facilities, in order to conform to the said requirement (if applicable per G.S. 136-27.1), without any cost to the Department.
5. By Executive Order 24, issued by Governor Perdue, and N.C. G.S. § 133-32, it is unlawful for any vendor or contractor ( i.e. architect, bidder, contractor, construction manager, design professional, engineer, landlord, offeror, seller, subcontractor, supplier, or vendor), to make gifts or to give favors to any State employee of the Governor's Cabinet Agencies (i.e., Administration, Commerce, Correction, Crime Control and Public Safety, Cultural Resources, Environment and Natural Resources, Health and Human Services, Juvenile Justice and Delinquency Prevention, Revenue, Transportation, and the Office of the Governor).

IN WITNESS WHEREOF, this Agreement has been executed, in duplicate, the day and year heretofore set out, on the part of the Department and the County by authority duly given.

L.S. ATTEST:

BRUNSWICK COUNTY

BY: \_\_\_\_\_ BY: \_\_\_\_\_

TITLE: \_\_\_\_\_ TITLE: Chairman

DATE: \_\_\_\_\_

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

Approved by \_\_\_\_\_ of the local governing body of the Brunswick County

as attested to by the signature of Clerk of said governing body on \_\_\_\_\_ (Date)

This instrument has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act.

(SEAL)

\_\_\_\_\_  
(FINANCE OFFICER)

Federal Tax Identification Number

\_\_\_\_\_

Remittance Address:

Brunswick County

\_\_\_\_\_

\_\_\_\_\_

DEPARTMENT OF TRANSPORTATION

BY: \_\_\_\_\_  
(CHIEF ENGINEER)

DATE: \_\_\_\_\_

APPROVED BY BOARD OF TRANSPORTATION ITEM O: \_\_\_\_\_ (Date)

Project: SS-4903BR

UC-1

County: Brunswick

PROJECT SPECIAL PROVISIONS  
Utility Construction



3220 Glen Royal Road  
Raleigh, NC 27617

5/31/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
--

**Revise the 2012 Standard Specifications as follows:**

**Page 10-58, Sub-article 1036-1 General**

add the following sentence:

All materials in contact with potable water shall be in conformance with Section 1417 of the Safe Drinking Water Act.

**Page 15-1, Sub-article 1500-2 Cooperation with the Utility Owner, paragraph 2:**

add the following sentences:

The utility owner is Brunswick County Public Utilities. The contact person is John Nichols and he can be reached by phone at 910-253-2653.

**Page 15-2, Sub-article 1500-9 Placing Pipelines into Service**

add the following sentence:

Obtain approval from the NCDENR-Public Water Supply Section prior to placing a new water line into service. Use backflow prevention assemblies for temporary connections to isolate new water lines from existing water line.

**Page 15-6, Sub-article 1510-3 (B), Testing and Sterilization**

change the allowable leakage formula to:

$$W = LD\sqrt{P} \div 148,000$$

**Page 15-6, Sub-article 1510-3 (B), Testing and Sterilization, sixth paragraph:**

Replace the paragraph with the following:

Sterilize water lines in accordance with Section 1003 of The Rules Governing Public Water supply and AWWA C651 Section 4.4.3, the Continuous Feed Method. Provide a chlorine

solution with between 50 parts per million and 100 parts per million in the initial feed. If the chlorine level drops below 10 parts per million during a 24 hour period, then flush, refill with fresh chlorine solution, and repeat for 24 hours. Provide certified bacteriological and contaminant test results from a state-approved or state-certified laboratory. Operate all valves and controls to assure thorough sterilization.

**Page 15-6, Sub-article 1510-3 (B), Testing and Sterilization, seventh paragraph:**

delete the words “may be performed concurrently or consecutively.”  
and replace with “shall be performed consecutively.”

**Page 15-7, sub-article 1515-2 Materials,**

replace paragraph beginning “Double check valves...” with the following:

Double Check valves (DCV) and Reduced Pressure Zone principal (RPZ) backflow prevention assemblies shall be listed on the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research list of approved backflow devices.

**Page 15-7, Article 1510-4 MEASUREMENT AND PAYMENT,** add the following paragraph after line 7:

The quantity of *Ductile Iron Water Pipe Fittings* will be measured and paid per pound based on the published weights for ductile iron fittings, exclusive of the weights of any accessories, as listed in the “DI Fittings Weight Chart” located at the NCDOT Utilities web site. If the Contractor elects to use compact ductile iron water pipe fittings, measurement will be based on the weight of standard size ductile iron water pipe fittings. Any fitting not listed will be measured based on the published weights for ductile iron fittings listed in ANSI/AWWA C-110/A21.10. This is limited to pressure pipe 4 inches or larger.

**Page 15-7, Article 1510-4 MEASUREMENT AND PAYMENT,** add the following pay item:

<b>Pay Item</b>	<b>Pay Unit</b>
Ductile Iron Water Pipe Fittings	Pound

**Page 15-9, Article 1515-4 MEASUREMENT AND PAYMENT,** line 28, delete “fittings”.

**Page 15-11, Sub-article 1520-3(A)(2) Testing, line 5,**

replace the second paragraph with the following:

Test all 24" and smaller gravity sewer lines for leakage using infiltration, exfiltration, or air test. Perform visual inspection on gravity sewer lines larger than 24". Perform line and grade testing and deflection testing on all gravity sewer lines.

**Page 15-13, Article 1520-4 MEASUREMENT AND PAYMENT,** add the following paragraph after line 2:

The quantity of *Ductile Iron Sewer Pipe Fittings* will be measured and paid per pound based on the published weights for ductile iron fittings, exclusive of the weights of any accessories, as listed

in the “DI Fittings Weight Chart” located at the NCDOT Utilities web site. If the Contractor elects to use compact ductile iron sewer pipe fittings, measurement will be based on the weight of standard size ductile iron sewer pipe fittings. Any fitting not listed will be measured based on the published weights for ductile iron fittings listed in ANSI/AWWA C-110/A21.10. This is limited to pressure pipe 4 inches or larger.

**Page 15-13, Article 1510-4 MEASUREMENT AND PAYMENT**, add the following pay item:

**Pay Item**

Ductile Iron Sewer Pipe Fittings

**Pay Unit**

Pound



Contract Item Sheets For DC00194

Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
--------	------------	-------	-------------	---------------	----------------	------------

0098	5558000000-E	1515	12" VALVE	3	EA	
0099	5589200000-E	1515	2" AIR RELEASE VALVE	1	EA	
0100	5709600000-E	1520	12" FORCE MAIN SEWER	500	LF	
0101	5769000000-E	SP	DUCTILE IRON SEWER PIPE FITTINGS	2,595	LB	
0102	5775000000-E	1525	4' DIA UTILITY MANHOLE	1	EA	
0103	5804000000-E	1530	ABANDON 12" UTILITY PIPE	420	LF	

Total: \$139,050.00

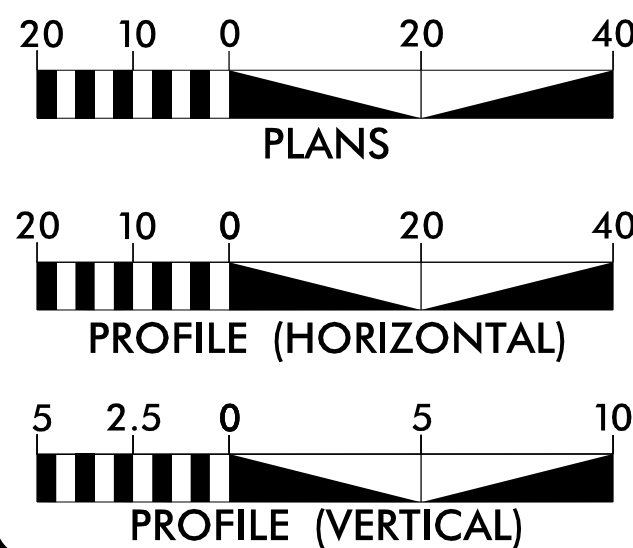
4/26/2017  
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-USERNAME-

09/08/99

CONTRACT: DC00134

TIP PROJECT: SS-4903BR

GRAPHIC SCALES



INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	DETAILS
UC-4	UTILITY CONSTRUCTION SHEETS
UC-5	PROFILE SHEETS

WATER AND SEWER OWNERS ON PROJECT

- (A) WATER: TOWN OF OCEAN ISLE BEACH, JUSTIN WHITESIDE, 910-579-3469  
(B) WATER: BRUNSWICK COUNTY, JOHN NICHOLS, 910-253-2653  
(C) SEWER: BRUNSWICK COUNTY, JOHN NICHOLS, 910-253-2653

PREPARED IN THE OFFICE OF

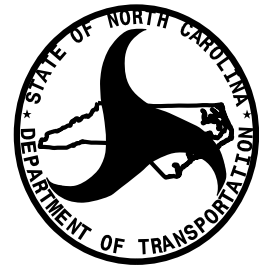


3220 GLEN ROYAL RD. RALEIGH, NC 27617  
TELE 919.788.0224 FAX 919.788.0232  
NC LICENSE #P-0189

ERIC TWEED, P.E. CONSULTANT CONTACT #1  
BRIAN WILES, P.E. CONSULTANT CONTACT #2  
MARY JO LEE, P.E. CONSULTANT CONTACT #3

SEAL

4/26/2017



DIVISION OF HIGHWAYS  
UTILITIES UNIT  
1555 MAIL SERVICES CENTER  
RALEIGH NC 27699-1555  
PHONE (919) 707-6690  
FAX (919) 250-4151

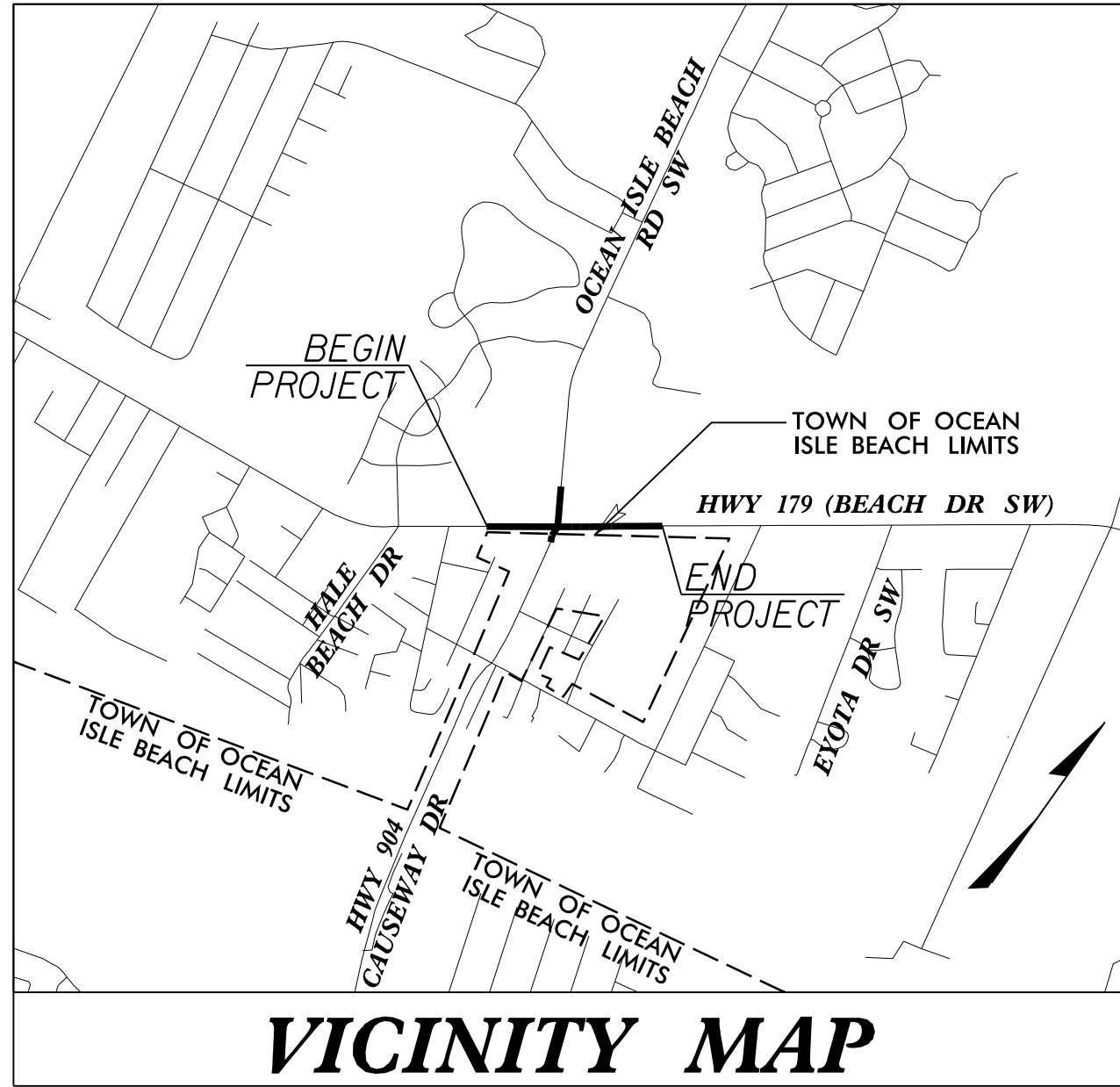
DONNA JACKSON, P.E. UTILITIES REGIONAL ENGINEER  
BO HEMPHILL, P.E. UTILITIES ENGINEER  
ED REAMS, P.E. UTILITIES AREA COORDINATOR  
STEVE DAVIS, P.E. UTILITIES COORDINATOR

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

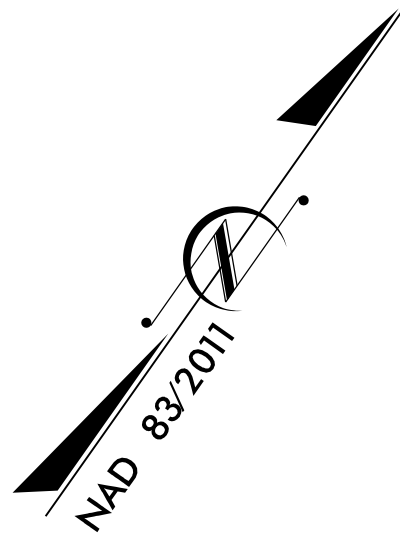
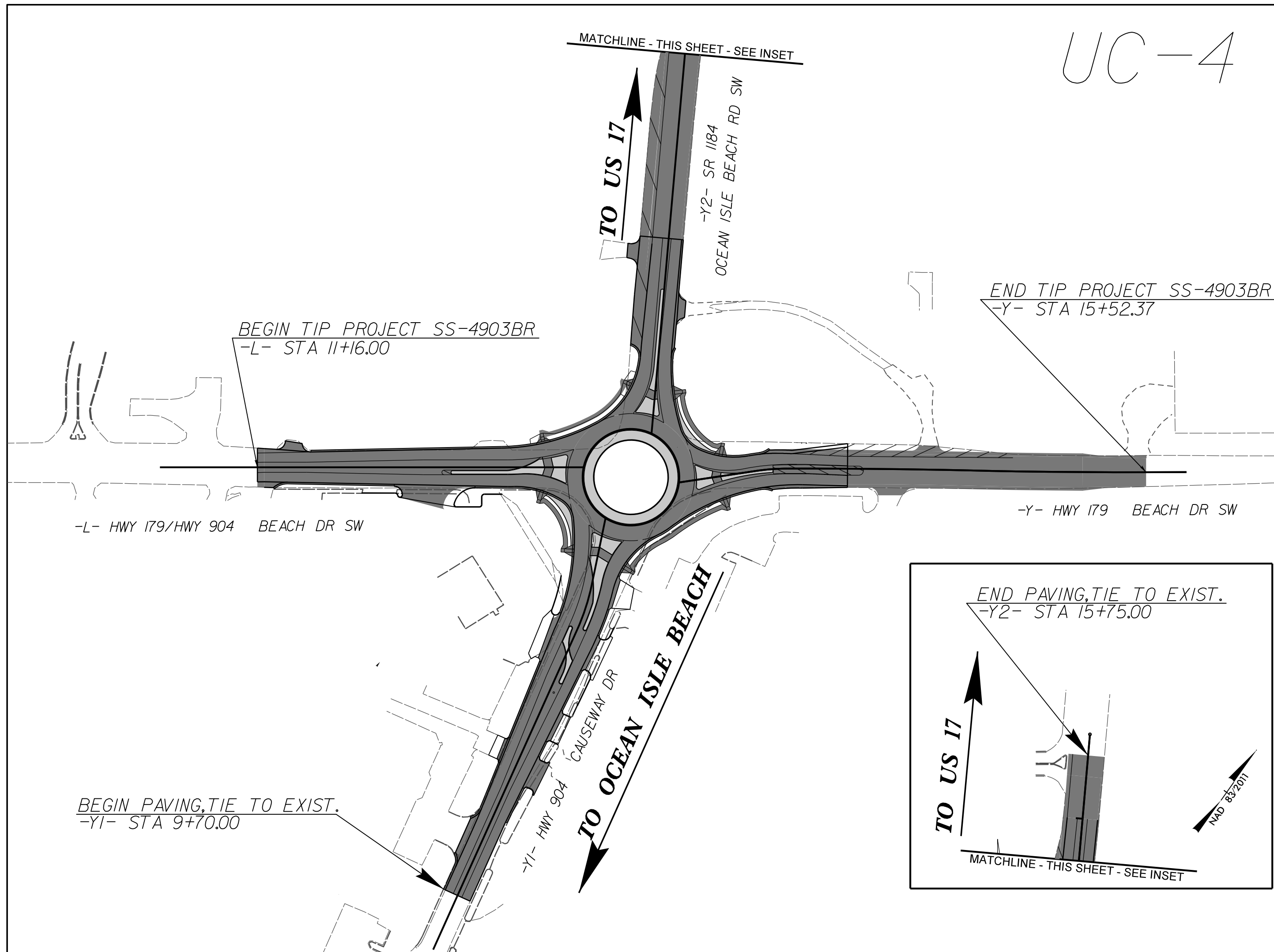
UTILITY CONSTRUCTION PLANS  
BRUNSWICK COUNTY

LOCATION: HWY 179 (BEACH DR) AT HWY 904 (CAUSEWAY DR) /  
SR 1184 (OCEAN ISLE BEACH RD SW) IN  
OCEAN ISLE BEACH, NC

TYPE OF WORK: WATER LINE AND FORCEMAIN RELOCATION



NOTE: THIS PROJECT IS PARTIALLY WITHIN THE TOWN  
OF OCEAN ISLE BEACH.



TO SHALLOTTE

TO SUNSET BEACH

DOCUMENT NOT CONSIDERED FINAL  
UNTIL ALL SIGNATURES ARE COMPLETED

# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

# UTILITIES PLAN SHEET SYMBOLS









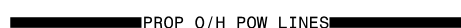



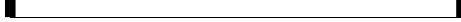

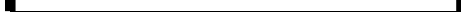
## PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	
11¼ Degree Bend	
22½ Degree Bend	
45 Degree Bend	
90 Degree Bend	
Plug	
Tee	
Cross	
Reducer	
Gate Valve	
Butterfly Valve	
Tapping Valve	
Line Stop	
Line Stop with Bypass	
Blow Off	
Fire Hydrant	
Relocate Fire Hydrant	
Remove Fire Hydrant	
Water Meter	
Relocate Water Meter	
Remove Water Meter	
Water Pump Station	
RPZ Backflow Preventer	
DCV Backflow Preventer	
Relocate RPZ Backflow Preventer	
Relocate DCV Backflow Preventer	

## PROPOSED SEWER SYMBOLS

Gravity Sewer Line ..... 12" SS  
(Sized as Shown)  
Force Main Sewer Line ..... 12" FMS  
(Sized as Shown)  
Manhole .....  
(Sized per Note)  
Sewer Pump Station ..... PS(SS)

## PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole .....		Thrust Block .....	
Telephone Pole .....		Air Release Valve .....	
Joint Use Pole .....		Utility Vault .....	
Telephone Pedestal .....		Concrete Pier .....	
Utility Line by Others (Type as Shown) .....		Steel Pier .....	
Trenchless Installation .....		Plan Note .....	
Encasement by Open Cut .....		Pay Item Note .....	
Encasement .....			

## EXISTING UTILITIES SYMBOLS

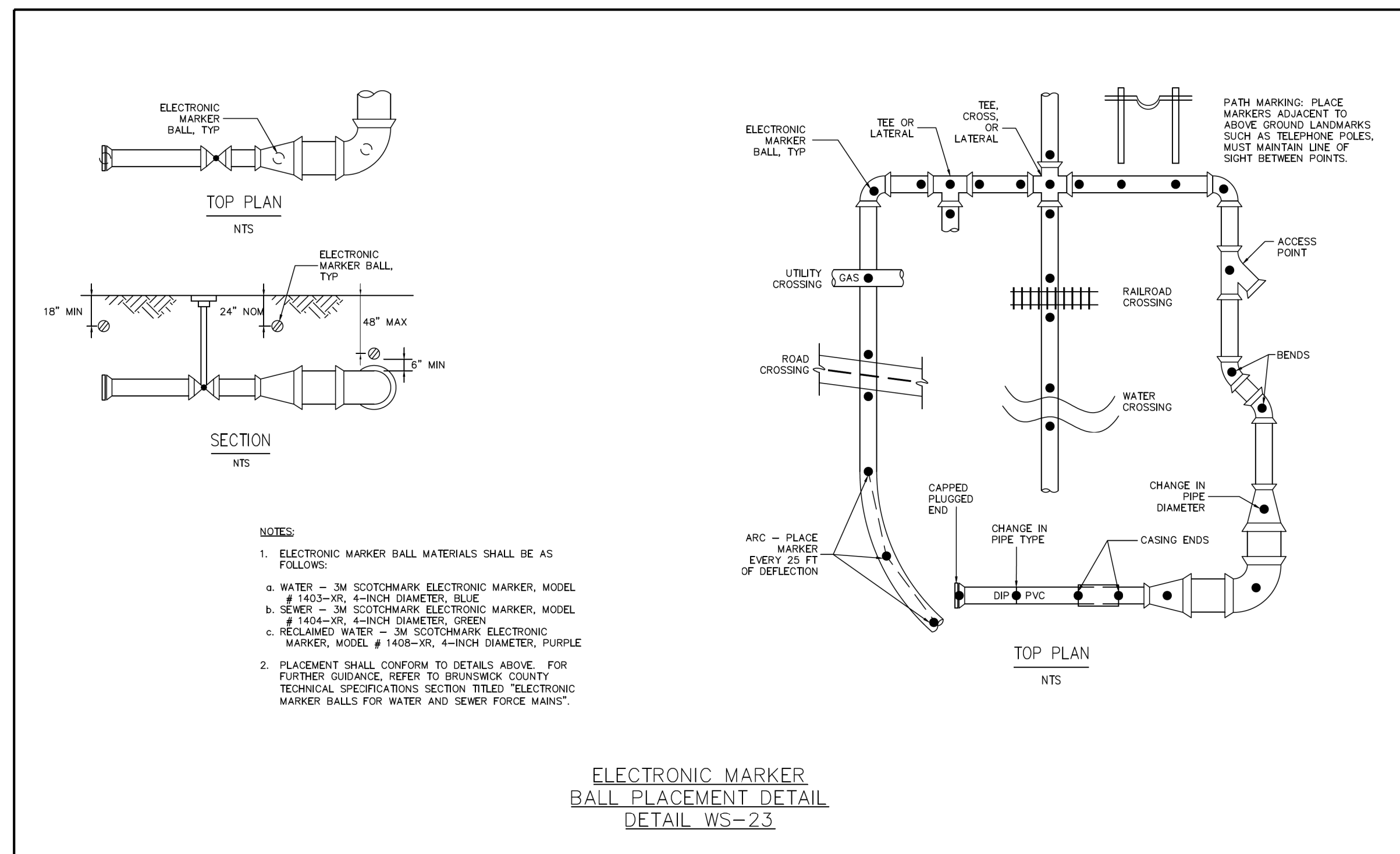
Object	Symbol	Object	Symbol
Power Pole	●	*Underground Power Line	_____
Telephone Pole	●	*Underground Telephone Cable	_____
Joint Use Pole	●	*Underground Telephone Conduit	_____
Utility Pole	●	*Underground Fiber Optics Telephone Cable	_____
Utility Pole with Base	□	*Underground TV Cable	_____
H-Frame Pole	●—●	*Underground Fiber Optics TV Cable	_____
Power Transmission Line Tower	⊠	*Underground Gas Pipeline	_____
Water Manhole	⊗	Aboveground Gas Pipeline	_____ A/G Gas
Power Manhole	⊙	*Underground Water Line	_____
Telephone Manhole	①	Aboveground Water Line	_____ A/G Water
Sanitary Sewer Manhole	⊕	*Underground Gravity Sanitary Sewer Line	_____ ss
Hand Hole for Cable	⊠	Aboveground Gravity Sanitary Sewer Line	_____ A/G Sanitary Sewer
Power Transformer	⊠	*Underground SS Forced Main Line	_____
Telephone Pedestal	⊠	Underground Unknown Utility Line	_____
CATV Pedestal	⊠	SUE Test Hole	⊠
Gas Valve	◇	Water Meter	⊠
Gas Meter	◇	Water Valve	⊗
Located Miscellaneous Utility Object	○	Fire Hydrant	⊠
Abandoned According to Utility Records	AATUR	Sanitary Sewer Cleanout	⊕

\*For Existing Utilities

Utility Line Drawn from Record ..... \_\_\_\_\_  
(Type as Shown)

Designated Utility Line ..... \_\_\_\_\_  
(Type as Shown)





5/14/99

6/27/2017 UC-ProJ\SS-4903BR\ut\_rdy4\_UC04A.dgn  
CH ENGINEERING

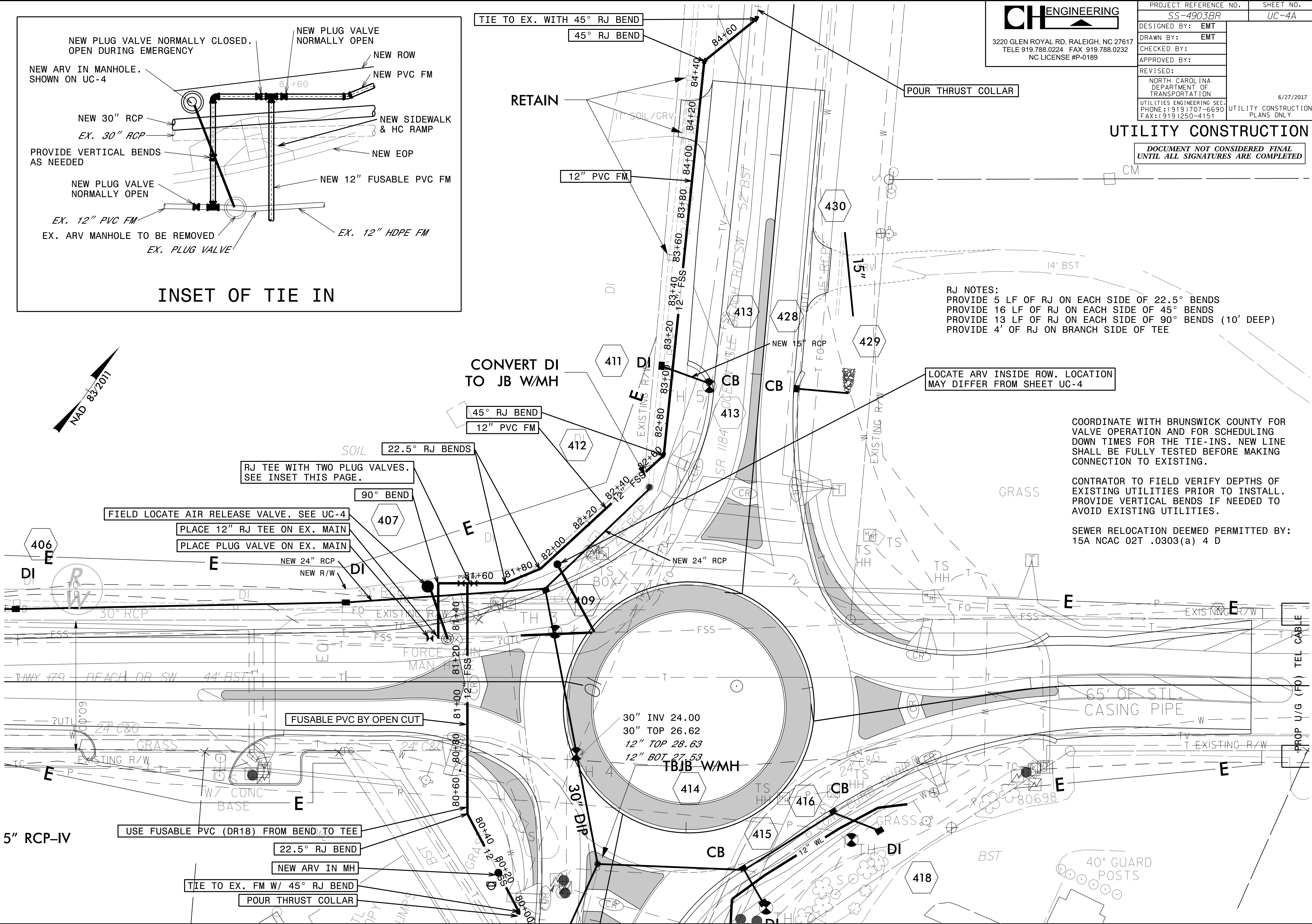
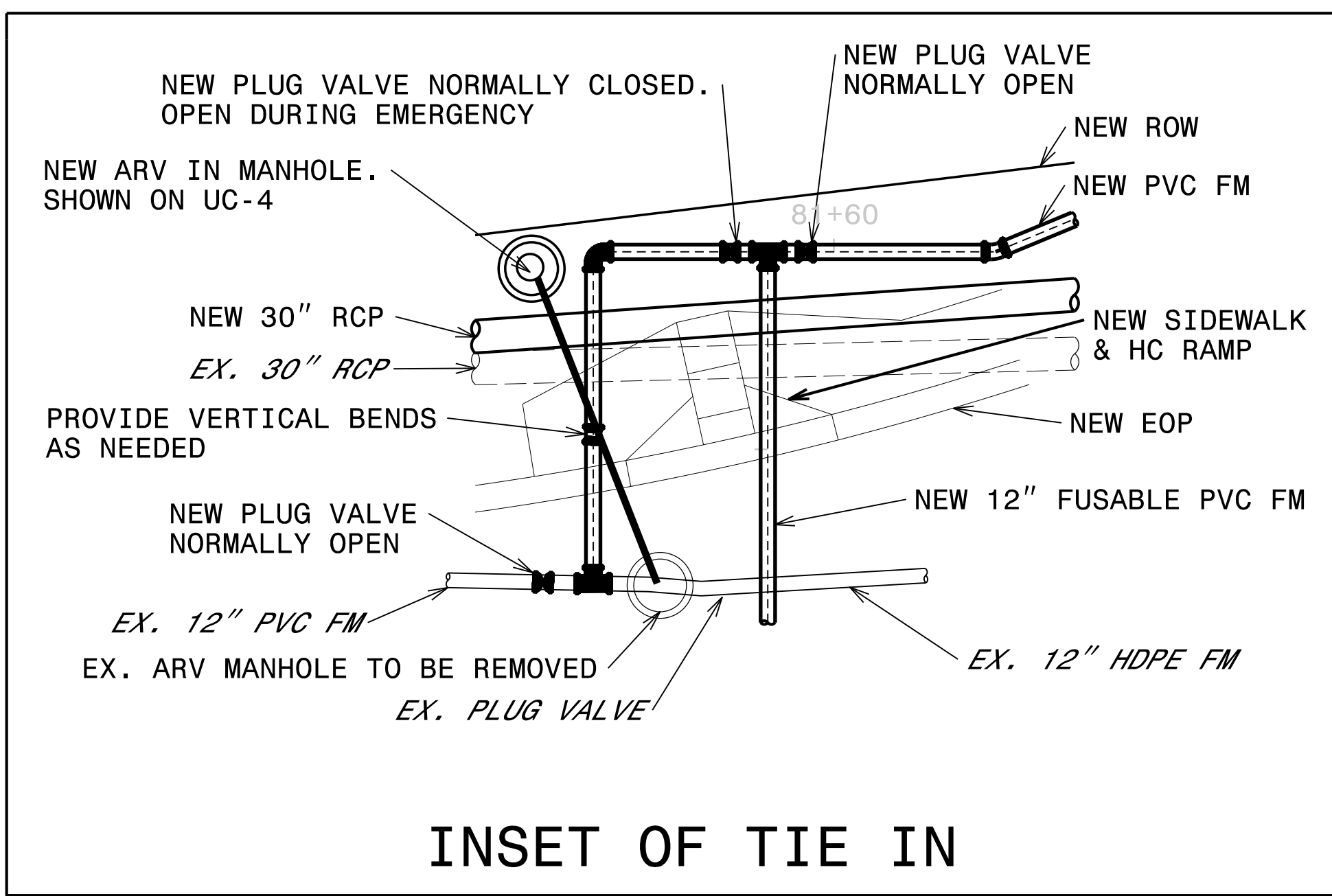


3220 GLEN ROYAL RD. RALEIGH, NC 27617  
TELE 919.788.0224 FAX 919.788.0232  
NC LICENSE #P-0189

PROJECT REFERENCE NO.	SHEET NO.
SS-4903BR	UC-4A
DESIGNED BY: EMT	
DRAWN BY: EMT	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	6/27/2017
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

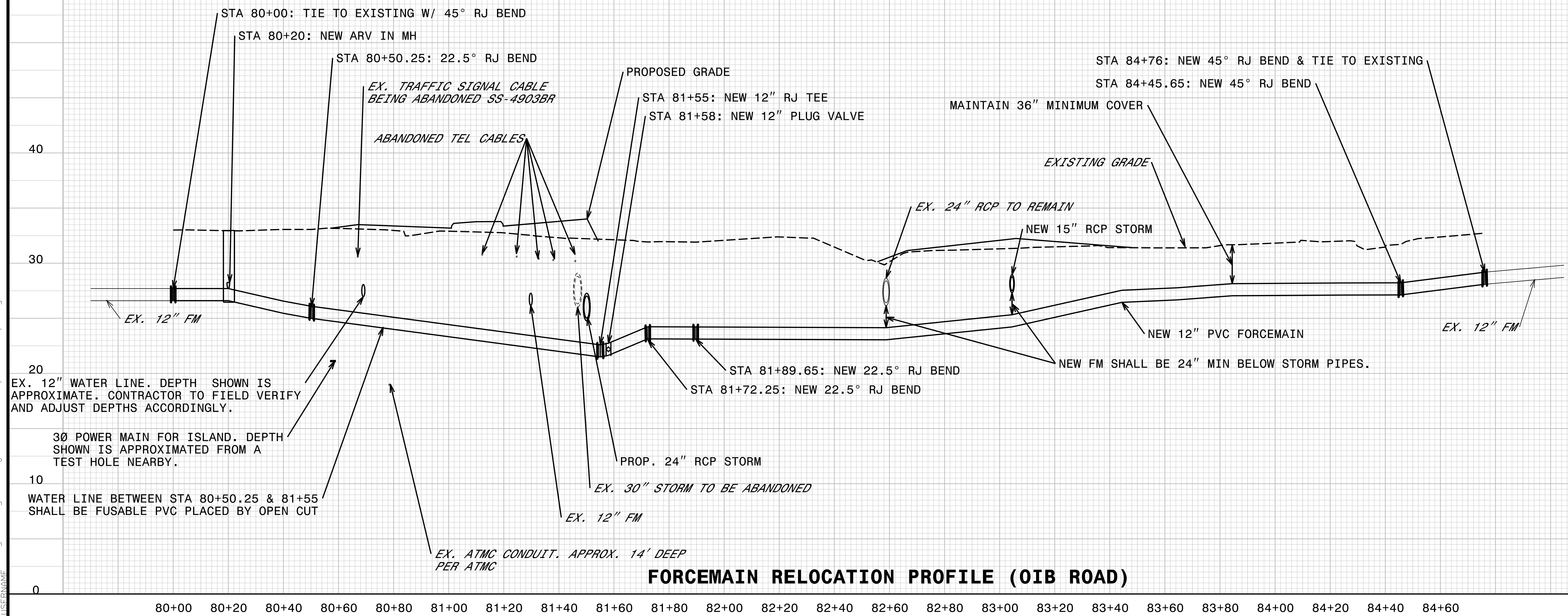
## UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL  
UNTIL ALL SIGNATURES ARE COMPLETED



## UTILITY CONSTRUCTION

**DOCUMENT NOT CONSIDERED FINAL  
UNTIL ALL SIGNATURES ARE COMPLETED**





Request Info	
Type	Budget Amendment
Description	NCDOT OIB Roadway Project
Justification	Board Meeting 04/16/2018-Appropriate \$24,050 of miscellaneous revenue for the agreement for NCDOT force main relocation at the Ocean Isle Beach Roundabout. This project was originally approved at the 06-19-2017 Board of Commissioners meeting. The actual costs are higher than the \$115,000 previously estimated for design and construction prior to the project being bid. The work was competitively bid and the total cost to the County after completion of the project is \$139,050.
Originator	Tiffany Rogers

Items						
Department	Object	Dept Desc	Object Desc	Amount	Incr/Decr	Dr/Cr
627210	383900	Wastewater - Administration	Miscellaneous Revenues	24050	Increase	Credit
627210	459040	Wastewater - Administration	Cap Outlay-COL Wastewater Proj	24050	Increase	Debit

Total	
Grand Total:	48100



**Brunswick County Board of Commissioners**  
**ACTION AGENDA ITEM**  
**April 16, 2018**

**From:**  
Andrea White

**Action Item # VI. - 1.**

Governing Body - Proclamation - Brunswick County Literacy  
Month (Chairman Frank Williams)

**Issue/Action Requested:**

Request that the Board of Commissioners approve a Proclamation declaring May as Brunswick County Literacy Council Month.

**Background/Purpose of Request:**

Each year, the Brunswick County Literacy Council celebrates May as Brunswick County Literacy Council Month. Carolyn and Kim Loucks will accept the proclamation on behalf of the Literacy Council.

The Literacy Council will host the Annual Brunswick County Spelling Bee on May 22, 2018 at the Virginia Williamson Events Center located on the campus of Brunswick Community College. The event begins with a Silent Auction at 6:00 p.m. followed by the Spelling Bee at 7:00 p.m.

**Fiscal Impact:**

Not Applicable

**Approved By County Attorney:**

Yes

**County Manager's Recommendation:**

Recommend that the Board of Commissioners approve a Proclamation declaring May as Brunswick County Literacy Council Month.

**ATTACHMENTS:**

Description

- ☐ Proclamation - Literacy Month



*County of Brunswick*  
*Office of the County Commissioners*



**BRUNSWICK COUNTY LITERACY MONTH 2018  
PROCLAMATION**

**WHEREAS**, the Brunswick County Board of Commissioners realize the importance of adequate literacy skills for all citizens in Brunswick County; and

**WHEREAS**, more than 30 percent of North Carolina's adults experience literacy issues that impact severely on their lives and families, their ability to work productively, and their full participation as citizens and residents of our state; and

**WHEREAS**, the Brunswick County Literacy Council, Brunswick Community College, Brunswick County Schools and the Brunswick County Library work diligently to improve the literacy skills of the citizens of Brunswick County.

**NOW, THEREFORE, THE BRUNSWICK COUNTY BOARD OF COMMISSIONERS** does hereby proclaim May 2018 as "Brunswick County Literacy Month," and urges citizens to assume an active role in literacy education for the benefit of Brunswick County as North Carolina moves toward an increasingly technological future.

This 16<sup>th</sup> day of April 2018.

---

Frank Williams, Chair  
Brunswick County Commissioners

Attest:

---

Andrea White, Clerk to the Board



**Brunswick County Board of Commissioners**  
**ACTION AGENDA ITEM**  
**April 16, 2018**

**Action Item # VI. - 2.**

**From:**

Governing Body - Proclamation - Honor Andrea White Earning the North Carolina Certified County Clerks Designation (Chairman Frank Williams)

**Issue/Action Requested:**

Request that the Board of Commissioners approve a proclamation in honor of Clerk to the Board of Commissioners Andrea White upon earning the North Carolina Certified County Clerks designation.

**Background/Purpose of Request:**

The North Carolina Certified County Clerks designation, a program jointly created by the School of Government at UNC Chapel Hill and the North Carolina Association of County Clerks to the Board of County Commissioners, recognizes professional achievement in addition to establishing levels and standards for training and knowledge. Completion of the program, and designation as a North Carolina Certified County Clerk, involves the completion of a significant amount of lectures, group work, out-of-class assignments, and achieving a minimum score on examinations. Andrea White, Brunswick County's Clerk to the Board of Commissioners, has completed this rigorous program and earned the designation of North Carolina Certified County Clerk.

**Fiscal Impact:**

Reviewed By Director of Fiscal Operations

**Approved By County Attorney:**

Yes

**County Manager's Recommendation:**

Recommend that the Board of Commissioners approve a proclamation in honor of Clerk to the Board of Commissioners Andrea White upon earning the North Carolina Certified County Clerks designation.

**ATTACHMENTS:**

Description

- In Honor of Andrea White Upon Earning the North Carolina Certified County Clerks Designation

*County of Brunswick*  
*Office of the County Commissioners*



**IN HONOR OF CLERK TO THE BOARD OF COMMISSIONERS ANDREA WHITE UPON  
EARNING THE NORTH CAROLINA CERTIFIED COUNTY CLERKS DESIGNATION**

**WHEREAS**, the School of Government at UNC Chapel Hill and the North Carolina Association of County Clerks to the Boards of County Commissioners jointly created a state certification program for county clerks, the North Carolina Certified County Clerks designation; and

**WHEREAS**, this program recognizes objectives that are relevant to county government and establishes levels and standards for training and knowledge; and

**WHEREAS**, successful completion of this program and subsequent certification requires the completion of lectures, group work, out-of-class assignments, and achieving a minimum score on examinations; and

**WHEREAS**, Andrea White serves diligently and tirelessly as the Clerk to the Brunswick County Board of Commissioners; and

**WHEREAS**, after a great deal of time and effort, Andrea completed this rigorous program and earned the designation of North Carolina Certified County Clerk.

**NOW, THEREFORE, BE IT PROCLAIMED THAT** the Brunswick County Board of Commissioners does recognize the hard work that leads to this certification and does congratulate Andrea White for this achievement, and thank her for her efforts in pursuit of this designation.

This the 16th day of April, 2018.

---

Frank Williams, Chairman  
Brunswick County Commissioners

Attest:

---

Andrea White, NCCCC  
Clerk to the Board



**Brunswick County Board of Commissioners**  
**ACTION AGENDA ITEM**  
**April 16, 2018**

**From:**  
Andrea White

**Action Item # VI. - 3.**

Presentation - Information Regarding the Naming of a Portion of I-140 in Honor of 10 Young Men from Brunswick County (Bob Quinn)

**Issue/Action Requested:**

Request that the Board of Commissioner receive a presentation from Mr. Bob Quinn regarding a request to name the first 5 miles of I-140 "Brunswick County's Ten Fallen Sons Highway".

**Background/Purpose of Request:**

Mr. Bob Quin would like the first 5 miles of I-140 to be named the "Brunswick County's Ten Fallen Sons Highway" in memory of 10 men from Brunswick County who demonstrated their civic responsibility by following the requirement of the Brunswick County Selective Service Board, at the cost of their lives.

The ten fallen sons are as follows: PFC Larry Daniels, PFC Ronnie White, PFC John Jacobs, PFC Prelow Grissette, Sgt. Kenneth Gore, 1/Lt. John Connell, PFC Richard Hewett, PFC Franklin Lanier, Cpt. Mckenzi Genwright, and CPL Clarence Mobley.

**Fiscal Impact:**

Reviewed By Director of Fiscal Operations

**Approved By County Attorney:**

Not Applicable

**Advisory Board Recommendation:**

Not Applicable

**County Manager's Recommendation:**

Recommend that the Board of Commissioner receive a presentation from Mr. Bob Quinn regarding a request to name the first 5 miles of I-140 "Brunswick County's Ten Fallen Sons Highway".

**ATTACHMENTS:**

Description

- ☐ NCDOT Honorary Designation Application
- ☐ Character Certification Form
- ☐ Support Letter from the Veterans Coalition
- ☐ Names & Photos of the 10 Fallen Sons



# Road, Bridge, Ferry Naming Application

Date: 4/13/2018

## Information about Yourself

Your Name: Robert Quinn

Phone Number: 910-457-5121

Mailing Address: PO Box 10177 Southport NC 28461

Alternate Phone Number: c-910-612-2309

Email Address: traverse@bellsouth.net

Relationship to Honoree: not Related

## Information about What You Want to Have Named

Do You Wish to Name a Road, Bridge or Ferry? Road

If a road or bridge, is it currently under construction?

No

*In order for a road or bridge to be named in honor of an individual, that road or bridge must be already constructed, or within 3 months of its expected construction completion date. (See Section III. B. in the Honorary Designations of State Transportation Assets Policy)*

County: Brunswick

Route: I-140 bypass

**Description:** *If a road request, please include preferred section (Point A to Point B), and if a bridge request, please include what the bridge crosses. For road requests, the distance of the proposed dedication should be 5 miles or less. Law enforcement officers will be honored with bridge dedications in lieu of highways. (See Section III. in Policy)*

*First 5 miles entering Brunswick County from New Hanover County*



# Road, Bridge, Ferry Naming Application

## Information about the Honoree (Person for whom the Road, Bridge or Ferry Request is being made)

Honoree's Name: *Brunswick County's Ten Fallen Sons*

1. If approved, what is the preferred name you would like to have on the sign?  
*Names can include one title, one given name and initial, a surname, and a suffix. (See Section III. E. in Policy) "Memorial" is no longer included on signs.*

*Brunswick County's Ten Fallen Sons*

2. Is the honoree living or deceased?  
If deceased, please provide date of death: *To qualify for a road, bridge, or ferry naming, an honoree must be either living, or be deceased longer than one year but less than 75 years. (See Section II. A. in Policy)*

*deceased*

*Individuals were killed 50 years ago between 1967 and 1969*

3. Is the honoree currently serving or seeking a term as an elected official?  
  
If so, please indicate what kind of office.  
*To qualify for a road, bridge, or ferry naming, an honoree must not be currently seeking or serving a term as a federal, state, or local elected official. (See Section II. B. of Policy)*

*not currently serving or seeking a term as an elected official*

Select the office.

4. Is the honoree currently a North Carolina resident?  
  
If no, please provide dates when the honoree was a North Carolina resident.  
*To qualify for a road, bridge, or ferry naming, an honoree must be or have been a North Carolina resident. (See Section II. C. in Policy)*

*No*

*1949-to 1969*

5. Has the honoree made notable local, state, and/or national contributions and/or had significant accomplishments?  
*(See Section II. D. in Policy) Later, you will be required to list these.*

*Yes*



# Road, Bridge, Ferry Naming Application

Information about the Honoree (Person for whom the Road, Bridge or Ferry Request is being made)	
<p>6. Does the honoree already have a state-owned road, bridge, or ferry named for him or her?</p> <p><i>To qualify for a road, bridge, or ferry naming, an honoree must not already have a state-owned road, bridge, or ferry named for him or her. (See Section II. E. in Policy)</i></p>	<p>No</p>
<p>7. Is the honoree a law enforcement officer killed in the line of duty?</p> <p><i>Municipal officials, employees, and law enforcement officers (including those killed in the line of duty) should be recognized with a municipally owned bridge in lieu of a state owned bridge except in extraordinary circumstances. (See Section II. F. in Policy)</i></p> <p>If you are requesting a state owned bridge be named for a local law enforcement officer, please describe what you believe to be the extraordinary circumstances that justify the exception.</p>	<p>No</p> <p>Click here to enter text.</p>
<p>8. Is the honorary designation being requested on the basis of the individual's military service?</p> <p>If yes, which valor medal has the honoree received?</p> <p>Verification of the award will be required at the time the resolution is submitted. <i>Only recipients of Medals of Honor are eligible for a road or bridge naming based military service (See Section II. I. of Policy). (Other military personnel are honored by the 1300+ mile Blue Star Memorial Highway Network across North Carolina, See Section V. of Policy.)</i></p>	<p>No</p> <p>Choose an item.</p>
<p><b>Description:</b> Please describe the background information of the honoree, and list his/her credentials that justify the road, bridge, or ferry naming. These must include notable local, state, and/or national contributions and/or significant accomplishments. (See Sections II. D. and IV. A. in Policy)</p> <p><i>The Ten Individuals collectively demonstrated commitment and loyalty to their homes in North Carolina and the United States of America by answering the call of the Brunswick County Selective Service Board and presented themselves for service in the military in time of war, while hundreds of thousands of their generation fled to Canada or failed to register as required by law. This dedication to their responsibilities as citizens cost them their lives.</i></p>	



# Road, Bridge, Ferry Naming Application

## Information about the Honoree (Person for whom the Road, Bridge or Ferry Request is being made)

## Support for Proposed Road/Bridge/Ferry Naming

<p>1. Does the proposed naming have strong local support? <i>Requested naming must have strong local support. Unanimous resolutions from the local governments with jurisdiction, passed in a public forum, will be required. (See Sections II. G. and Section IV. B. in Policy) At a later stage of the review process, you will need to provide at least three letters of recommendation from civic, service, or business organizations that demonstrate this support. (See Section IV. D. in Policy)</i></p>	Yes
<p>2. Does the family of the honoree support the proposed naming? <i>The family must support the proposed naming. (See Section II. H. &amp; Section IV. E. in Policy)</i></p>	Yes
<p>3. Has a source of the \$2000 administrative fee for the sign been identified? <i>The requesting party or local government is responsible for \$2000 towards the cost of the signs. The local government or designee must participate by paying an administrative fee of \$2000. (See Section IV. G. in Policy)</i></p>	Yes

*When complete, this form should be emailed to the appropriate Division contact for Honorary Designations. For assistance identifying the appropriate contact, you may email the Road, Bridge or Ferry Naming Committee Service account at [roadnaming@ncdot.gov](mailto:roadnaming@ncdot.gov).*





# Honorary Designation for State Roads, Bridges and Ferries Character Certification Form

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## Honorary Designation for State Roads, Bridges and Ferries Character Certification by Town/County Official

Full Name of Individual the Honorary Designation is being requested for: *BRUNSWICK COUNTY'S  
TEN FALLEN SONS,*

Character Certification Reference - (to be completed by local town/county official)

1. Are you aware of any criminal charges pending against the individual or if they have ever been convicted of any crime anywhere, including in federal, state, local, military and tribal courts? If yes, please explain.

*There is no individual designated in the dedication title. It is a recognition of the collective honorable response by ten young men to the directions of the Brunswick County Selective Service Board*

2. Do you know if the individual has ever been charged with a criminal act? If yes, please explain.

*Designation does not identify an individual by name. When the Ten did respond to the Selective Service Boards directions they were found acceptable. At that time conviction of a felony made individuals unacceptable for service..*

3. Are you aware of any controversial matter in which the individual has been involved? If yes, please explain.

*Designation does not identify an Individual by name. A screening at the Clerk of Court found no criminal records.*

4. Is there any information regarding the character of the individual that you feel is pertinent? If yes, please explain.

*The Ten young men demonstrated a commitment to their civic responsibilities and did as the*



## Honorary Designation for State Roads, Bridges and Ferries Character Certification Form

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*Brunswick County Selective Service Board directed. At that time hundreds of thousands of young men, in lieu of serving our country, fled to Canada or refused to Register.*



## Honorary Designation for State Roads, Bridges and Ferries Character Certification Form

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I hereby state that the information contained above is true and accurate to the best of my knowledge. In the event that information is later confirmed that was not included on this form or incomplete, the Board of Transportation reserves the right to revoke the designation.

This the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
(Printed Name of Local Official Performing Character Reference)

Sworn to and subscribed before me

This the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_

Commissioners of Brunswick County  
Box 249  
Bolivia, NC 28422  
Dear Commissioners:

The purpose of this correspondence is to seek the support of the Brunswick County Commissioners in the naming of the Interstate I-140 Bridge entering Brunswick County the, **North Carolina Vietnam Memorial Bridge** and to designate first 5 mile segment of the Highway coming into Brunswick County **The Brunswick County 10 Fallen Sons Highway** honoring the 10 Brunswick County men that lost their lives in the Vietnam War.

North Carolina has long been known throughout the state as well as the nation as a Veteran Friendly state. This is supported by the naming of various highways throughout the state as Blue Star Highways, please see attachment, or the Gold Star Highway which is Highway 24 between Fayetteville, NC, and Camp Lejeune..

The Brunswick County Veteran s Coalition is currently comprised of fifteen veteran organizations including the American Legion, Veterans of Foreign Wars, and American Veterans. It has been reported there are over 14,000 veterans who reside within the boundaries of Brunswick County. On March 14, 2018, a proposal to support the naming of the bridge on Interstate I-140 the North Carolina Vietnam Memorial Bridge was voted on at the Veterans Coalition meeting and was accepted unanimously by the membership as a fitting tribute to the men and women who fought in Vietnam. In that War, over 58,000 (1612 from North Carolina and 10 from Brunswick County) died serving their country.

In 2017, President Trump signed the Vietnam War Veterans Recognition Act designating March 29<sup>th</sup> of each year as National Vietnam War Veterans Day. Many towns and municipalities throughout the United States planned and held celebrations to signify and acknowledge the sacrifices these veterans and their families had to endure during the 20-years of the United States Involvement there. The disgraceful way these service men and women were treated as they returned home from battle has been well documented.. Many states have recognized this injustice and have paid tribute to those who participated in the war by naming bridges in their honor. To the best of our knowledge there is no bridge within North Carolina that has been named the Vietnam Veteran s Memorial Bridge. Brunswick County and the North Carolina Department of Transportation (DOT) have the opportunity to recognize these brave American Citizens by dedicating the Bridge and a segment of the highway to them.

While the Coalition acknowledges and is grateful for the recognition of the men and women in the Armed Forces with the Blue and Gold Star Highways. We also understand that most citizens who travel these routes do not fully understand the meaning of the titles, Blue and Gold Star. We are requesting that the County take advantage of this opportunity to recognize the ultimate price paid by the Ten Sons of Brunswick County and their families when they answered the call to serve from the local Selective Service Board as well as the 1612 young men from North Carolina and 58000+ from the Country that gave their lives in that War.

On behalf of the members of the Brunswick County Veteran s Coalition, most of whom are Vietnam Veterans we urge you to draft and submit a resolution to the Wilmington Metropolitan Planning Organization and the DOT recognizing their collective commitment to our County and Country by naming the I-140 Bridge entering Brunswick County the **NORTH CAROLINA VIETNAM MEMORIAL BRIDGE**. With the first 5 mile segment of the highway being designated as, **BRUNSWICK COUNTY S TEN FALLEN SONS HIGHWAY** as the gateway to Brunswick County. Incidentally three of the 10 were from Winnabow which is in close proximity to

and highway to them.

Thank you for your considerations in this matter.

*Gary G. Crowden*

Gary G. Crowden

Chairman

Bunswick County Veterans Coalition



Request County Commissioners Recommend to DOT that a 5 mile section of I-140  
HIGHWAY entering Brunswick County be named to Honor Ten Citizens Killed in Action in  
Vietnam

### **Brunswick County Ten Fallen Sons Highway**

Shown below are 3 from Winnabow, 2 from Shallotte, 2 from Ash, 1 from Leland, 1 from Supply, and 1 from Southport. These men answered the Counties call and made the ultimate sacrifice in Vietnam while their families and friends were left with a painful absence in their lives.



PFC Larry Daniels  
Ash, US.Army  
4<sup>th</sup> Bn. -12TH Inf.  
KIA Apr.68



PFC Ronnie White  
Ash US Army  
1st/502nd Inf  
KIA Mar. 1969



PFC John Jacobs  
Leland US Army  
1<sup>st</sup> Bn. 11<sup>th</sup> INF  
KIA OCT 1968



PFC Prebow Grissette  
Shallotte US Army  
2<sup>nd</sup> Bn. 503<sup>rd</sup> INF.  
KIA NOV 68



Sgt. Kenneth Gore  
Shallotte. USA Army  
1<sup>st</sup> Bn. 27<sup>th</sup> Inf  
KIA JUN 1967



1/Lt John Connell  
Southport US Army  
1<sup>st</sup> Bn. 5<sup>th</sup> Inf  
KIA Aug 1968



PFC Richard Hewett  
Supply US. Army  
1<sup>st</sup> Bn. 14<sup>th</sup> Inf  
KIA Mar 1968



PFC Franklin Lanier  
Winnabow US.Army  
3<sup>rd</sup> Bn 22<sup>nd</sup> Inf  
KIA Mar 1969



CPT Mckenzi Genwright  
Winnabow US Army  
8<sup>th</sup> Eng Bn. 1<sup>st</sup> Cav  
KIA Sep. 69



CPL Clarence Mobley  
Winnabow USMC  
1<sup>st</sup> Bn. 9<sup>th</sup> Marines  
KIA Jun 1968



**Brunswick County Board of Commissioners**  
**ACTION AGENDA ITEM**  
**April 16, 2018**

**Action Item # VI. - 4.**

**From:**

Andrea White

Wilmington Urban Area Metropolitan Organization - 2045  
Metropolitan Transportation Plan (Michael Madsen, GIS Analyst)

**Issue/Action Requested:**

Request that the Board of Commissioners receive a presentation on the 2045 Metropolitan Transportation Plan process from the Wilmington Urban Area Metropolitan Planning Organization (WMPO).

**Background/Purpose of Request:**

Wilmington MPO staff began advertising the public outreach phase for the 2045 Metropolitan Transportation Plan (MTP) in April 2018. The advertising period will continue through July.

The WMPO requested an opportunity to present information about the MTP process and the information they hope to gather from the public's participation.

**Fiscal Impact:**

Not Applicable

**Approved By County Attorney:**

Yes

**County Manager's Recommendation:**

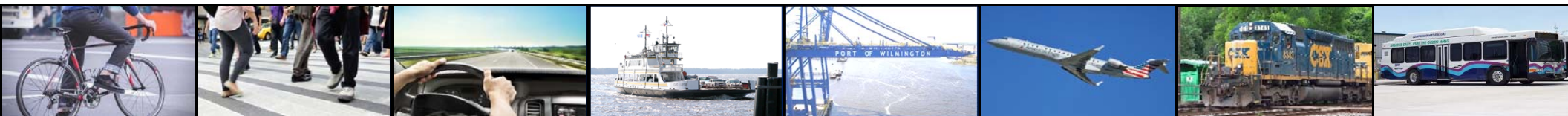
Recommend that the Board of Commissioners receive a presentation on the 2045 Metropolitan Transportation Plan process from the Wilmington Urban Area Metropolitan Planning Organization (WMPO).

**ATTACHMENTS:**

Description

- ☐ WMPO Member Jurisdictions Presentation





CAPE FEAR

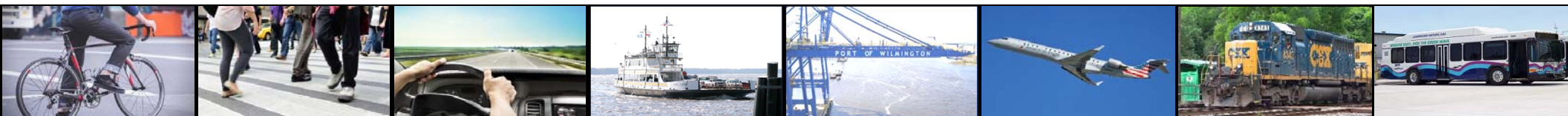
# Moving Forward 2045

METROPOLITAN TRANSPORTATION PLAN



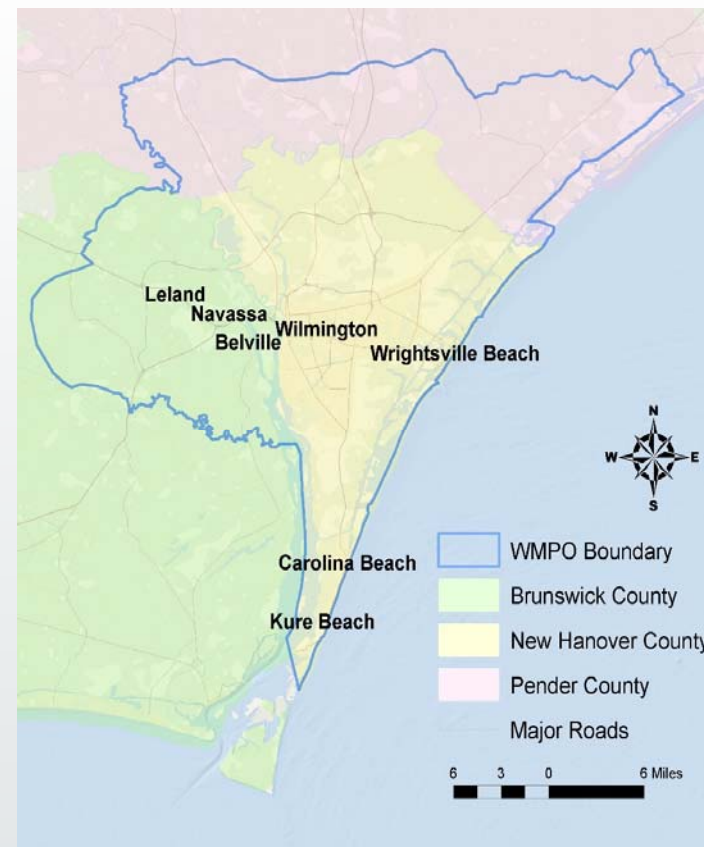
WMPO Member Jurisdiction Update

April 2018



# Wilmington Urban Area MPO

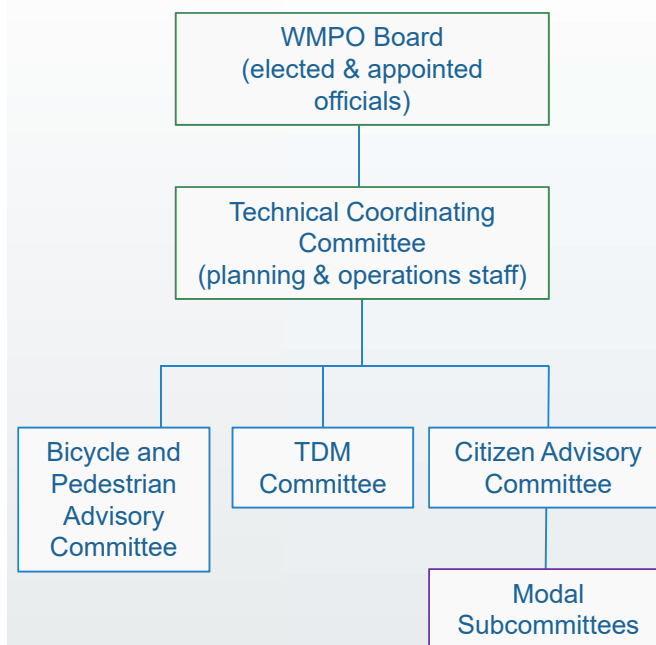
- Wilmington
- Wrightsville Beach
- Carolina Beach
- Kure Beach
- Leland
- Belville
- Navassa
- New Hanover County
- Brunswick County
- Pender County
- NCDOT
- Cape Fear Public Transportation Authority

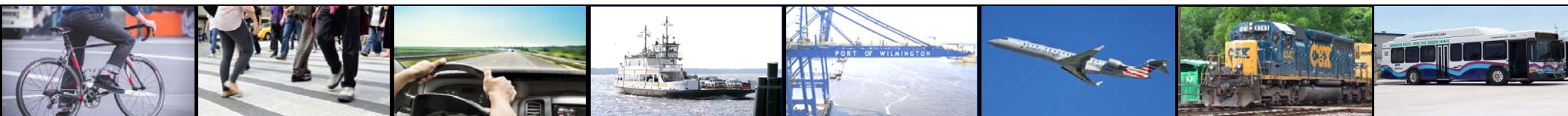




# WMPO Responsibilities

- Federally mandated to provide a comprehensive, continuing, and cooperative planning process for metropolitan areas with 50,000+ population
- This planning process serves the basis for the expenditure of all federal transportation funds in the Wilmington MPO area
- Assists with the prioritization of transportation projects in the State/Metropolitan Transportation Improvement Programs
- Coordinates WMPO Board recommendations and activities
- Completes and adopts Metropolitan Transportation Plan





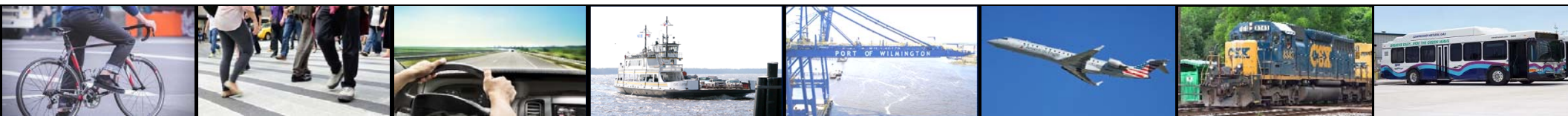
# Metropolitan Transportation Plan

- Federally required long range transportation plan with a minimum 20 year horizon
  - Multi-modal transportation needs analysis
  - Region demographics, land use, and travel pattern analysis
  - Fiscal analysis and constraint
  - Public Involvement
- Basis for STIP/MTIP
  - Expenditure of federal transportation funds in our region

## Currently Adopted Plan:

### Cape Fear Transportation





# Moving Forward 2045 Vision Statement

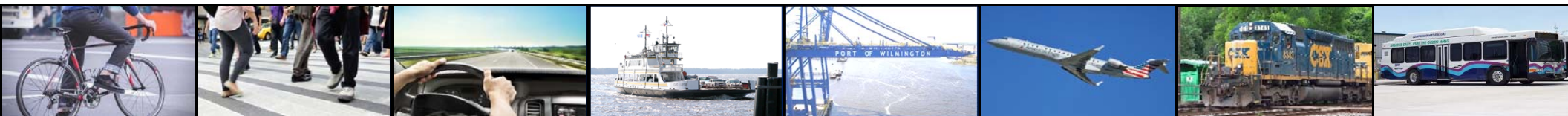
CAPE FEAR

Moving Forward **2045** 

METROPOLITAN TRANSPORTATION PLAN

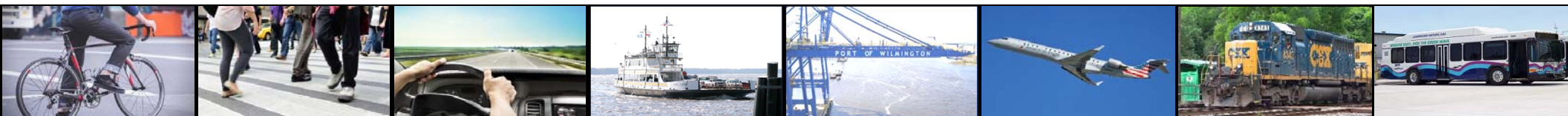
“The 2045 MTP will plan for a safe, realistic, efficient, and reliable multimodal transportation network that embraces innovation and is environmentally and socially responsible.”







# Plan Development Schedule






Initial Public Outreach Efforts	April – July 2018
Public Comment Review & Analysis	August – September 2018
Develop Project Lists	October – December 2018
Prioritize Projects and Draft Plan	January – December 2019
Public Hearings and Plan Approval Process	January – November 2020





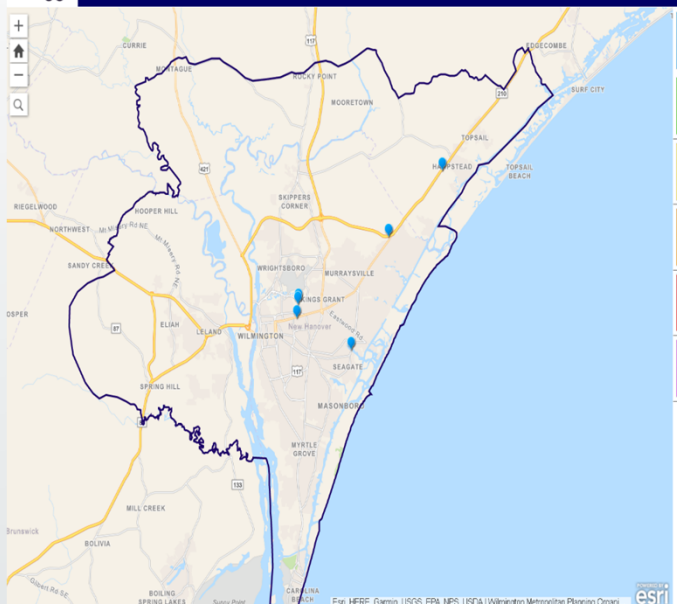
[www.CapeFearMovingForward2045.org](http://www.CapeFearMovingForward2045.org)

## How To Get Involved







**2045**  **Public Input...** 

-  **Roadway**
-  **Bicycle and Pedestrian**
-  **Aviation**
-  **Mass Transportation**
-  **Ferry**

**2045**  **Public Input Map** 



Legend:

-  Roadway
-  Bicycle and Pedestrian
-  Aviation
-  Mass Transportation
-  Ferry
-  Freight and Rail



# How To Get Involved

[www.CapeFearMovingForward2045.org](http://www.CapeFearMovingForward2045.org)



The Wilmington Urban Area Metropolitan Planning Organization (WMPO) is conducting a 17-question survey about transportation issues and services in the Wilmington area. The results will be used to identify travel needs and develop recommendations to make it easier to travel around the region (Your answers will be completely confidential). Thank you and please visit the website, [CapeFearMovingforward2045.org](http://CapeFearMovingforward2045.org).

Please mail or drop-off completed surveys to: City of WMPO Transportation Planning,  
305 Chestnut Street, 4th Floor, P.O. Box 1810, Wilmington, NC 28402-1810

**1. When deciding where to live, how important is it to have different transportation options?**

- ☐ Not important      ☐ Somewhat Important  
☐ Important      ☐ Very Important

**2. The percentage of trips I CURRENTLY make to WORK/SCHOOL: (Choose one option for each row)**

	0%	1-25%	26-50%	+50%
Driving a car	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In a carpool/vanpool	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using public transportation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
By bicycle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**6. In the FUTURE, to get to WORK/SCHOOL, I would prefer to: (Choose one option for each row)**

	More often	Less often	The same amount
Drive a car	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Carpool/vanpool	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use public transportation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bicycle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**7. In the FUTURE, to get to RUN ERRANDS, I would prefer to: (Choose one option for each row)**

	More often	Less often	The same amount
Drive a car	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



# Open Houses



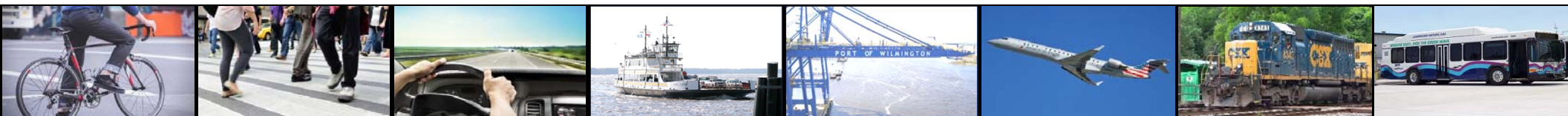
Location	Date and Time
Carolina Beach Town Hall	Tuesday, May 1 <sup>st</sup> from 4-6pm
Hampstead Annex	TBD
Leland Town Hall	Tuesday, May 8 <sup>th</sup> from 4-6pm
New Hanover County Senior Center	Monday, May 14 <sup>th</sup> from 4-6pm
Thalian Hall – Wilmington City Hall	Wednesday, May 16 <sup>th</sup> from 4-6pm



Facebook.com/wilmingtonmpo/



@WilmingtonMPO



Questions?

[www.CapeFearMovingForward2045.org](http://www.CapeFearMovingForward2045.org)

[www.wmpo.org](http://www.wmpo.org)

Abby Lorenzo, Senior Transportation Planner

(910) 341-7890

[Abigail.Lorenzo@wilmingtonnc.gov](mailto:Abigail.Lorenzo@wilmingtonnc.gov)



**Brunswick County Board of Commissioners**  
**ACTION AGENDA ITEM**  
**April 16, 2018**

**Action Item # VII. - 1.**

**From:**

Andrea White

Health and Human Services - Public Housing - Public Hearing  
(Catherine Lytch, Director of DSS)

**Issue/Action Requested:**

Request that the Board of Commissioners receive comments or suggestions on the Public Housing Agency goals, objectives and policies.

**Background/Purpose of Request:**

The Department of Housing and Urban Development (HUD) requires each Public Housing Agency (PHA) to annually hold a public hearing regarding any changes to the goals, objectives and policies of the agency and invite the public to comment regarding such changes. HUD considers the annual public hearing essential to PHAs in determining whether changes to goals, objectives and policies are needed.

At the February 5, 2018 regular meeting, the Board of Commissioners set this public hearing to be held on April 16, 2018, to receive comments or suggestions on the Public Housing Agency goals, objectives and policies.

**Fiscal Impact:**

Not Applicable

**Approved By County Attorney:**

Yes

**Advisory Board Recommendation:**

Not Applicable

**County Manager's Recommendation:**

Recommend that the Board of Commissioners receive comments or suggestions on the Public Housing Agency goals, objectives and policies.

**ATTACHMENTS:**

Description

☐ Public Hearing Notice

## **NOTICE OF A PUBLIC HEARING**

**The Brunswick County Board of Commissioners will conduct a Public Hearing on Monday, April 16, 2018 at 6:00 p.m. in the Commissioners Chambers located in the David R. Sandifer Building, 30 Government Center Dr., N.E., Bolivia, NC. The purpose of the public hearing is to receive comments from citizens on the agency's goals and objectives. All citizens are encouraged to attend the public hearing and make comments. The goals and objectives may be viewed in the administrative office of the Public Housing Agency located Building B of the County Government Center, Bolivia, NC. Written comments and questions can be forwarded to the Brunswick County Public Housing Agency, Attn: Catherine Lytch, P.O. Box 219, Bolivia, North Carolina 28422.**

**Andrea White  
Clerk to the Brunswick Board of Commissioners**



**Brunswick County Board of Commissioners**  
**ACTION AGENDA ITEM**  
**April 16, 2018**

**Action Item # VII. - 2.**

**From:**

Jan Clemmons

GIS - Street Adoptions Public Hearing (Jan Clemmons, GIS)

**Issue/Action Requested:**

Request that the Board of Commissioners approve the second reading and adoption of the proposed street names.

**Background/Purpose of Request:**

The attached street names were named by property owners, the GIS Department or by recorded survey.

**Fiscal Impact:**

Reviewed By Director of Fiscal Operations

**Approved By County Attorney:**

Yes

**Advisory Board Recommendation:**

Not Applicable

**County Manager's Recommendation:**

Recommend that the Board of Commissioners approve the second reading and adoption of the proposed street names.

**ATTACHMENTS:**

Description

- ▣ List of streets to be adopted

<u>TO</u>	<u>FROM</u>	<u>TOWNSHIP</u>
ADALYNNS TRL NW	NONE	WACCAMAW
AMOROSA LOOP NE	NONE	NORTHWEST
ANCHORS BEND DR SW	NONE	SHALLOTTE
AROT CT SW	NONE	SHALLOTTE
BAY BEACH RD SW	NONE	LOCKWOOD FOLLY
BIRCH ABBEY TRL NE	NONE	NORTHWEST
BLUE PAPAYA NE	NONE	NORTHWEST
CASSADINE CT NE	NONE	NORTHWEST
CLOVE HITCH LN SW	NONE	SHALLOTTE
DAGGER DR NE	NONE	NORTHWEST
DEFYANCE CT SW	NONE	SHALLOTTE
DELLCASTLE CT NW	NONE	SHALLOTTE
DELZA ANN DR NE	NONE	TOWN CREEK
DIP LN NW	NONE	LOCKWOOD FOLLY
DONASH LN NW	NONE	WACCAMAW
GATEWAY VILLAGE CIR SE	NONE	SMITHVILLE
HERON WATCH DR SW	NONE	LOCKWOOD FOLLY
HILL HOMESTEAD LN SE	NONE	LOCKWOOD FOLLY
HOMER BRYAN AVE NE	NONE	NORTHWEST
INDUS WAY SE	NONE	LOCKWOOD FOLLY
MAGNOLIA HILL PL SW	NONE	LOCKWOOD FOLLY
MARILLA DR NE	NONE	NORTHWEST
MONTAGU WAY SW	NONE	LOCKWOOD FOLLY
N OLD MT MISERY RD	NONE	NORTHWEST
NORMA JEAN LN SW	NONE	LOCKWOOD FOLLY
PENNY HEDGE DR NE	NONE	NORTHWEST
REEFSIDE LOOP NE	NONE	NORTHWEST
RUSTY FARM TRL NW	NONE	WACCAMAW
S OLD MT MISERY RD	NONE	NORTHWEST
SAWGRASS POINT LN SW	NONE	LOCKWOOD FOLLY
SAYBROOKE LN NW	NONE	SHALLOTTE
SEA ISLAND RD NE	NONE	NORTHWEST
SNOWDROP CT NW	NONE	SHALLOTTE
SOLARIS CT NE	NONE	NORTHWEST
SOUTHVIEW CT NE	NONE	NORTHWEST
SPOONWOOD DR NE	NONE	NORTHWEST
SPRINGSTONE DR NE	NONE	TOWN CREEK
SQUARE KNOT LN SW	NONE	SHALLOTTE
STEDWICK ST NW	NONE	SHALLOTTE
SUNSET CREEK WAY SW	NONE	SHALLOTTE
TERESA CT NE	NONE	NORTHWEST
TWICKENHAM CT SE	NONE	TOWN CREEK
WILBUR MCKEITHAN WAY NE	NONE	TOWN CREEK
WINTERCRESS DR NE	NONE	NORTHWEST
WOODRIFF CIR NE	NONE	NORTHWEST



**Brunswick County Board of Commissioners**  
**ACTION AGENDA ITEM**  
**April 16, 2018**

**Action Item # VII. - 3.**

**From:**  
Kirstie Dixon, Planning Director

Planning - Rezoning Case Z-760 (Kirstie Dixon, Director of Planning)

**Issue/Action Requested:**

Request that, after the Public Hearing, the Board of Commissioners approve First and Second Readings to amend the Official Unified Development Ordinance Zoning Map from RR (Rural Low Density Residential) to C-LD (Commercial Low Density) with an associated CAMA Land Use Plan Map from LDR (Low Density Residential) to Commercial (Z-18-760).

**Background/Purpose of Request:**

The proposed rezoning from RR (Rural Low Density Residential) to C-LD (Commercial Low Density) would allow commercial use of Tax Parcels 084BA001, 084BA002, 084BA003, 084BA014, 084BA015, 084BA016 and 084BA017. This rezoning is located off Ocean Highway East (US 17) and Kirby Road NE. This rezoning totals approximately 2.67 acres.

A proposed amendment to the Official Brunswick County CAMA Land Use Plan Map from LDR (Low Density Residential) to Commercial for Tax Parcels 084BA001, 084BA002, 084BA003, 084BA014, 084BA015, 084BA016 and 084BA017 classification accompanies the proposed zoning. This proposed land use plan map amendment totals approximately 2.67 acres.

The Planning Board held a public hearing on 12-Mar-18 and Mr. Chris Stanley with East Coast Engineering and Surveying addressed the Board on behalf of the applicant. He stated that the applicant desires to develop the property in accordance with the surrounding area

**Fiscal Impact:**

Reviewed By Director of Fiscal Operations

**Approved By County Attorney:**

Yes

**Advisory Board Recommendation:**

At its meeting on 12-Mar-18, the Planning Board voted unanimously to recommend approval of the rezoning and associated land use plan map amendment as proposed.

Members Present: Eric Dunham, Joy Easley, Richard Leary, Ron Medlin, Troy Price, Tom Simmons and Randy Ward

**County Manager's Recommendation:**

Recommend that, after the Public Hearing, the Board of Commissioners approve First and Second Readings to amend the Official Unified Development Ordinance Zoning Map from RR (Rural Low Density Residential) to C-LD (Commercial Low Density) with an associated CAMA Land Use Plan Map from LDR (Low Density Residential) to Commercial(Z-18-760).

## **ATTACHMENTS:**

### **Description**

- ▣ Staff Report
- ▣ Zoning Map
- ▣ Land Use Plan Map
- ▣ Site Photos
- ▣ Minutes
- ▣ Consistency Statement



# REZONING STAFF REPORT

Prepared by Helen Bunch, Zoning Administrator

Rezoning Case#: Z-760

March 12, 2018



## APPLICATION SUMMARY

The applicant requests to rezone Tax Parcels 084BA001, 084BA002, 084BA003, 084BA014, 084BA015, 084BA016 and 084BA017 from RR (Rural Residential) to CLD (Commercial Low Density). This rezoning request is conventional therefore, no conditions or site plans are proposed. All owners and adjacent owners have been notified via first class mail.

### Location

Kelly Road and Ocean Hwy E (US 17)

### Tax Parcels

084BA001, 084BA002, 084BA003,  
084BA014, 084BA015, 084BA016,  
084BA017

### Current Zoning

RR

### Proposed Zoning

CLD

### Surrounding Zoning

RR, CLD, R-6000

### Current Use

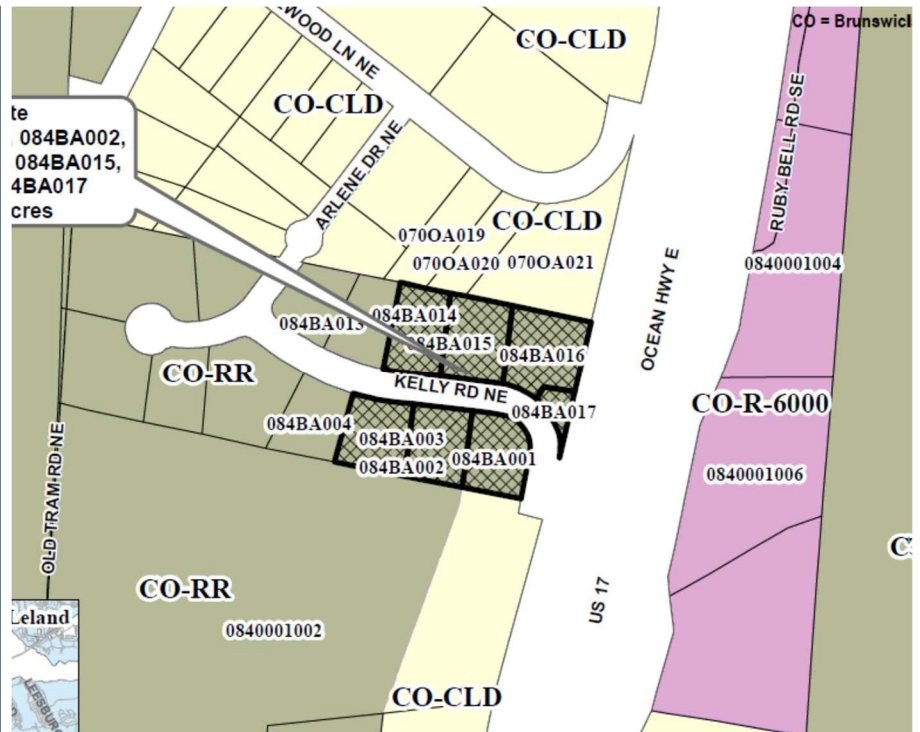
Vacant

### Surrounding Land Uses

Residential, Commercial, Vacant  
Lands

### Size

2.67 acres



## SITE CONSIDERATIONS

**Zoning History:** There are not any known zoning changes to the rezoning site since introduction of zoning in 1994. A number of nearby parcels have experienced zoning changes. Tax Parcels 0700A004-0700A015 and 0700A023-0700A028 to the northwest were rezoned to CLD as part of Rezoning Case Z-357 on April 7, 2003.

**Buffers:** If rezoned to CLD, all non-residential uses will require a 0.6 (vacant) or 0.8 (developed) opacity buffer to properties zoned RR. A buffer is not required for non-residential uses zoned CLD unless there is existing residential. When adjacent to a residential use, a 0.4 opacity buffer will be required.

**Traffic:** The average annual daily traffic count for this section of Ocean Hwy East (US 17) is 28,000 vehicle trips per day.

**Utilities:** Water is available from Brunswick County along Ocean Hwy East. Sewer availability is limited to a Brunswick County force main. Water and sewer connections will require developer responsibility to connect to the system.

**Schools:** Town Creek Elementary School is currently out of capacity.

**CIP Projects in Area:** New Town Creek Middle School (FY 2019).

**NCDOT Road Improvements in Area:** Convert US 17 & NC 211 intersection to interchange (Project U-5932) – Design Phase (Anticipated Construction 2024).

**Environmental Impacts:** Biodiversity & Wildlife Habitat Assessment Score: Small portions of the rezoning site score a 5 out of 10 due to wetlands classified as substantial.

## ANALYSIS

*"This District is intended primarily to be used in outlying areas, adjacent to major thoroughfares, with yards and other provisions for reducing conflicts with adjacent residential uses, and with substantial setbacks to reduce marginal friction on adjacent major thoroughfares. Commercial uses in this District will serve the needs of residential neighborhoods for auto-dependent commercial facilities; and serve the needs of highway oriented tourist business."*

**CAMA Land Use Plan Classification:** LDR (Low Density Residential).

- Proposed Zoning is not consistent with CAMA Land Use Plan.
- Associated Land Use Plan Amendment (LUM-760):  
Request to amend Tax Parcels 084BA001, 084BA002, 084BA003, 084BA014, 084BA015, 084BA016 and 084BA017 from LDR to Commercial.

**Applicable CAMA Land Use Policies:**

- P.16 states that Brunswick County strongly supports commercial nodes, including town or village centers, and the prohibition of strip commercialization.
- P.49 states that Brunswick County supports directing more intensive land uses to areas that have existing or planned infrastructure.

## STAFF RECOMMENDATION SUMMARY

Staff recommends **APPROVAL TO CLD IN CONJUNCTION WITH A LAND USE PLAN AMENDMENT TO COMMERCIAL FOR TAX PARCELS 084BA001, 084BA002, 084BA003, 084BA014, 084BA015, 084BA016 AND 084BA017**

**BASED** upon information provided, surrounding area, current uses, the Brunswick County CAMA CORE Land Use Plan, and other adopted Brunswick County plans and policies.

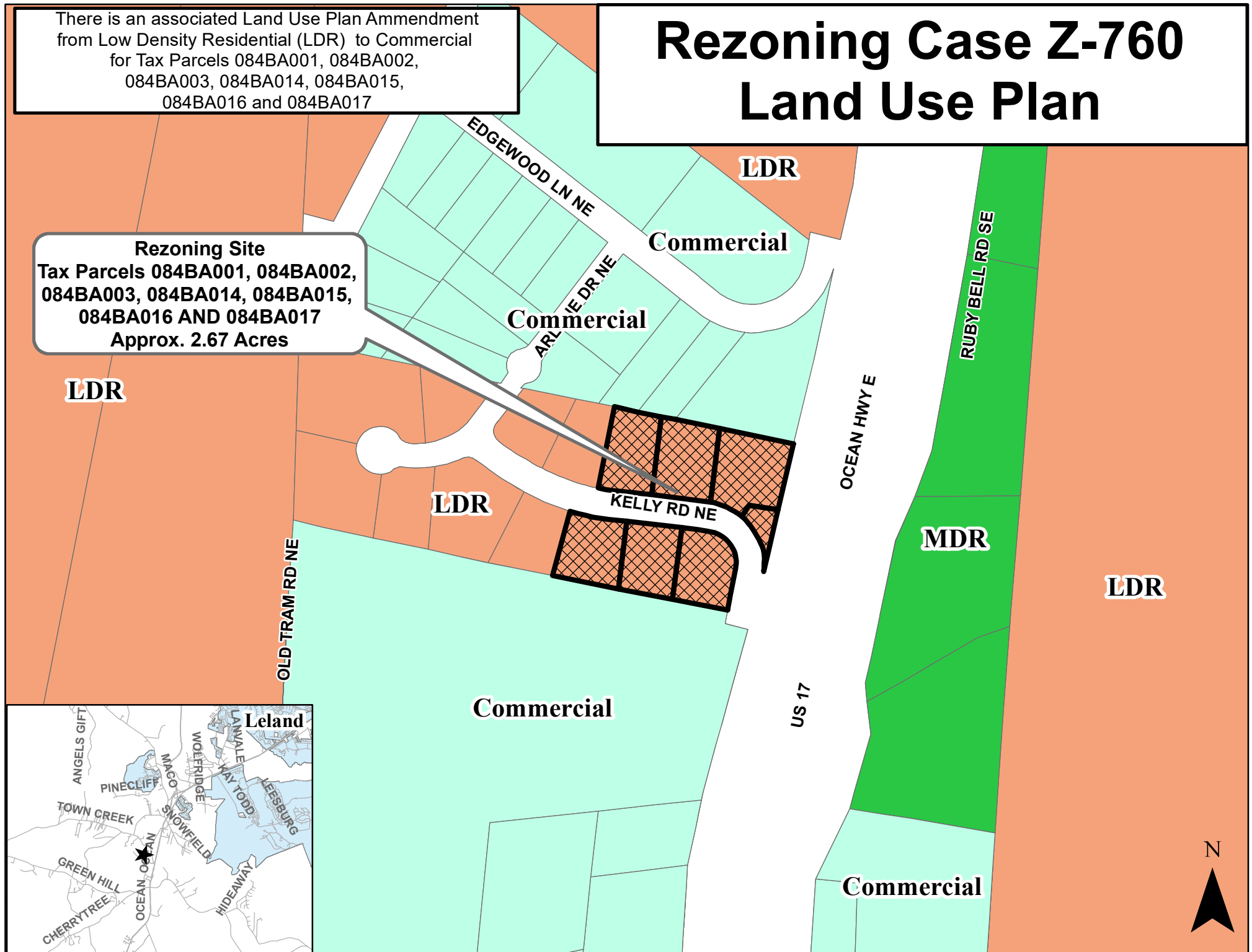


There is an associated Land Use Plan Ammdement  
from Low Density Residential (LDR) to Commercial  
for Tax Parcels 084BA001, 084BA002,  
084BA003, 084BA014, 084BA015,  
084BA016 and 084BA017

# Rezoning Case Z-760

## Land Use Plan

**Rezoning Site**  
Tax Parcels 084BA001, 084BA002,  
084BA003, 084BA014, 084BA015,  
084BA016 AND 084BA017  
Approx. 2.67 Acres



## Pictures Z-760



Public Notice on Ocean Hwy E (US 17)



View of Site



View of Ocean Hwy E facing North



View of Ocean Hwy E facing South

**MINUTES**  
**PLANNING BOARD**  
**BRUNSWICK COUNTY, NC**

**6:00 P.M. Monday**  
**March 12, 2018**

**Commissioners Chambers**  
**David R. Sandifer Administration Bldg.**  
**County Government Center**  
**Old U.S 17 East**

**MEMBERS PRESENT**

Eric Dunham, Chair  
Joy Easley, Vice Chair  
Richard Leary  
Ron Medlin  
Troy Price  
Tom Simmons  
Randy Ward

**MEMBERS ABSENT**

None

**STAFF PRESENT**

Kirstie Dixon, Director  
Helen Bunch, Zoning Admin.  
Connie Marlowe, Admin. Asst. II  
Marc Pages, Senior Planner  
Bryan Batton, Asst. County Attorney

**OTHERS PRESENT**

Alan Lewis  
John Hankins  
Doreen Alloway

Terry Pope, State Port Pilot  
Renee Whitby  
Chris Stanley

**I. CALL TO ORDER.**

The Chair called the meeting to order at 6:01 p.m.

**II. INVOCATION/PLEDGE OF ALLEGIANCE.**

Mr. Dunham said a prayer. The Chair asked everyone to stand and face the U.S. Flag to say the Pledge of Allegiance.

III. ROLL CALL.

There were no members absent.

IV. CONSIDERATION OF MINUTES OF THE 12-FEB-18 MEETING.

Mr. Leary made a motion to approve the minutes as written and the motion was unanimously carried.

V. AGENDA AMENDMENTS.

Ms. Dixon said staff will add 2 announcements under Other Business.

VI. PUBLIC COMMENT.

There were none.

VII. PUBLIC HEARINGS.

A. Rezoning Z-760– East Coast Engineering and Surveying (%Chris Stanley).

Request to rezone approximately 2.67 acres located off Ocean Highway East (US 17) and Kelly Road NE near Winnabow from RR (Rural Low Density Residential) to C-LD (Commercial Low Density) for Tax Parcels 084BA001, 084BA002, 084BA003, 084BA014, 084BA015, 084BA016 and 084BA017.

Land Use Plan Map Amendment LUM-760:

Request to amend Tax Parcels 084BA001, 084BA002, 084BA003, 084BA014, 084BA015, 084BA016 and 084BA017 located off Ocean Highway East (US 17) and Kelly Road NE near Winnabow from LDR (Low Density Residential) to Commercial.

Ms. Bunch addressed the Board. She read the Staff Report (attached). She identified the subject property and surrounding properties on a visual map.

Ms. Bunch said staff recommends approval from RR (Rural Low Density Residential) to C-LD (Commercial Low Density) for Tax Parcels 084BA001, 084BA002, 084BA003, 084BA014, 084BA015, 084BA016 and 084BA017 in conjunction with an amendment to the Official Brunswick County CAMA Land Use Plan Map for Tax Parcels 084BA001, 084BA002, 084BA003, 084BA014, 084BA015, 084BA016 and 084BA017 located off Ocean Highway East (US 17) and Kelly Road NE near Winnabow from LDR (Low Density Residential) to Commercial.



Mr. Dunham clarified that this does not involve a split-zoning issue for the parcels that are requesting a zoning change and Ms. Bunch concurred.

Ms. Easley made a motion to open the Public Hearing and the motion was unanimously carried.

Mr. Chris Stanley, East Coast Engineering and Surveying, addressed the Board on behalf of the applicant, George Irving. Mr. Stanley stated that the lots were subdivided in the 1990s for residential purposes, but the applicant desires to develop the property in accordance with the surrounding area.

With no further comments, Ms. Easley made a motion to close the Public Hearing and the motion was unanimously carried.

Ms. Easley made a motion to recommend to the Board of Commissioners to approve Tax Parcels 084BA001, 084BA002, 084BA003, 084BA014, 084BA015, 084BA016 and 084BA017 in conjunction with an amendment to the Official Brunswick County CAMA Land Use Plan Map for Tax Parcels 084BA001, 084BA002, 084BA003, 084BA014, 084BA015, 084BA016 and 084BA017 located off Ocean Highway East (US 17) and Kelly Road NE near Winnabow from LDR (Low Density Residential) to Commercial and the motion was unanimously carried.

THEREFORE, on the basis of all the foregoing, IT IS ORDERED that the application for REZONING be recommended to the Board of Commissioners for

☒ **APPROVAL – NOT CONSISTENT WITH THE COMPREHENSIVE PLAN**

- The Planning Board finds that the proposed zoning amendment is NOT consistent with the CAMA Land Use Plan (Comprehensive Plan) for the following reasons:

The parcels are currently classified as LDR (Low Density Residential). However, an amendment has been requested from LDR (Low Density Residential) to Commercial.

- The Planning Board further finds that approval of the proposed zoning amendment will amend the CAMA Land Use Plan (Comprehensive Plan) and the following changes have been considered to meet the needs of the community:

There is commercial zoning in the immediate area and the County strongly supports commercial nodes, which will serve the community and neighboring communities.

- The Planning Board further finds that the proposed zoning amendment is reasonable and in the public interest for the following reasons:

There is existing commercial zoning adjoining and in close proximity to this area.

B. Rezoning Z-761– Renee Whitby.

Request to rezone approximately 75.56 acres located off Red Bug Road SW (SR 1136) near Shallotte from R-7500 (Medium Density Residential) and R-6000 (High Density Residential) to R-6000 (High Density Residential) for Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098.



Land Use Plan Map Amendment LUM-761:

Request to amend Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098 located off Red Bug Road SW (SR 1136) near Shallotte from LDR (Low Density Residential) to MDR (Medium Density Residential).

Mr. Pages addressed the Board. He read the Staff Report (attached). He identified the subject property and surrounding properties on a visual map and he provided drone footage of the site and surrounding area.

Mr. Pages said staff recommends approval from R-7500 (Medium Density Residential) and R-6000 (High Density Residential) to R-6000 (High Density Residential) for Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098 in conjunction with an amendment to the Official Brunswick County CAMA Land Use Plan Map for Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098 located off Red Bug Road SW (SR 1136) near Shallotte from LDR (Low Density Residential) to MDR (Medium Density Residential).

Ms. Easley asked staff if both public water and sewer will have to be provided through other property since the subject property is not accessed off Red Bug Road SW (SR 1136)? Mr. Pages said both public water and sewer will have to be accessed via an easement off either Fieldview Lane SW or Ocean Highway West (US 17).

Mr. Dunham asked staff if Tax Parcel 18200098 is split-zoned and Mr. Pages replied, yes. Mr. Pages added that there are single-wide manufactured homes in the area and they will not be allowed to be replaced under the current zoning.

Ms. Easley made a motion to open the Public Hearing and the motion was unanimously carried.

Ms. Renee Whitby addressed the Board. Ms. Whitby stated that there are members of her family that wish to place single-wide manufactured homes on vacant lots as well as replace an existing older single-wide manufactured home with a newer single-wide manufactured home. Mr. Dunham asked staff if the existing single-wide manufactured home can be replaced? Ms. Bunch said the Brunswick County Unified Development Ordinance (UDO) allows for an existing single-wide to be replaced with certain provisions, but single-wide manufactured homes are not allowed in the existing zoning district if the lot is currently vacant. Ms. Whitby said Tax Parcels 1820010806 and 182001807 are small lots and a single-wide manufactured home is ideal and the desired dwelling for those lots .

Ms. Doreen Alloway addressed the Board. Ms. Alloway said there are wetlands in the area and she was concerned with the potential impact to the area if the zoning designation is changed? Ms. Bunch said development of individual lots should not have a negative impact on stormwater runoff in the area.

With no further comments, Ms. Easley made a motion to close the Public Hearing and the motion was unanimously carried.

Mr. Leary made a motion to recommend to the Board of Commissioners to approve Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098 in conjunction with an amendment to the Official Brunswick County CAMA Land Use Plan Map for Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098 located off Red Bug Road SW (SR 1136) near Shallotte from LDR (Low Density Residential) to MDR (Medium Density Residential) and the motion was unanimously carried.

THEREFORE, on the basis of all the foregoing, IT IS ORDERED that the application for REZONING be recommended to the Board of Commissioners for

☒ **APPROVAL – NOT CONSISTENT WITH THE COMPREHENSIVE PLAN**

- The Planning Board finds that the proposed zoning amendment is NOT consistent with the CAMA Land Use Plan (Comprehensive Plan) for the following reasons:

The parcels are classified as LDR (Low Density Residential). However, an amendment has been requested from LDR (Low Density Residential) to MDR (Medium Density Residential).

- The Planning Board further finds that approval of the proposed zoning amendment will amend the CAMA Land Use Plan (Comprehensive Plan) and the following changes have been considered to meet the needs of the community:

This amendment would allow for the replacement of existing single-wide manufactured homes and placement of single-wide manufactured homes as there are lots that can only accommodate a single-wide manufactured home.

- The Planning Board further finds that the proposed zoning amendment is reasonable and in the public interest for the following reasons:

There is MDR land classification and R-6000 zoning in the immediate area.

C. Rezoning Z-762– East Coast Engineering and Surveying (%Alan Lewis).

Request to rezone approximately 12.94 acres located at 5841 Ocean Highway West (US 17) from R-7500 (Medium Density Residential) and C-LD (Commercial Low Density) to C-LD (Commercial Low Density) for Tax Parcel 2120002302.

Land Use Plan Map Amendment LUM-762:

Request to amend Tax Parcel 2120002302 located at 5841 Ocean Highway West (US 17) from LDR (Low Density Residential) to Commercial.

Mr. Pages addressed the Board. He read the Staff Report (attached). He identified the subject property and surrounding properties on a visual map and he provided drone footage of the site.

Mr. Pages said staff recommends approval from R-7500 (Medium Density Residential) and C-LD (Commercial Low Density) to C-LD (Commercial Low Density) for Tax Parcel 2120002302 in

conjunction with an amendment to the Official Brunswick County CAMA Land Use Plan Map for Tax Parcel 2120002302 located at 5841 Ocean Highway West (US 17) from LDR (Low Density Residential) to Commercial.

Mr. Ward made a motion to open the Public Hearing and the motion was unanimously carried.

Mr. Alan Lewis, East Coast Engineering and Surveying, addressed the Board on behalf of the applicant and potential buyer. Mr. Lewis stated that the applicant wishes to correct a split-zoning issue. He stated that the existing vegetative buffer will be maintained.

With no further comments, Ms. Easley made a motion to close the Public Hearing and the motion was unanimously carried.

Mr. Dunham asked if the current use on the property is in compliance with the UDO and Mr. Pages replied, yes.

Mr. Price made a motion to recommend to the Board of Commissioners to approve Tax Parcel 2120002302 in conjunction with an amendment to the Official Brunswick County CAMA Land Use Plan Map for Tax Parcel 2120002302 located at 5841 Ocean Highway West (US 17) from LDR (Low Density Residential) to Commercial and the motion was unanimously carried.

THEREFORE, on the basis of all the foregoing, IT IS ORDERED that the application for REZONING be recommended to the Board of Commissioners for

☒ **APPROVAL – NOT CONSISTENT WITH THE COMPREHENSIVE PLAN**

- The Planning Board finds that the proposed zoning amendment is NOT consistent with the CAMA Land Use Plan (Comprehensive Plan) for the following reasons:

The parcel is classified as LDR (Low Density Residential). However, an amendment has been requested from LDR (Low Density Residential) to Commercial. The property has been used for commercial purposes for 2 decades.

- The Planning Board further finds that approval of the proposed zoning amendment will amend the CAMA Land Use Plan (Comprehensive Plan) and the following changes have been considered to meet the needs of the community:

The property is commercial in nature and the CAMA Land Use Plan encourages commercial development at intersections along major corridors.

- The Planning Board further finds that the proposed zoning amendment is reasonable and in the public interest for the following reasons:

The proposed zoning amendment will be consistent with surrounding properties and it will correct a split-zoning issue.

## VIII. OTHER BUSINESS.

- Recognition of Helen Bunch on receiving the 2017 Outstanding Local Government Planner Award from the Cape Fear Council of Government.

Ms. Dixon addressed the Board. She stated that Ms. Bunch was presented the 2017 Outstanding Local Government Planner of the Year Award from the Cape Fear Council of Government at their 27-Feb-18 Annual Banquet. The Board members congratulated Ms. Bunch on her award.

- Setback Inspections

Ms. Dixon addressed the Board. She stated that there have been situations where zoning setbacks are not clearly defined on sites. As a result, Ms. Dixon said the County is proposing complimentary zoning compliance inspections to confirm that residential projects are in compliance with approved site plans submitted for a building permit. Ms. Dixon further stated that recently a case was heard by the Board of Adjustment requesting a variance from the minimum setback requirements and the Board of Adjustment suggested that a survey be required to alleviate this issue. She said staff will be addressing different options to ensure structures are placed on parcels in conformance with UDO minimum setback requirements.

- Planning Board Cases Update

Ms. Dixon addressed the Board. She stated that Zoning Case Z-759 will be considered at the Board of Commissioners' 19-Mar-18 meeting as well as revisions to both solar farm facilities and temporary use permits for large events with 1,000 guests or more.

- FEMA Flood Maps

Ms. Dixon addressed the Board. She stated that FEMA has released the final flood maps. As a result, the Flood Damage Prevention Ordinance will be revised to reflect the new flood maps and a public hearing has to be scheduled by the Planning Board, which will likely be held at the Planning Board's 08-Apr-18 meeting.

- Planning Board Training

Ms. Dixon addressed the Board. She stated that staff is working on scheduling a training session for the Board and she will contact the Board once dates and times are confirmed.

## IX. ADJOURNMENT.

With no further business, Mr. Leary made a motion to adjourn and the motion was unanimously carried.

# CONSISTENCY STATEMENT

## FOR BRUNSWICK COUNTY BOARD OF COMMISSIONERS



**ZONING AMENDMENT DESCRIPTION:** Rezoning Case Z-18-760

***THE BRUNSWICK COUNTY BOARD OF COMMISSIONERS HEREBY ORDER, on the basis of all the foregoing, that the UNIFIED DEVELOPMENT ORDINANCE ZONING AMENDMENT be***

☐ **APPROVED – CONSISTENT WITH COMPREHENSIVE PLAN**

- The Board of Commissioners finds that the proposed zoning amendment *is consistent with the CAMA Land Use Plan (Comprehensive Plan)* for the following reasons: \_\_\_\_\_  
\_\_\_\_\_
- The Board of Commissioners further finds that the proposed zoning amendment *is reasonable and in the public interests* for the following reasons: \_\_\_\_\_  
\_\_\_\_\_

☐ **APPROVED – NOT CONSISTENT WITH COMPREHENSIVE PLAN**

- The Board of Commissioners finds that the proposed zoning amendment *is NOT consistent* with the CAMA Land Use Plan (Comprehensive Plan) for the following reasons: \_\_\_\_\_  
\_\_\_\_\_

***PLANNING BOARD RECOMMENDATION: The parcels are currently classified as LDR (Low Density Residential). However, an amendment has been requested from LDR (Low Density Residential) to Commercial.***

- The Board of Commissioners further finds that the approval of the proposed zoning amendment will amend the CAMA Land Use Plan (Comprehensive Plan) and the following changes have been considered to meet the needs of the community: \_\_\_\_\_  
\_\_\_\_\_

***PLANNING BOARD RECOMMENDATION: There is commercial zoning in the immediate area and the County strongly supports commercial nodes, which will serve the community and neighboring communities.***

- The Board of Commissioners further finds that the proposed zoning amendment *is reasonable and in the public interests* for the following reasons: \_\_\_\_\_  
\_\_\_\_\_

***PLANNING BOARD RECOMMENDATION: There is existing commercial zoning adjoining and in close proximity to this area.***

☐ **DENIED– INCONSISTENT WITH COMPREHENSIVE PLAN**

- The Board of Commissioners finds that the proposed zoning amendment ☐ **is** ☐ **is not** consistent with the CAMA Land Use Plan (Comprehensive Plan) and ☐ **is** ☐ **is not** in the public interests for the following reasons: \_\_\_\_\_  
\_\_\_\_\_



## **Brunswick County Board of Commissioners**

### **ACTION AGENDA ITEM**

**April 16, 2018**

#### **Action Item # VII. - 4.**

**From:**  
Kirstie Dixon, Planning Director

Planning - Rezoning Case Z-761 (Kirstie Dixon, Director of Planning)

#### **Issue/Action Requested:**

Request that, after the Public Hearing, the Board of Commissioners approve First and Second Readings to amend the Official Unified Development Ordinance Zoning Map from R-7500 (Medium Density Residential) and R-6000 (High Density Residential) to R-6000 (High Density Residential) with an associated CAMA Land Use Plan Map from LDR (Low Density Residential) to MDR (Medium Density Residential) (Z-18-761).

#### **Background/Purpose of Request:**

The proposed rezoning from R-7500 (Medium Density Residential) and R-6000 (High Density Residential) to R-6000 (High Density Residential) will allow residential use for Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098 located of Red Bug Road SW (SR 1136). This rezoning totals approximately 75.56 acres.

A proposed amendment to the Official Brunswick County CAMA Land Use Plan Map from LDR (Low Density Residential) to MDR (Medium Density Residential) for Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098 classification accompanies the proposed zoning. This proposed land use plan map amendment totals approximately 75.56 acres.

The Planning Board held a Public Hearing on 12-Mar-18 and the applicant Ms. Renee Whitby stated that there are members of her family that wish to place single-wide manufactured homes on vacant lots as well as replace an existing older single-wide manufactured home with a newer single-wide manufactured home. Single-wide manufactured homes are not allowed in the current zoning district and will not allow any new single-wide mobile homes or replacements .

Ms. Doreen Alloway was concerned with potential impact to current wetlands in the area if the zoning designation changed. Ms. Bunch assured her that development on an individual lot should not have a negative impact on stormwater runoff in the area.

#### **Fiscal Impact:**

Reviewed By Director of Fiscal Operations

#### **Approved By County Attorney:**

Yes

#### **Advisory Board Recommendation:**

At its meeting on 12-Mar-18, the Planning Board voted unanimously to recommend approval of the rezoning and land use plan map amendment as proposed.

Members Present: Eric Dunham, Joy Easley, Richard Leary, Ron Medlin, Troy Price, Tom Simmons and

Randy Ward

Members Absent: None

**County Manager's Recommendation:**

Recommend that, after the Public Hearing, the Board of Commissioners approve First and Second Readings of the proposed amendment to the Brunswick County Unified Development Ordinance (Z-18-761) from R-7500 (Medium Density Residential) and R-6000 (High Density Residential) to R-6000 (High Density Residential) with an associated CAMA Land Use Plan Map from LDR (Low Density Residential) to MDR (Medium Density Residential) (Z-18-761).

**ATTACHMENTS:**

Description

- ▣ Staff Report
- ▣ Zoning Map
- ▣ Land Use Plan Map
- ▣ Site Photos
- ▣ Minutes
- ▣ Consistency Statement

# REZONING STAFF REPORT

Prepared by Marc Pages, Senior Planner

Rezoning Case#: Z-761

March 12, 2018



## APPLICATION SUMMARY

The applicant requests to rezone Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098 from R-7500 (Medium Density Residential) and R-6000 (High Density Residential) to R-6000 (High Density Residential). This rezoning request is conventional therefore, no conditions or site plans are proposed. All owners and adjacent owners have been notified via first class mail.

### Location

Red Bug Road (SR 1136)

### Tax Parcel(s)

18200108, 1820010802,  
1820010803, 1820010804,  
1820010805, 1820010806,  
1820010807, 1820010808,  
18200109 and a portion of  
18200098

### Current Zoning

R-7500 & R-6000

### Proposed Zoning

R-6000

### Surrounding Zoning

R-7500, CLD, R-6000

### Current Use

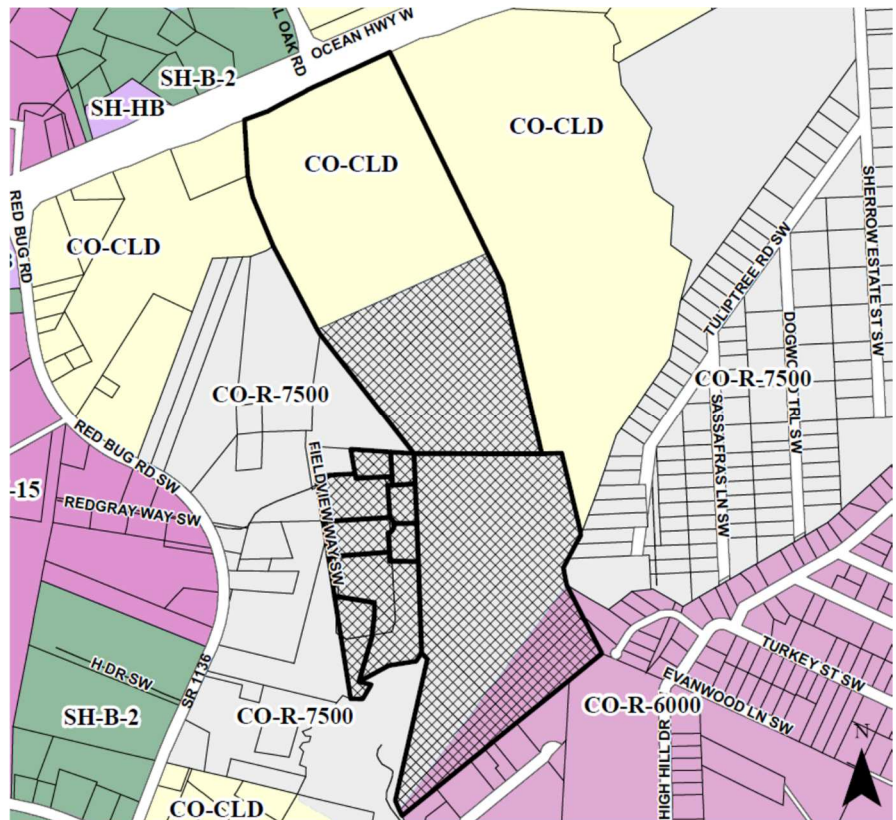
Residential & Vacant Lands

### Surrounding Land Uses

Residential, Vacant Lands

### Size

75.56 acres





## SITE CONSIDERATIONS

**Zoning History:** There are not any known zoning changes to the rezoning site since introduction of zoning in 1994. One adjacent parcel has experienced a zoning change. Adjacent Tax Parcel 18200097 to the east was rezoned to CLD as part of Rezoning Case Z-660 on August 2, 2010.

**Buffers:** If rezoned to R-6000, project boundary buffers shall be a 0.2 (vacant) or 0.6 (developed) opacity buffer adjacent to CLD areas. A buffer is not required for residential uses adjacent to R-6000 or R-7500 areas. If non-residential uses are proposed adjacent to R-6000 or R-7500 areas then a 0.4 opacity buffer will be required.

**Traffic:** The average annual daily traffic count for this section of Red Bug Road is 2,800 vehicle trips per day. Many of the parcels are accessed via Fieldview Way SW, an unimproved road.

**Utilities:** Water is available from Brunswick County along Red Bug Road and Ocean Hwy West. Sewer is available on Ocean Hwy West. Water & Sewer connection will require developer responsibility to connect to the water and sewer system.

**Schools:** There are not any vicinity school capacity deficiencies at this time.

**CIP Projects in Area:** West Brunswick Classroom Addition (FY 2019), and Brunswick County Waterway Park (FY 2018 & 2019).

**NCDOT Road Improvements in Area:** Convert US 17 & NC 211 intersection to interchange (Project U-5932) – Design Phase (Anticipated Construction 2024).

**Environmental Impacts:** Biodiversity & Wildlife Habitat Assessment Score: Small southern portions of the rezoning site score a 7 or 8 out of 10 due to wetlands classified as substantial.

## ANALYSIS

*"The R-7500, R-6000, and SBR-6000 districts are established to provide for orderly suburban residential development. A limited number of commercial and civic uses are allowed, subject to the restrictions necessary to preserve and protect the residential character of the neighborhood. A special permit process for higher intensity development is also allowed, using discretion to balance issues of higher density with improved amenities. Due to the higher intensity developments contained in this district, it is intended to be applied to properties served by public sewer and water systems."*

**CAMA Land Use Plan Classification:** LDR (Low Density Residential).

- Proposed Zoning is not consistent with CAMA Land Use Plan.
- Associated Land Use Plan Amendment (LUM-761):  
Request to amend Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098 from LDR to MDR

**Applicable CAMA Land Use Policies:**

- P.15 states that Brunswick County supports greater residential densities in areas that are accessible to water and sewer service(s). Agricultural and low-density residential land uses should be located in areas that do not have central water or sewer service.
- P.49 states that Brunswick County supports directing more intensive land uses to areas that have existing or planned infrastructure.

## STAFF RECOMMENDATION SUMMARY

Staff recommends **APPROVAL TO R-6000 IN CONJUNCTION WITH A LAND USE PLAN AMENDMENT TO MDR FOR TAX PARCELS 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 AND A PORTION OF 18200098 BASED** upon information provided, surrounding area, current uses, the Brunswick County CAMA CORE Land Use Plan, and other adopted Brunswick County plans and policies.

There is an associated Land Use Plan Ammendment from Low Density Residential (LDR) to Medium Density Residential (MDR) for Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098.

# Rezoning Case Z-761 R-7500 and R-6000 to R-6000

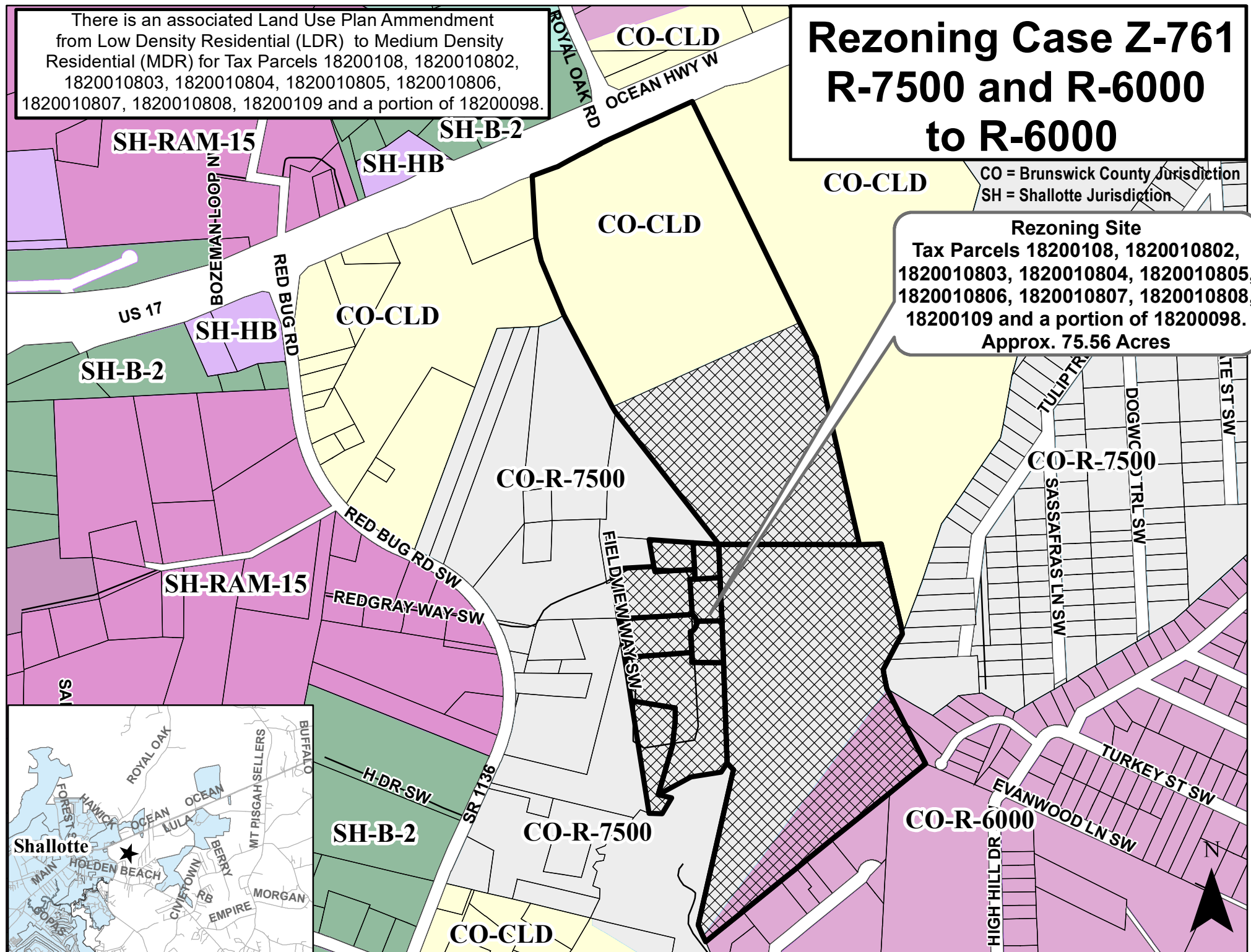
CO-CLD

CO = Brunswick County Jurisdiction  
SH = Shallotte Jurisdiction

## Rezoning Site

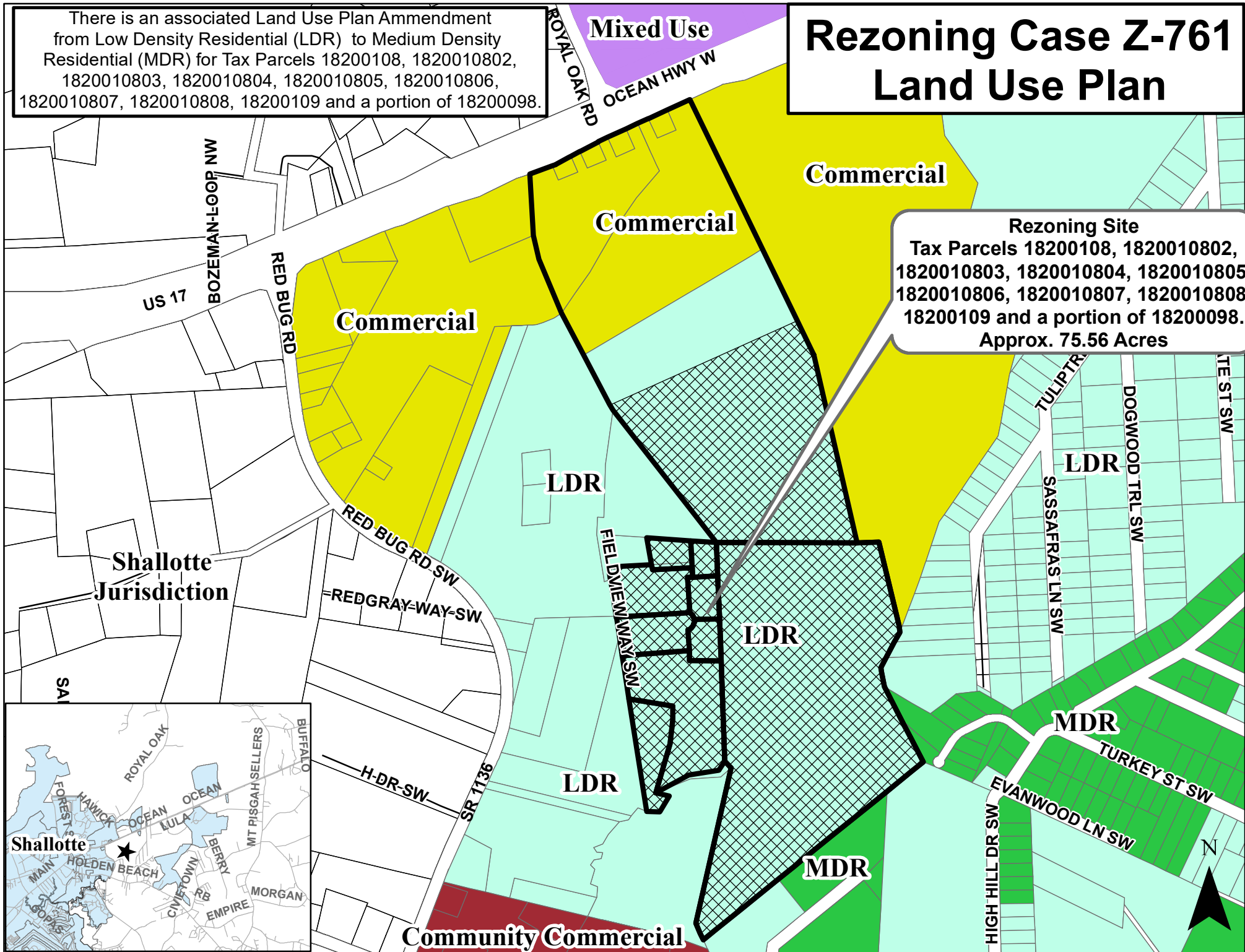
Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098.

Approx. 75.56 Acres

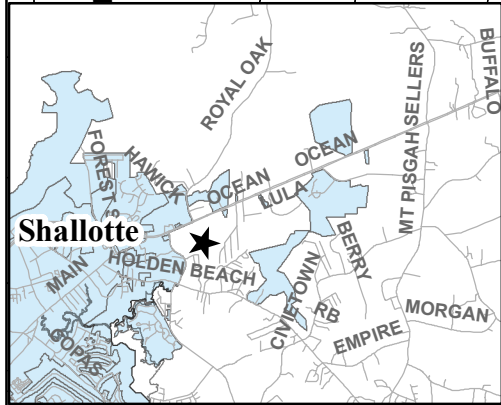


There is an associated Land Use Plan Ammdement from Low Density Residential (LDR) to Medium Density Residential (MDR) for Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098.

# Rezoning Case Z-761 Land Use Plan



**Rezoning Site**  
Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098.  
Approx. 75.56 Acres



## Pictures Z-761



Public Notice on Fieldview Way



View of Site



View of Site



View of Access via Fieldview Way

**MINUTES**  
**PLANNING BOARD**  
**BRUNSWICK COUNTY, NC**

**6:00 P.M. Monday**  
**March 12, 2018**

**Commissioners Chambers**  
**David R. Sandifer Administration Bldg.**  
**County Government Center**  
**Old U.S 17 East**

**MEMBERS PRESENT**

Eric Dunham, Chair  
Joy Easley, Vice Chair  
Richard Leary  
Ron Medlin  
Troy Price  
Tom Simmons  
Randy Ward

**MEMBERS ABSENT**

None

**STAFF PRESENT**

Kirstie Dixon, Director  
Helen Bunch, Zoning Admin.  
Connie Marlowe, Admin. Asst. II  
Marc Pages, Senior Planner  
Bryan Batton, Asst. County Attorney

**OTHERS PRESENT**

Alan Lewis  
John Hankins  
Doreen Alloway

Terry Pope, State Port Pilot  
Renee Whitby  
Chris Stanley

**I. CALL TO ORDER.**

The Chair called the meeting to order at 6:01 p.m.

**II. INVOCATION/PLEDGE OF ALLEGIANCE.**

Mr. Dunham said a prayer. The Chair asked everyone to stand and face the U.S. Flag to say the Pledge of Allegiance.

III. ROLL CALL.

There were no members absent.

IV. CONSIDERATION OF MINUTES OF THE 12-FEB-18 MEETING.

Mr. Leary made a motion to approve the minutes as written and the motion was unanimously carried.

V. AGENDA AMENDMENTS.

Ms. Dixon said staff will add 2 announcements under Other Business.

VI. PUBLIC COMMENT.

There were none.

VII. PUBLIC HEARINGS.

A. Rezoning Z-760– East Coast Engineering and Surveying (%Chris Stanley).

Request to rezone approximately 2.67 acres located off Ocean Highway East (US 17) and Kelly Road NE near Winnabow from RR (Rural Low Density Residential) to C-LD (Commercial Low Density) for Tax Parcels 084BA001, 084BA002, 084BA003, 084BA014, 084BA015, 084BA016 and 084BA017.

Land Use Plan Map Amendment LUM-760:

Request to amend Tax Parcels 084BA001, 084BA002, 084BA003, 084BA014, 084BA015, 084BA016 and 084BA017 located off Ocean Highway East (US 17) and Kelly Road NE near Winnabow from LDR (Low Density Residential) to Commercial.

Ms. Bunch addressed the Board. She read the Staff Report (attached). She identified the subject property and surrounding properties on a visual map.

Ms. Bunch said staff recommends approval from RR (Rural Low Density Residential) to C-LD (Commercial Low Density) for Tax Parcels 084BA001, 084BA002, 084BA003, 084BA014, 084BA015, 084BA016 and 084BA017 in conjunction with an amendment to the Official Brunswick County CAMA Land Use Plan Map for Tax Parcels 084BA001, 084BA002, 084BA003, 084BA014, 084BA015, 084BA016 and 084BA017 located off Ocean Highway East (US 17) and Kelly Road NE near Winnabow from LDR (Low Density Residential) to Commercial.

Mr. Dunham clarified that this does not involve a split-zoning issue for the parcels that are requesting a zoning change and Ms. Bunch concurred.

Ms. Easley made a motion to open the Public Hearing and the motion was unanimously carried.

Mr. Chris Stanley, East Coast Engineering and Surveying, addressed the Board on behalf of the applicant, George Irving. Mr. Stanley stated that the lots were subdivided in the 1990s for residential purposes, but the applicant desires to develop the property in accordance with the surrounding area.

With no further comments, Ms. Easley made a motion to close the Public Hearing and the motion was unanimously carried.

Ms. Easley made a motion to recommend to the Board of Commissioners to approve Tax Parcels 084BA001, 084BA002, 084BA003, 084BA014, 084BA015, 084BA016 and 084BA017 in conjunction with an amendment to the Official Brunswick County CAMA Land Use Plan Map for Tax Parcels 084BA001, 084BA002, 084BA003, 084BA014, 084BA015, 084BA016 and 084BA017 located off Ocean Highway East (US 17) and Kelly Road NE near Winnabow from LDR (Low Density Residential) to Commercial and the motion was unanimously carried.

THEREFORE, on the basis of all the foregoing, IT IS ORDERED that the application for REZONING be recommended to the Board of Commissioners for

☒ **APPROVAL – NOT CONSISTENT WITH THE COMPREHENSIVE PLAN**

- The Planning Board finds that the proposed zoning amendment is NOT consistent with the CAMA Land Use Plan (Comprehensive Plan) for the following reasons:

The parcels are currently classified as LDR (Low Density Residential). However, an amendment has been requested from LDR (Low Density Residential) to Commercial.

- The Planning Board further finds that approval of the proposed zoning amendment will amend the CAMA Land Use Plan (Comprehensive Plan) and the following changes have been considered to meet the needs of the community:

There is commercial zoning in the immediate area and the County strongly supports commercial nodes, which will serve the community and neighboring communities.

- The Planning Board further finds that the proposed zoning amendment is reasonable and in the public interest for the following reasons:

There is existing commercial zoning adjoining and in close proximity to this area.

B. Rezoning Z-761– Renee Whitby.

Request to rezone approximately 75.56 acres located off Red Bug Road SW (SR 1136) near Shallotte from R-7500 (Medium Density Residential) and R-6000 (High Density Residential) to R-6000 (High Density Residential) for Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098.



Land Use Plan Map Amendment LUM-761:

Request to amend Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098 located off Red Bug Road SW (SR 1136) near Shallotte from LDR (Low Density Residential) to MDR (Medium Density Residential).

Mr. Pages addressed the Board. He read the Staff Report (attached). He identified the subject property and surrounding properties on a visual map and he provided drone footage of the site and surrounding area.

Mr. Pages said staff recommends approval from R-7500 (Medium Density Residential) and R-6000 (High Density Residential) to R-6000 (High Density Residential) for Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098 in conjunction with an amendment to the Official Brunswick County CAMA Land Use Plan Map for Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098 located off Red Bug Road SW (SR 1136) near Shallotte from LDR (Low Density Residential) to MDR (Medium Density Residential).

Ms. Easley asked staff if both public water and sewer will have to be provided through other property since the subject property is not accessed off Red Bug Road SW (SR 1136)? Mr. Pages said both public water and sewer will have to be accessed via an easement off either Fieldview Lane SW or Ocean Highway West (US 17).

Mr. Dunham asked staff if Tax Parcel 18200098 is split-zoned and Mr. Pages replied, yes. Mr. Pages added that there are single-wide manufactured homes in the area and they will not be allowed to be replaced under the current zoning.

Ms. Easley made a motion to open the Public Hearing and the motion was unanimously carried.

Ms. Renee Whitby addressed the Board. Ms. Whitby stated that there are members of her family that wish to place single-wide manufactured homes on vacant lots as well as replace an existing older single-wide manufactured home with a newer single-wide manufactured home. Mr. Dunham asked staff if the existing single-wide manufactured home can be replaced? Ms. Bunch said the Brunswick County Unified Development Ordinance (UDO) allows for an existing single-wide to be replaced with certain provisions, but single-wide manufactured homes are not allowed in the existing zoning district if the lot is currently vacant. Ms. Whitby said Tax Parcels 1820010806 and 182001807 are small lots and a single-wide manufactured home is ideal and the desired dwelling for those lots .

Ms. Doreen Alloway addressed the Board. Ms. Alloway said there are wetlands in the area and she was concerned with the potential impact to the area if the zoning designation is changed? Ms. Bunch said development of individual lots should not have a negative impact on stormwater runoff in the area.

With no further comments, Ms. Easley made a motion to close the Public Hearing and the motion was unanimously carried.



Mr. Leary made a motion to recommend to the Board of Commissioners to approve Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098 in conjunction with an amendment to the Official Brunswick County CAMA Land Use Plan Map for Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098 located off Red Bug Road SW (SR 1136) near Shallotte from LDR (Low Density Residential) to MDR (Medium Density Residential) and the motion was unanimously carried.

THEREFORE, on the basis of all the foregoing, IT IS ORDERED that the application for REZONING be recommended to the Board of Commissioners for

☒ **APPROVAL – NOT CONSISTENT WITH THE COMPREHENSIVE PLAN**

- The Planning Board finds that the proposed zoning amendment is NOT consistent with the CAMA Land Use Plan (Comprehensive Plan) for the following reasons:

The parcels are classified as LDR (Low Density Residential). However, an amendment has been requested from LDR (Low Density Residential) to MDR (Medium Density Residential).

- The Planning Board further finds that approval of the proposed zoning amendment will amend the CAMA Land Use Plan (Comprehensive Plan) and the following changes have been considered to meet the needs of the community:

This amendment would allow for the replacement of existing single-wide manufactured homes and placement of single-wide manufactured homes as there are lots that can only accommodate a single-wide manufactured home.

- The Planning Board further finds that the proposed zoning amendment is reasonable and in the public interest for the following reasons:

There is MDR land classification and R-6000 zoning in the immediate area.

C. Rezoning Z-762– East Coast Engineering and Surveying (%Alan Lewis).

Request to rezone approximately 12.94 acres located at 5841 Ocean Highway West (US 17) from R-7500 (Medium Density Residential) and C-LD (Commercial Low Density) to C-LD (Commercial Low Density) for Tax Parcel 2120002302.

Land Use Plan Map Amendment LUM-762:

Request to amend Tax Parcel 2120002302 located at 5841 Ocean Highway West (US 17) from LDR (Low Density Residential) to Commercial.

Mr. Pages addressed the Board. He read the Staff Report (attached). He identified the subject property and surrounding properties on a visual map and he provided drone footage of the site.

Mr. Pages said staff recommends approval from R-7500 (Medium Density Residential) and C-LD (Commercial Low Density) to C-LD (Commercial Low Density) for Tax Parcel 2120002302 in

conjunction with an amendment to the Official Brunswick County CAMA Land Use Plan Map for Tax Parcel 2120002302 located at 5841 Ocean Highway West (US 17) from LDR (Low Density Residential) to Commercial.

Mr. Ward made a motion to open the Public Hearing and the motion was unanimously carried.

Mr. Alan Lewis, East Coast Engineering and Surveying, addressed the Board on behalf of the applicant and potential buyer. Mr. Lewis stated that the applicant wishes to correct a split-zoning issue. He stated that the existing vegetative buffer will be maintained.

With no further comments, Ms. Easley made a motion to close the Public Hearing and the motion was unanimously carried.

Mr. Dunham asked if the current use on the property is in compliance with the UDO and Mr. Pages replied, yes.

Mr. Price made a motion to recommend to the Board of Commissioners to approve Tax Parcel 2120002302 in conjunction with an amendment to the Official Brunswick County CAMA Land Use Plan Map for Tax Parcel 2120002302 located at 5841 Ocean Highway West (US 17) from LDR (Low Density Residential) to Commercial and the motion was unanimously carried.

THEREFORE, on the basis of all the foregoing, IT IS ORDERED that the application for REZONING be recommended to the Board of Commissioners for

☒ **APPROVAL – NOT CONSISTENT WITH THE COMPREHENSIVE PLAN**

- The Planning Board finds that the proposed zoning amendment is NOT consistent with the CAMA Land Use Plan (Comprehensive Plan) for the following reasons:

The parcel is classified as LDR (Low Density Residential). However, an amendment has been requested from LDR (Low Density Residential) to Commercial. The property has been used for commercial purposes for 2 decades.

- The Planning Board further finds that approval of the proposed zoning amendment will amend the CAMA Land Use Plan (Comprehensive Plan) and the following changes have been considered to meet the needs of the community:

The property is commercial in nature and the CAMA Land Use Plan encourages commercial development at intersections along major corridors.

- The Planning Board further finds that the proposed zoning amendment is reasonable and in the public interest for the following reasons:

The proposed zoning amendment will be consistent with surrounding properties and it will correct a split-zoning issue.

## VIII. OTHER BUSINESS.

- Recognition of Helen Bunch on receiving the 2017 Outstanding Local Government Planner Award from the Cape Fear Council of Government.

Ms. Dixon addressed the Board. She stated that Ms. Bunch was presented the 2017 Outstanding Local Government Planner of the Year Award from the Cape Fear Council of Government at their 27-Feb-18 Annual Banquet. The Board members congratulated Ms. Bunch on her award.

- Setback Inspections

Ms. Dixon addressed the Board. She stated that there have been situations where zoning setbacks are not clearly defined on sites. As a result, Ms. Dixon said the County is proposing complimentary zoning compliance inspections to confirm that residential projects are in compliance with approved site plans submitted for a building permit. Ms. Dixon further stated that recently a case was heard by the Board of Adjustment requesting a variance from the minimum setback requirements and the Board of Adjustment suggested that a survey be required to alleviate this issue. She said staff will be addressing different options to ensure structures are placed on parcels in conformance with UDO minimum setback requirements.

- Planning Board Cases Update

Ms. Dixon addressed the Board. She stated that Zoning Case Z-759 will be considered at the Board of Commissioners' 19-Mar-18 meeting as well as revisions to both solar farm facilities and temporary use permits for large events with 1,000 guests or more.

- FEMA Flood Maps

Ms. Dixon addressed the Board. She stated that FEMA has released the final flood maps. As a result, the Flood Damage Prevention Ordinance will be revised to reflect the new flood maps and a public hearing has to be scheduled by the Planning Board, which will likely be held at the Planning Board's 08-Apr-18 meeting.

- Planning Board Training

Ms. Dixon addressed the Board. She stated that staff is working on scheduling a training session for the Board and she will contact the Board once dates and times are confirmed.

## IX. ADJOURNMENT.

With no further business, Mr. Leary made a motion to adjourn and the motion was unanimously carried.

# CONSISTENCY STATEMENT

## FOR BRUNSWICK COUNTY BOARD OF COMMISSIONERS



**ZONING AMENDMENT DESCRIPTION:** Rezoning Case Z-18-761

***THE BRUNSWICK COUNTY BOARD OF COMMISSIONERS HEREBY ORDER, on the basis of all the foregoing, that the UNIFIED DEVELOPMENT ORDINANCE ZONING AMENDMENT be***

☐ **APPROVED – CONSISTENT WITH COMPREHENSIVE PLAN**

- The Board of Commissioners finds that the proposed zoning amendment *is consistent with the CAMA Land Use Plan (Comprehensive Plan)* for the following reasons: \_\_\_\_\_  
\_\_\_\_\_
- The Board of Commissioners further finds that the proposed zoning amendment *is reasonable and in the public interests* for the following reasons: \_\_\_\_\_  
\_\_\_\_\_

☐ **APPROVED – NOT CONSISTENT WITH COMPREHENSIVE PLAN**

- The Board of Commissioners finds that the proposed zoning amendment *is NOT consistent* with the CAMA Land Use Plan (Comprehensive Plan) for the following reasons: \_\_\_\_\_  
\_\_\_\_\_

***PLANNING BOARD RECOMMENDATION: The parcels are currently classified as LDR (Low Density Residential). However, an amendment has been requested from LDR (Low Density Residential) to MDR (Medium Density Residential).***

- The Board of Commissioners further finds that the approval of the proposed zoning amendment will amend the CAMA Land Use Plan (Comprehensive Plan) and the following changes have been considered to meet the needs of the community: \_\_\_\_\_  
\_\_\_\_\_

***PLANNING BOARD RECOMMENDATION: This amendment would allow for the replacement of existing single-wide manufactured homes and placement of single-wide manufactured homes as there are lots that can only accommodate a single-wide manufactured home.***

- The Board of Commissioners further finds that the proposed zoning amendment *is reasonable and in the public interests* for the following reasons: \_\_\_\_\_  
\_\_\_\_\_

***PLANNING BOARD RECOMMENDATION: There is MDR land use classification and R-6000 zoning in the immediate area.***

☐ **DENIED– INCONSISTENT WITH COMPREHENSIVE PLAN**

- The Board of Commissioners finds that the proposed zoning amendment ☐ **is** ☐ **is not** consistent with the CAMA Land Use Plan (Comprehensive Plan) and ☐ **is** ☐ **is not** in the public interests for the following reasons: \_\_\_\_\_  
\_\_\_\_\_



**Brunswick County Board of Commissioners**  
**ACTION AGENDA ITEM**  
**April 16, 2018**

**Action Item # VII. - 5.**

**From:**  
Kirstie Dixon, Planning Director

Planning - Rezoning Case Z-762 (Kirstie Dixon, Director of Planning)

**Issue/Action Requested:**

Request that, after the Public Hearing, the Board of Commissioners approve First and Second Readings to amend the Official Unified Development Ordinance Zoning Map from R-7500 (Medium Density Residential) and C-LD (Commercial Low Density) to C-LD (Commercial Low Density) with an associated CAMA Land Use Plan Map from LDR (Low Density Residential) to Commercial (Z-18-762).

**Background/Purpose of Request:**

The proposed rezoning from R-7500 (Medium Density Residential) and C-LD (Commercial Low Density) to C-LD (Commercial Low Density) will allow commercial use for Tax Parcel 2120002302 located at 5841 Ocean Highway West (US 17). This rezoning totals approximately 12.94 acres. This parcel is currently split zoned and has a RV & Boat Storage commercial business within the CLD area.

A proposed amendment to the Official Brunswick County CAMA Land Use Plan Map from LDR (Low Density Residential) to Commercial for Tax Parcel 2120002302 classification accompanies the proposed zoning. This proposed land use plan map amendment totals approximately 12.94 acres.

The Planning Board held a Public Hearing on 12-Mar-18 and Mr. Alan Lewis with East Coast Engineering and Surveying addressed the Board on behalf of the applicant. Mr. Lewis said the applicant wishes to correct a split-zoning issue and the existing vegetative buffer will be maintained on the site.

**Fiscal Impact:**

Reviewed By Director of Fiscal Operations

**Approved By County Attorney:**

Yes

**Advisory Board Recommendation:**

At its meeting on 12-Mar-18, the Planning Board voted unanimously to recommend approval of the rezoning and land use plan map amendment as proposed.

Members Present: Eric Dunham, Joy Easley, Richard Leary, Ron Medlin, Troy Price, Tom Simmons and Randy Ward

Members Absent: None

**County Manager's Recommendation:**

Recommend that, after the Public Hearing, the Board of Commissioners approve First and Second Readings of the proposed amendment to the Brunswick County Unified Development Ordinance (Z-18-762) from R-7500 (Medium Density Residential) and C-LD (Commercial Low Density) to C-LD (Commercial Low Density) with an associated CAMA Land Use Plan Map from LDR (Low Density Residential) to

Commercial.

**ATTACHMENTS:**

Description

- ▣ Staff Report
- ▣ Zoning Map
- ▣ Land Use Plan Map
- ▣ Site Photos
- ▣ Minutes
- ▣ Consistency Statement

# REZONING STAFF REPORT

Prepared by Marc Pages, Senior Planner

Rezoning Case#: Z-762

March 12, 2018



## APPLICATION SUMMARY

The applicant requests to rezone Tax Parcel 2120002302 from R-7500 (Medium Density Residential) and CLD (Commercial Low Density) to CLD (Commercial Low Density). This rezoning request is conventional therefore, no conditions or site plans are proposed. All owners and adjacent owners have been notified via first class mail.

### Location

5841 Ocean Hwy West (US 17)

### Tax Parcel

2120002302

### Current Zoning

R-7500 & CLD

### Proposed Zoning

CLD

### Surrounding Zoning

R-7500, CLD, SH-HB (Shallotte Jurisdiction)

### Current Use

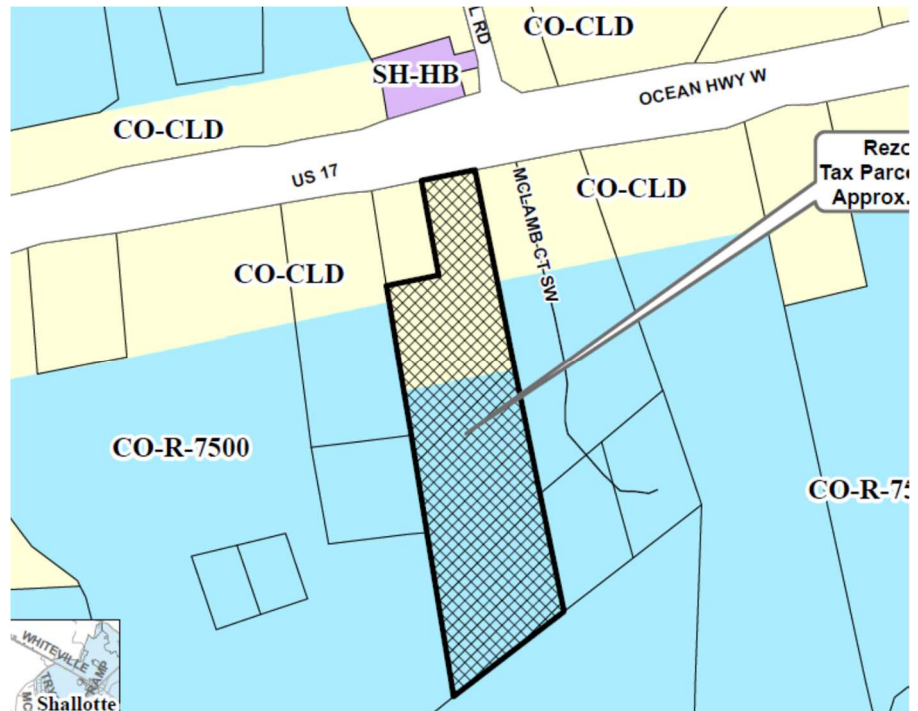
Commercial (RV & Boat Storage)

### Surrounding Land Uses

Residential, Commercial, Vacant Lands

### Size

12.94 acres



## SITE CONSIDERATIONS

**Zoning History:** In July 2005 a 2.89-acre portion of the subject parcel (Tax Parcel 2120002302) was rezoned from R-7500 to CLD. No other recent rezoning activity has taken place in the vicinity.

**Buffers:** If rezoned to CLD, all non-residential uses will require a 0.4 (vacant) or 0.6 (developed) opacity buffer to R-7500 areas. A buffer is not required for non-residential uses zoned CLD unless there is existing residential then a 0.4 opacity buffer will be required.

**Traffic:** The average annual daily traffic count for this section of Ocean Hwy West (US 17) is 23,000 vehicle trips per day.

**Utilities:** Water & Sewer is available from Brunswick County along Ocean Hwy West. Water & Sewer connection will require developer responsibility to connect to the water and sewer system.

**Schools:** There are not any vicinity school capacity deficiencies at this time.

**CIP Projects in Area:** West Brunswick Classroom Addition (FY 2019), and Brunswick County Waterway Park (FY 2018 & 2019).

**NCDOT Road Improvements in Area:** Convert US 17 & NC 211 intersection to interchange (Project U-5932) – Design Phase (Anticipated Construction 2024).

**Environmental Impacts:** Biodiversity & Wildlife Habitat Assessment Score: No portion of the subject site ranks on the Biodiversity and Wildlife Habitat Assessment scale map.

## ANALYSIS

*"This District is intended primarily to be used in outlying areas, adjacent to major thoroughfares, with yards and other provisions for reducing conflicts with adjacent residential uses, and with substantial setbacks to reduce marginal friction on adjacent major thoroughfares. Commercial uses in this District will serve the needs of residential neighborhoods for auto-dependent commercial facilities; and serve the needs of highway oriented tourist business."*

**CAMA Land Use Plan Classification:** LDR (Low Density Residential).

- Proposed Zoning is not consistent with CAMA Land Use Plan.
- Associated Land Use Plan Amendment (LUM-762):  
Request to amend Tax Parcels 2120002302 from LDR to Commercial.

**Applicable CAMA Land Use Policies:**

- P.16 states that Brunswick County strongly supports commercial nodes, including town or village centers, and the prohibition of strip commercialization.
- P.17 states that Brunswick County encourages/supports commercial development (nodes) at the intersections of major roads consistent with the County's future land use map.
- P.49 states that Brunswick County supports directing more intensive land uses to areas that have existing or planned infrastructure.

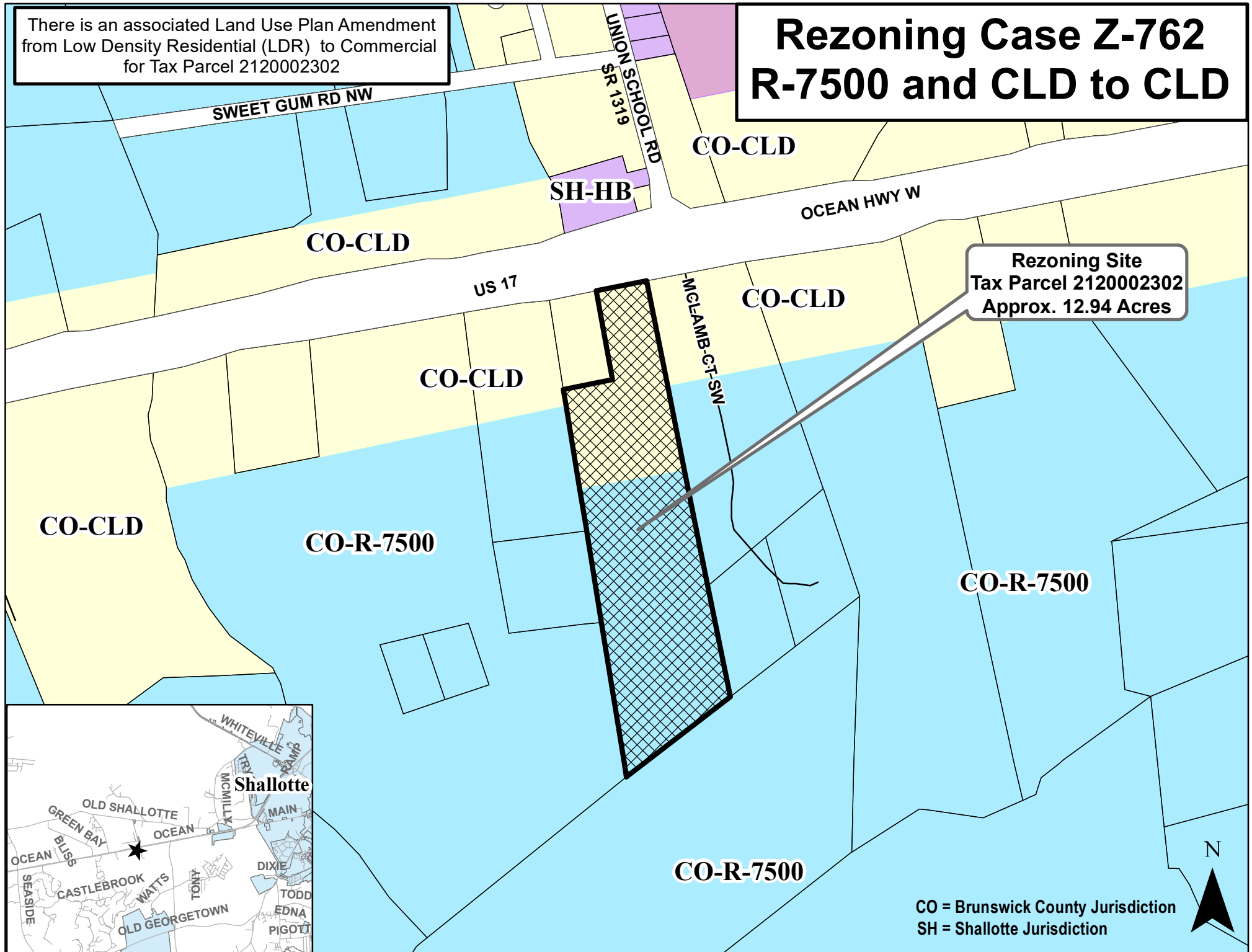
## STAFF RECOMMENDATION SUMMARY

Staff recommends APPROVAL TO CLD IN CONJUNCTION WITH A LAND USE PLAN AMENDMENT TO COMMERCIAL FOR TAX PARCELS 2120002302 BASED upon information provided, surrounding area, current uses, the Brunswick County CAMA CORE Land Use Plan, and other adopted Brunswick County plans and policies.



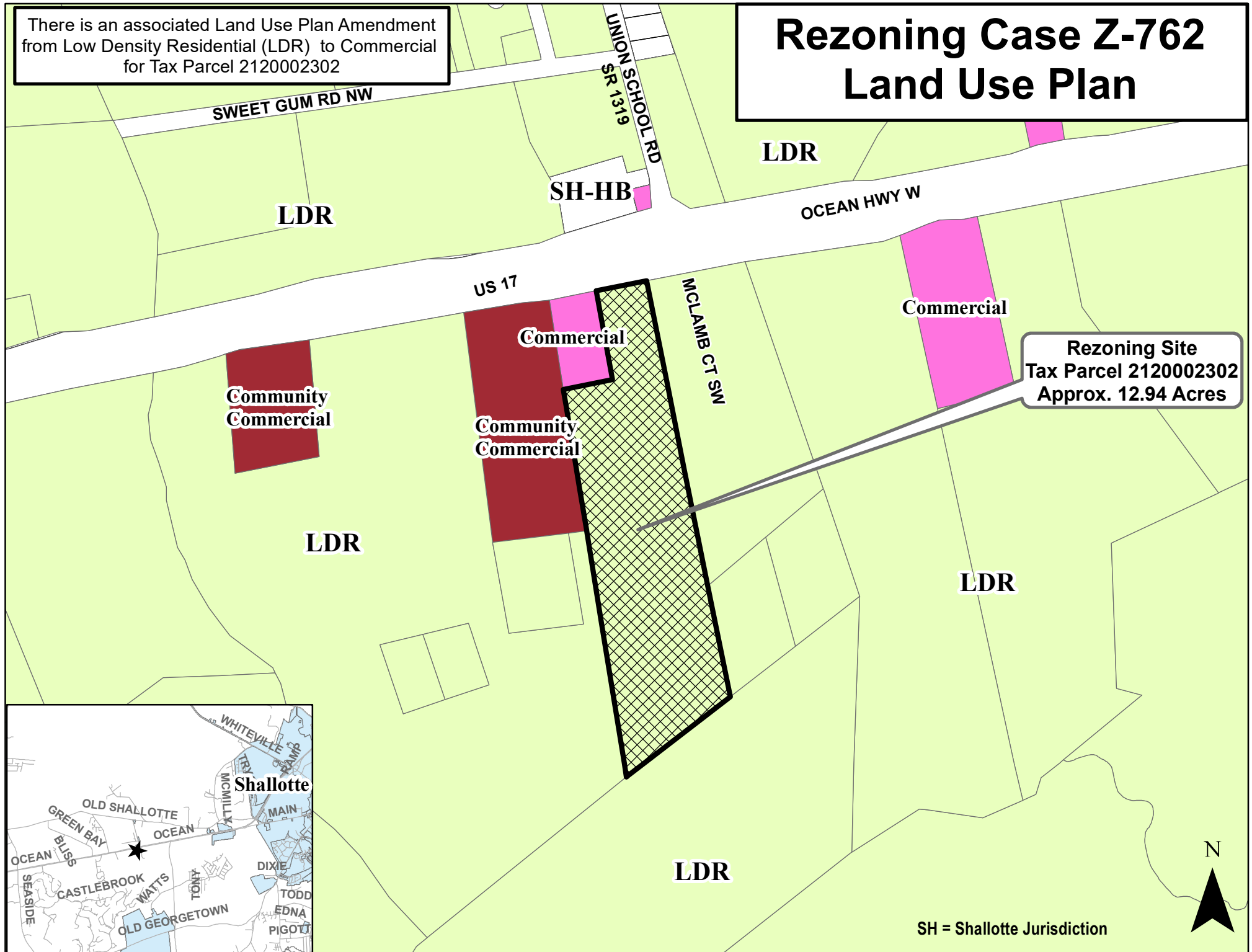
There is an associated Land Use Plan Amendment from Low Density Residential (LDR) to Commercial for Tax Parcel 2120002302

# Rezoning Case Z-762 R-7500 and CLD to CLD



There is an associated Land Use Plan Amendment from Low Density Residential (LDR) to Commercial for Tax Parcel 2120002302

# Rezoning Case Z-762 Land Use Plan



## Pictures Z-762



Public Notice on Ocean Hwy W (US 17)



View of Site



View Ocean Hwy W facing North



View of Ocean Hwy W facing South

**MINUTES**  
**PLANNING BOARD**  
**BRUNSWICK COUNTY, NC**

**6:00 P.M. Monday**  
**March 12, 2018**

**Commissioners Chambers**  
**David R. Sandifer Administration Bldg.**  
**County Government Center**  
**Old U.S 17 East**

**MEMBERS PRESENT**

Eric Dunham, Chair  
Joy Easley, Vice Chair  
Richard Leary  
Ron Medlin  
Troy Price  
Tom Simmons  
Randy Ward

**MEMBERS ABSENT**

None

**STAFF PRESENT**

Kirstie Dixon, Director  
Helen Bunch, Zoning Admin.  
Connie Marlowe, Admin. Asst. II  
Marc Pages, Senior Planner  
Bryan Batton, Asst. County Attorney

**OTHERS PRESENT**

Alan Lewis  
John Hankins  
Doreen Alloway

Terry Pope, State Port Pilot  
Renee Whitby  
Chris Stanley

**I. CALL TO ORDER.**

The Chair called the meeting to order at 6:01 p.m.

**II. INVOCATION/PLEDGE OF ALLEGIANCE.**

Mr. Dunham said a prayer. The Chair asked everyone to stand and face the U.S. Flag to say the Pledge of Allegiance.

III. ROLL CALL.

There were no members absent.

IV. CONSIDERATION OF MINUTES OF THE 12-FEB-18 MEETING.

Mr. Leary made a motion to approve the minutes as written and the motion was unanimously carried.

V. AGENDA AMENDMENTS.

Ms. Dixon said staff will add 2 announcements under Other Business.

VI. PUBLIC COMMENT.

There were none.

VII. PUBLIC HEARINGS.

A. Rezoning Z-760– East Coast Engineering and Surveying (%Chris Stanley).

Request to rezone approximately 2.67 acres located off Ocean Highway East (US 17) and Kelly Road NE near Winnabow from RR (Rural Low Density Residential) to C-LD (Commercial Low Density) for Tax Parcels 084BA001, 084BA002, 084BA003, 084BA014, 084BA015, 084BA016 and 084BA017.

Land Use Plan Map Amendment LUM-760:

Request to amend Tax Parcels 084BA001, 084BA002, 084BA003, 084BA014, 084BA015, 084BA016 and 084BA017 located off Ocean Highway East (US 17) and Kelly Road NE near Winnabow from LDR (Low Density Residential) to Commercial.

Ms. Bunch addressed the Board. She read the Staff Report (attached). She identified the subject property and surrounding properties on a visual map.

Ms. Bunch said staff recommends approval from RR (Rural Low Density Residential) to C-LD (Commercial Low Density) for Tax Parcels 084BA001, 084BA002, 084BA003, 084BA014, 084BA015, 084BA016 and 084BA017 in conjunction with an amendment to the Official Brunswick County CAMA Land Use Plan Map for Tax Parcels 084BA001, 084BA002, 084BA003, 084BA014, 084BA015, 084BA016 and 084BA017 located off Ocean Highway East (US 17) and Kelly Road NE near Winnabow from LDR (Low Density Residential) to Commercial.

Mr. Dunham clarified that this does not involve a split-zoning issue for the parcels that are requesting a zoning change and Ms. Bunch concurred.

Ms. Easley made a motion to open the Public Hearing and the motion was unanimously carried.

Mr. Chris Stanley, East Coast Engineering and Surveying, addressed the Board on behalf of the applicant, George Irving. Mr. Stanley stated that the lots were subdivided in the 1990s for residential purposes, but the applicant desires to develop the property in accordance with the surrounding area.

With no further comments, Ms. Easley made a motion to close the Public Hearing and the motion was unanimously carried.

Ms. Easley made a motion to recommend to the Board of Commissioners to approve Tax Parcels 084BA001, 084BA002, 084BA003, 084BA014, 084BA015, 084BA016 and 084BA017 in conjunction with an amendment to the Official Brunswick County CAMA Land Use Plan Map for Tax Parcels 084BA001, 084BA002, 084BA003, 084BA014, 084BA015, 084BA016 and 084BA017 located off Ocean Highway East (US 17) and Kelly Road NE near Winnabow from LDR (Low Density Residential) to Commercial and the motion was unanimously carried.

THEREFORE, on the basis of all the foregoing, IT IS ORDERED that the application for REZONING be recommended to the Board of Commissioners for

☒ **APPROVAL – NOT CONSISTENT WITH THE COMPREHENSIVE PLAN**

- The Planning Board finds that the proposed zoning amendment is NOT consistent with the CAMA Land Use Plan (Comprehensive Plan) for the following reasons:

The parcels are currently classified as LDR (Low Density Residential). However, an amendment has been requested from LDR (Low Density Residential) to Commercial.

- The Planning Board further finds that approval of the proposed zoning amendment will amend the CAMA Land Use Plan (Comprehensive Plan) and the following changes have been considered to meet the needs of the community:

There is commercial zoning in the immediate area and the County strongly supports commercial nodes, which will serve the community and neighboring communities.

- The Planning Board further finds that the proposed zoning amendment is reasonable and in the public interest for the following reasons:

There is existing commercial zoning adjoining and in close proximity to this area.

B. Rezoning Z-761– Renee Whitby.

Request to rezone approximately 75.56 acres located off Red Bug Road SW (SR 1136) near Shallotte from R-7500 (Medium Density Residential) and R-6000 (High Density Residential) to R-6000 (High Density Residential) for Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098.

Land Use Plan Map Amendment LUM-761:

Request to amend Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098 located off Red Bug Road SW (SR 1136) near Shallotte from LDR (Low Density Residential) to MDR (Medium Density Residential).

Mr. Pages addressed the Board. He read the Staff Report (attached). He identified the subject property and surrounding properties on a visual map and he provided drone footage of the site and surrounding area.

Mr. Pages said staff recommends approval from R-7500 (Medium Density Residential) and R-6000 (High Density Residential) to R-6000 (High Density Residential) for Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098 in conjunction with an amendment to the Official Brunswick County CAMA Land Use Plan Map for Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098 located off Red Bug Road SW (SR 1136) near Shallotte from LDR (Low Density Residential) to MDR (Medium Density Residential).

Ms. Easley asked staff if both public water and sewer will have to be provided through other property since the subject property is not accessed off Red Bug Road SW (SR 1136)? Mr. Pages said both public water and sewer will have to be accessed via an easement off either Fieldview Lane SW or Ocean Highway West (US 17).

Mr. Dunham asked staff if Tax Parcel 18200098 is split-zoned and Mr. Pages replied, yes. Mr. Pages added that there are single-wide manufactured homes in the area and they will not be allowed to be replaced under the current zoning.

Ms. Easley made a motion to open the Public Hearing and the motion was unanimously carried.

Ms. Renee Whitby addressed the Board. Ms. Whitby stated that there are members of her family that wish to place single-wide manufactured homes on vacant lots as well as replace an existing older single-wide manufactured home with a newer single-wide manufactured home. Mr. Dunham asked staff if the existing single-wide manufactured home can be replaced? Ms. Bunch said the Brunswick County Unified Development Ordinance (UDO) allows for an existing single-wide to be replaced with certain provisions, but single-wide manufactured homes are not allowed in the existing zoning district if the lot is currently vacant. Ms. Whitby said Tax Parcels 1820010806 and 182001807 are small lots and a single-wide manufactured home is ideal and the desired dwelling for those lots .

Ms. Doreen Alloway addressed the Board. Ms. Alloway said there are wetlands in the area and she was concerned with the potential impact to the area if the zoning designation is changed? Ms. Bunch said development of individual lots should not have a negative impact on stormwater runoff in the area.

With no further comments, Ms. Easley made a motion to close the Public Hearing and the motion was unanimously carried.

Mr. Leary made a motion to recommend to the Board of Commissioners to approve Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098 in conjunction with an amendment to the Official Brunswick County CAMA Land Use Plan Map for Tax Parcels 18200108, 1820010802, 1820010803, 1820010804, 1820010805, 1820010806, 1820010807, 1820010808, 18200109 and a portion of 18200098 located off Red Bug Road SW (SR 1136) near Shallotte from LDR (Low Density Residential) to MDR (Medium Density Residential) and the motion was unanimously carried.

THEREFORE, on the basis of all the foregoing, IT IS ORDERED that the application for REZONING be recommended to the Board of Commissioners for

☒ **APPROVAL – NOT CONSISTENT WITH THE COMPREHENSIVE PLAN**

- The Planning Board finds that the proposed zoning amendment is NOT consistent with the CAMA Land Use Plan (Comprehensive Plan) for the following reasons:

The parcels are classified as LDR (Low Density Residential). However, an amendment has been requested from LDR (Low Density Residential) to MDR (Medium Density Residential).

- The Planning Board further finds that approval of the proposed zoning amendment will amend the CAMA Land Use Plan (Comprehensive Plan) and the following changes have been considered to meet the needs of the community:

This amendment would allow for the replacement of existing single-wide manufactured homes and placement of single-wide manufactured homes as there are lots that can only accommodate a single-wide manufactured home.

- The Planning Board further finds that the proposed zoning amendment is reasonable and in the public interest for the following reasons:

There is MDR land classification and R-6000 zoning in the immediate area.

C. Rezoning Z-762– East Coast Engineering and Surveying (%Alan Lewis).

Request to rezone approximately 12.94 acres located at 5841 Ocean Highway West (US 17) from R-7500 (Medium Density Residential) and C-LD (Commercial Low Density) to C-LD (Commercial Low Density) for Tax Parcel 2120002302.

Land Use Plan Map Amendment LUM-762:

Request to amend Tax Parcel 2120002302 located at 5841 Ocean Highway West (US 17) from LDR (Low Density Residential) to Commercial.

Mr. Pages addressed the Board. He read the Staff Report (attached). He identified the subject property and surrounding properties on a visual map and he provided drone footage of the site.

Mr. Pages said staff recommends approval from R-7500 (Medium Density Residential) and C-LD (Commercial Low Density) to C-LD (Commercial Low Density) for Tax Parcel 2120002302 in



conjunction with an amendment to the Official Brunswick County CAMA Land Use Plan Map for Tax Parcel 2120002302 located at 5841 Ocean Highway West (US 17) from LDR (Low Density Residential) to Commercial.

Mr. Ward made a motion to open the Public Hearing and the motion was unanimously carried.

Mr. Alan Lewis, East Coast Engineering and Surveying, addressed the Board on behalf of the applicant and potential buyer. Mr. Lewis stated that the applicant wishes to correct a split-zoning issue. He stated that the existing vegetative buffer will be maintained.

With no further comments, Ms. Easley made a motion to close the Public Hearing and the motion was unanimously carried.

Mr. Dunham asked if the current use on the property is in compliance with the UDO and Mr. Pages replied, yes.

Mr. Price made a motion to recommend to the Board of Commissioners to approve Tax Parcel 2120002302 in conjunction with an amendment to the Official Brunswick County CAMA Land Use Plan Map for Tax Parcel 2120002302 located at 5841 Ocean Highway West (US 17) from LDR (Low Density Residential) to Commercial and the motion was unanimously carried.

THEREFORE, on the basis of all the foregoing, IT IS ORDERED that the application for REZONING be recommended to the Board of Commissioners for

☒ **APPROVAL – NOT CONSISTENT WITH THE COMPREHENSIVE PLAN**

- The Planning Board finds that the proposed zoning amendment is NOT consistent with the CAMA Land Use Plan (Comprehensive Plan) for the following reasons:

The parcel is classified as LDR (Low Density Residential). However, an amendment has been requested from LDR (Low Density Residential) to Commercial. The property has been used for commercial purposes for 2 decades.

- The Planning Board further finds that approval of the proposed zoning amendment will amend the CAMA Land Use Plan (Comprehensive Plan) and the following changes have been considered to meet the needs of the community:

The property is commercial in nature and the CAMA Land Use Plan encourages commercial development at intersections along major corridors.

- The Planning Board further finds that the proposed zoning amendment is reasonable and in the public interest for the following reasons:

The proposed zoning amendment will be consistent with surrounding properties and it will correct a split-zoning issue.

## VIII. OTHER BUSINESS.

- Recognition of Helen Bunch on receiving the 2017 Outstanding Local Government Planner Award from the Cape Fear Council of Government.

Ms. Dixon addressed the Board. She stated that Ms. Bunch was presented the 2017 Outstanding Local Government Planner of the Year Award from the Cape Fear Council of Government at their 27-Feb-18 Annual Banquet. The Board members congratulated Ms. Bunch on her award.

- Setback Inspections

Ms. Dixon addressed the Board. She stated that there have been situations where zoning setbacks are not clearly defined on sites. As a result, Ms. Dixon said the County is proposing complimentary zoning compliance inspections to confirm that residential projects are in compliance with approved site plans submitted for a building permit. Ms. Dixon further stated that recently a case was heard by the Board of Adjustment requesting a variance from the minimum setback requirements and the Board of Adjustment suggested that a survey be required to alleviate this issue. She said staff will be addressing different options to ensure structures are placed on parcels in conformance with UDO minimum setback requirements.

- Planning Board Cases Update

Ms. Dixon addressed the Board. She stated that Zoning Case Z-759 will be considered at the Board of Commissioners' 19-Mar-18 meeting as well as revisions to both solar farm facilities and temporary use permits for large events with 1,000 guests or more.

- FEMA Flood Maps

Ms. Dixon addressed the Board. She stated that FEMA has released the final flood maps. As a result, the Flood Damage Prevention Ordinance will be revised to reflect the new flood maps and a public hearing has to be scheduled by the Planning Board, which will likely be held at the Planning Board's 08-Apr-18 meeting.

- Planning Board Training

Ms. Dixon addressed the Board. She stated that staff is working on scheduling a training session for the Board and she will contact the Board once dates and times are confirmed.

## IX. ADJOURNMENT.

With no further business, Mr. Leary made a motion to adjourn and the motion was unanimously carried.

# CONSISTENCY STATEMENT

## FOR BRUNSWICK COUNTY BOARD OF COMMISSIONERS



**ZONING AMENDMENT DESCRIPTION:** Rezoning Case Z-18-762

***THE BRUNSWICK COUNTY BOARD OF COMMISSIONERS HEREBY ORDER, on the basis of all the foregoing, that the UNIFIED DEVELOPMENT ORDINANCE ZONING AMENDMENT be***

☐ **APPROVED – CONSISTENT WITH COMPREHENSIVE PLAN**

- The Board of Commissioners finds that the proposed zoning amendment *is consistent with the CAMA Land Use Plan (Comprehensive Plan)* for the following reasons: \_\_\_\_\_  
\_\_\_\_\_
- The Board of Commissioners further finds that the proposed zoning amendment *is reasonable and in the public interests* for the following reasons: \_\_\_\_\_  
\_\_\_\_\_

☐ **APPROVED – NOT CONSISTENT WITH COMPREHENSIVE PLAN**

- The Board of Commissioners finds that the proposed zoning amendment *is NOT consistent* with the CAMA Land Use Plan (Comprehensive Plan) for the following reasons: \_\_\_\_\_  
\_\_\_\_\_

***PLANNING BOARD RECOMMENDATION: The parcel is classified as LDR (Low Density Residential). However, an amendment has been requested from LDR (Low Density Residential) to Commercial. The property has been used for commercial purposes for 2 decades.***

- The Board of Commissioners further finds that the approval of the proposed zoning amendment will amend the CAMA Land Use Plan (Comprehensive Plan) and the following changes have been considered to meet the needs of the community: \_\_\_\_\_  
\_\_\_\_\_

***PLANNING BOARD RECOMMENDATION: The property is commercial in nature and the CAMA Land Use Plan encourages commercial development at intersections along major corridors.***

- The Board of Commissioners further finds that the proposed zoning amendment *is reasonable and in the public interests* for the following reasons: \_\_\_\_\_  
\_\_\_\_\_

***PLANNING BOARD RECOMMENDATION: The proposed zoning amendment will be consistent with surrounding properties and it will correct a split-zoning issue.***

☐ **DENIED– INCONSISTENT WITH COMPREHENSIVE PLAN**

- The Board of Commissioners finds that the proposed zoning amendment ☐ is ☐ is not consistent with the CAMA Land Use Plan (Comprehensive Plan) and ☐ is ☐ is not in the public interests for the following reasons: \_\_\_\_\_  
\_\_\_\_\_



# Brunswick County Board of Commissioners

## ACTION AGENDA ITEM

### April 16, 2018

#### Action Item # VIII. - 1.

**From:** Administration - Water and Sewer System Development Fees  
Ann Hardy, County Manager (Ann Hardy, County Manager)

#### Issue/Action Requested:

Request that the Board of Commissioners receive Brunswick County's Water and Sewer System Development Fee Analysis and approve posting the report for public review and comment.

#### Background/Purpose of Request:

The North Carolina General Assembly passed House Bill 436 in July 2017, amending Chapter 162A of the General Statutes by adding "Article 8, System Development Fees." This amendment was enacted as "An Act to Provide for Uniform Authority to Implement System Development Fees for Public Water and Sewer Systems in North Carolina and to clarify the Applicable Statute of Limitations." As a requirement of the amended General Statute, Brunswick County contracted with Raftelis Financial Consultants, Inc. ("RFC") to complete a system development fee analysis. The statute specifies that a written analysis be performed to calculate a system development fee, based upon the required criteria.

RFC calculated system development fees using generally accepted accounting, engineering, and planning methodologies to include the buy-in, incremental cost, and combined cost methods for each service as referenced Article 8. RFC analyzed the county's water and sewer fixed asset data, outstanding debt and debt service information, capital improvement plan, contributed capital, system capacity, water production reports, sewer inflow and infiltration factors and a history of system development fees collected.

The Combined cost method was chosen for water system development fees due to the county having existing water capacity and plans to expand the water treatment capacity 12 MGD. The Combined approach involves both a buy-in and incremental cost calculation. Below is the current rates and the maximum allowable charges for water system development fees are:

	EXISTING			MAXIMUM COST JUSTIFIED		
	WATER			WATER		
	Capital Recovery	Transmission	Total	Capital Recovery	Transmission	Total
<b>Residential:</b>						
One bedroom	\$ 573	\$ 193	<b>\$ 766</b>	\$ 456	\$ 231	<b>\$ 687</b>
Two bedrooms	\$ 573	\$ 193	<b>\$ 766</b>	\$ 912	\$ 462	<b>\$ 1,375</b>
Three bedrooms	\$ 860	\$ 290	<b>\$ 1,150</b>	\$ 1,365	\$ 691	<b>\$ 2,056</b>
Four bedrooms	\$ 1,147	\$ 387	<b>\$ 1,534</b>	\$ 1,821	\$ 923	<b>\$ 2,743</b>

Note 1: The County currently assesses the same system development fee for either a 1 or 2 bedroom home and assesses the same system development fee for more than four bedrooms as for a 4 bedroom. The maximum allowable charge for more than four bedrooms is calculated using the same calculated rate for a 1 bedroom for each additional bedroom.

The Buy-In method was chosen for wastewater system development fees due to the county have existing sewer capacity for its retail service area. Future expansions are planned to increase its sewer treatment capacity, the expansions are required to serve only wholesale wastewater participants whom will reimburse the County for the costs or for the debt issued to fund the wastewater plant expansions. Below is the current rates and the maximum allowable charges for wastewater system development fees are:

	EXISTING			MAXIMUM COST JUSTIFIED		
	WASTEWATER			WASTEWATER		
	<u>Capital Recovery</u>	<u>Transmission</u>	<u>Total</u>	<u>Capital Recovery</u>	<u>Transmission</u>	<u>Total</u>
<b>Residential:</b>						
One bedroom	\$ 2,000	\$ 667	<b>\$ 2,667</b>	\$ 1,328	\$ 455	<b>\$ 1,783</b>
Two bedrooms	\$ 2,000	\$ 667	<b>\$ 2,667</b>	\$ 2,656	\$ 910	<b>\$ 3,566</b>
Three bedrooms	\$ 3,000	\$ 1,000	<b>\$ 4,000</b>	\$ 3,983	\$ 1,365	<b>\$ 5,348</b>
Four bedrooms	\$ 4,000	\$ 1,333	<b>\$ 5,333</b>	\$ 5,310	\$ 1,821	<b>\$ 7,131</b>

Note 1: The County currently assesses the same system development fee for either a 1 or 2 bedroom home and assesses the same system development fee for more than four bedrooms as for a 4 bedroom. The maximum allowable charge for more than four bedrooms is calculated using the same calculated rate for a 1 bedroom for each additional bedroom.

For commercial customers, the county uses the permitted flow specified by the North Carolina Administrative Code Title 15A for non-residential customers. The maximum allowable commercial rate is based on the calculated rate for a 3 bedroom home which is the average number of bedrooms for a typical residential home. The adjusted ERU for a 3 bedroom home is 362 gallons per day for water and 279 gallons per day for wastewater. These adjusted ERUs are used to calculate a commercial customer's system development fee, so that the fee complies with Section 162A-205 (6) of the General Statute that specifies the need for "an equivalency or conversion table for use in determining the fees applicable for various categories of demand.

The County may elect to charge a cost per gallon that is less than the maximum cost justified documented in this report. If the County elects to charge a fee that is less, all customers must be treated equally, meaning the same reduced cost per gallon per day must be used for all customers.

Prior to considering adoption of the professional analysis, House Bill 436 requires that a local governmental unit post the analysis on its webpage for public review and comment. The public review and comment period shall extend for a minimum of 45 days and provide the means for written comments to be submitted to the preparer of the professional analysis. After public review, the governing body of the local governmental unit shall conduct a public hearing prior to considering adoption of the analysis with any modifications or revisions.

#### **Fiscal Impact:**

Reviewed By Director of Fiscal Operations

#### **Approved By County Attorney:**

Yes

#### **County Manager's Recommendation:**

Recommend that the Board of Commissioners receive Brunswick County's Water and Sewer System Development Fee Analysis and approve posting the report for public review and comment.

**ATTACHMENTS:**

## Description

- ▣ Brunswick System Development Fee Report 4-5-18

April 13, 2018

Ms. Julie A. Miller  
Director of Fiscal Operations  
Brunswick County Finance  
PO Box 249  
Bolivia, NC 28451

**Subject: Brunswick County Capacity Development Fees**

Dear Ms. Miller:

Raftelis has completed an evaluation to develop cost-justified water and wastewater system development fees for consideration by Brunswick County (County). This letter documents the results of the analysis, which is based on an approach for establishing system development fees set forth in North Carolina General Statute 162A Article 8 – “System Development Fees.” As one of the largest and most respected utility financial, rate, management, and operational consulting firms in the U.S., and having prepared system development fee calculations for utilities in North Carolina and across the U.S. since 1993, Raftelis is qualified to perform system development fee calculations for water and wastewater utilities in North Carolina.

**Background**

System development fees are one-time charges assessed to new water and/or wastewater customers, or developers or builders, to recover a proportional share of capital costs incurred to provide service availability and capacity for new customers. North Carolina General Statute 162A Article 8 (Article 8) provides for the uniform authority to implement system development fees for public water and wastewater systems in North Carolina, and was recently passed by the North Carolina General Assembly and signed into law on July 20, 2017. According to the statute, system development fees must be adopted in accordance with the conditions and limitations of Article 8 and must conform to the requirements set forth in the Article no later than July 1, 2018. In addition, the system development fees must also be prepared by a financial professional or licensed professional engineer, qualified by experience and training or education, who, according to the Article, shall:

- Document in reasonable detail the facts and data used in the analysis and their sufficiency and reliability.
- Employ generally accepted accounting, engineering, and planning methodologies, including the buy-in, incremental cost or marginal cost, and combined cost approaches for each service, setting forth appropriate analysis to the consideration and selection of an approach appropriate to the circumstances and adapted as necessary to satisfy all requirements of the Article.

- Document and demonstrate the reliable application of the methodologies to the facts and data, including all reasoning, analysis, and calculations underlying each identifiable component of the system development fee and the aggregate thereof.
- Identify all assumptions and limiting conditions affecting the analysis and demonstrate that they do not materially undermine the reliability of conclusions reached.
- Calculate a final system development fee per service unit of new development and include an equivalency or conversion table for use in determining the fees applicable for various categories of demand.
- Consider a planning horizon of not less than 10 years, nor more than 20 years.

This letter report documents the results of the calculation of water and wastewater system development fees for the County in accordance with these requirements.

Article 8 references three methodologies that can be used to calculate system development fees. These include the buy-in method, the incremental cost method, and the combined cost method. A description of each of these methods follows:

#### Capacity Buy-In Approach

The Capacity Buy-In Methodology is most appropriate in cases where the existing system assets provide adequate capacity to provide service to new customers. This approach calculates a fee based upon the proportional cost of each user's share of existing plant capacity. The cost of the facilities is based on fixed assets records and usually includes escalation of the depreciated value of those assets to current dollars.

#### Incremental Cost Approach

The second method used to calculate water and wastewater system development fees is the Incremental Cost (or Marginal Cost) Methodology. This method focuses on the cost of adding additional facilities to serve new customers. It is most appropriate when existing facilities do not have adequate capacity to provide service to new customers, and the cost for new capacity can be tied to an approved capital improvement plan (CIP) that covers at least a 10-year planning period.

#### Combined Approach

A combined approach, which is a combination of the Buy-In and Incremental Cost approaches, can be used when the existing assets provide some capacity to accommodate new customers, but where the capital improvement plan also identifies significant capital investment to add additional infrastructure to address future growth and capacity needs.



## Summary of Results

To perform the system development fee calculation, Raftelis requested and was provided with the following data from County staff:

- Water and wastewater fixed asset data;
- Outstanding utility debt and associated debt service;
- Capital improvement plan;
- Contributed capital;
- Capacity in water and wastewater systems;
- Water production data for system peaking factors
- Inflow and infiltration factors
- History of system development fees collected.

It should be noted the County provides retail water and wastewater service within its service area and wholesale water and wastewater service outside its service area. The County issues debt to finance water and wastewater plant expansions and other infrastructure required to service its retail and wholesale service areas. The County has set up various agreements with wholesale water customers and with wastewater participants (wholesale customers) for paying debt service issued for projects that directly benefit their service area. The County collects system development fees only within its *retail* service area for new development.

The Combined approach was chosen as the method to calculate the water system development fees. The County has existing water capacity but has also identified projects over the next ten years that will expand the water treatment capacity. As a result, the Combined approach was chosen as the method for calculating system development fees for the County's water service area. The Combined approach involves both a buy-in and incremental cost calculation, as discussed below.

The Buy-In approach was chosen as the method to calculate the wastewater system development fees. The County has existing sewer capacity for its retail service area. While the County has identified projects over the next ten years to increase its wastewater treatment capacity, the expansions are required to serve *only* wholesale wastewater participants (as opposed to the County retail service area) who will reimburse the County for the cost or the debt issued to fund the wastewater plant expansions. Since the County only collects system development fees in its retail service area, and since the County has adequate capacity to serve retail customers, the Buy-In approach was chosen to calculate the wastewater system development fees as described below.

### **Buy-In Calculation**

Using the Buy-In approach, Raftelis calculated the estimated cost, or investment in, the current capacity available to provide utility services to existing and new customers. This analysis was based on a review of fixed asset records and other information as of June 30, 2017. The depreciated value of the assets was escalated to reflect an estimated replacement cost, or "replacement cost new less

depreciation” (RCNLD).<sup>1</sup> The asset values were escalated using the Handy Whitman Index of Public Utility Construction Costs (for the South Atlantic Region). Results of the asset escalation by asset category are shown in Exhibits 1 and 2.

**Exhibit 1 – Replacement Cost New, Less Depreciation: Water Assets**

Asset Category	RCNLD Value
Buildings <sup>2</sup>	\$21,043,693
Distribution System	\$170,913,835
Equipment	\$11,076,966
Land	\$760,138
Land Improvements	\$6,022,755
Operating Plant Improvements	\$20,004,466
Operating Plants	\$3,291,688
Tanks	\$9,278,240
Vehicles	\$375,040
<b>Total</b>	<b>\$242,766,823</b>

**Exhibit 2 – Replacement Cost New, Less Depreciation: Wastewater Assets**

Asset Category	RCNLD Value
Building Improvements	\$65,839
Buildings	\$598,094
Collection System	\$124,167,981
Equipment	\$898,467
Land	\$2,116,677
Land Improvements	\$202,267
Operating Plant Improvements	\$20,765,634
Operating Plants	\$152,458,389
Vehicles	\$380,432
<b>Total</b>	<b>\$301,653,779</b>

Several adjustments (Exhibit 3) were then made to the estimated water and wastewater RCNLD values in accordance with Article 8, as described below.

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1 The RCNLD value represents the value of the County’s assets as they are now, including depreciation. The cost of replacing these assets with new, undepreciated assets would therefore be significantly higher than the RCNLD value shown.

2 The “Buildings” asset category includes plant components, pump stations, and buildings that are essential to water or wastewater production or processing.

- Construction Work in Progress - Construction work in progress represents projects that were in the process of being completed but not yet booked to fixed assets. These assets were added to the RCNLD.
- Contributed Capital - The listing of fixed assets provided was reviewed to identify assets that were donated (or contributed) or funded through grants. The RCNLD value of all assets donated or funded through grants was subtracted from the RCNLD value, as these assets do not represent an investment in system capacity by the County.
- Developer Reimbursements - The County has historically reimbursed developers over time as new customers have connected to lines donated by the developer. As previously stated, the original asset donated by the developer is removed from the RCNLD calculation. However, the reimbursements made by the County to the developer over time has resulted in the County paying for a portion of the donated asset. Therefore, reimbursements are added to the RCNLD value to reflect the portion of assets paid for by the County.
- Non-Core Fixed Assets - The RCNLD value excludes non-core assets such as equipment, vehicles, and meters.
- Special Assessment Districts - The listing of fixed assets provided was reviewed to identify assets that were funded through assessments. The RCNLD value of all assets funded through assessments was subtracted from the RCNLD value, as these assets do not represent an investment in system capacity by the County.
- Outstanding Debt Service Deduction - Utilities often borrow funds to construct assets, and revenues from retail rates and charges can be used to make the payments on these borrowed funds. To ensure that new customers are not being double charged for debt-funded assets, once through retail rates and charges and again through system development fees, the proportion of the outstanding debt principal that is anticipated to be funded through retail rates was deducted from the system development fee calculation. Because the County applies system development fee revenue to offset debt service payments, and the County's bond ordinance allows for the inclusion of system development fees in calculating debt service coverage ratios, the debt deduction may be reduced. This reduction was calculated by comparing the historical annual amount of revenues collected from water and wastewater system development fees with the respective annual principal payments.
  - Annual revenues from water system development fees have exceeded annual principal debt for the water system over the past several years.<sup>3</sup> Therefore, no debt credit may be applied to the water system. For the wastewater system, the County's outstanding principal debt is divided into three categories: debt paid by the County's

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<sup>3</sup> The County applies revenues from system development fees to offset annual principal and interest on debt service, as well as to cash fund a portion of capital improvements.

retail customers, debt paid by participants (wastewater wholesale customers), or debt paid through assessments. Annual revenues from wastewater system development fees have paid for 51% of annual principal debt over the past five years, so the remaining 49% is paid by retail customers, and should be included as the debt credit for the wastewater system.

**Exhibit 3 – Deductions from RCNLD Value for Water and Wastewater**

Deduction or Credit	Water	Wastewater
RCNLD	\$242,766,823	\$301,653,779
Plus: Construction Work in Progress	\$5,368,751	\$1,791,797
Less: Donated/Contributed	\$(53,530,409)	\$(62,386,310)
Plus: Credit for Developer Reimbursements	\$1,012,309	\$31,233,671
Less: Non-Core Assets:		
Meter-related assets	\$(190,658)	\$(38,315)
Equipment	\$(11,076,966)	\$(898,467)
Vehicles	\$(375,040)	\$(380,432)
Less: Special Assessment Districts	\$(7,046,398)	\$(43,348,601)
Less: Debt Service Paid through Rates	\$(-)	\$(19,525,722)
<b>Net System Value</b>	<b>\$176,928,412</b>	<b>\$208,101,401</b>

The adjusted system values for water and wastewater were then converted to a unit cost of capacity by dividing by their respective capacity in gallons per day (GPD) (Exhibit 4). It should be noted that the capacity shown includes the capacity to service both the County's retail and wholesale customers.

**Exhibit 4 – Cost per GPD of Capacity**

	Water	Wastewater
A. Net System Value	\$176,928,412	\$208,101,401
B. Existing Capacity (GPD)	30,000,000	10,855,000
<b>Cost Per GPD (A/B)</b>	<b>\$5.90</b>	<b>\$19.17</b>

**Incremental Calculation**

Using the Incremental Cost approach, Raftelis calculated the cost of capital improvements relative to the increased water capacity to be provided. The starting point for the Incremental approach is the cost of capital improvements for expansion-related capital projects included in the County's water capital improvement plan, which is \$174,159,600 for the water system (Exhibit 5). The aggregate

project costs must be reduced by a revenue credit according to the North Carolina General Statute 126A-207 "Minimum requirements" of Article 8. The credit shall reflect a deduction of either the outstanding principal debt or the net present value (NPV) of projected revenues received by the local governmental unit for the capital improvements. The credit must be no less than 25% of the aggregate cost of these capital improvements. The revenue credit is applied to ensure that new customers are not paying twice for the capacity (once through the system development fee and then again through rates which are used to pay debt service issued for the projects that provided capacity). The County anticipates debt funding all expansion projects.<sup>4</sup> The net present value of the principal debt to be issued is \$112,472,773. This number exceeds 25% of project costs so it was chosen as the appropriate debt credit based on the statutory requirements. The net capital improvement costs are shown in Exhibit 5. The net capital improvement costs are then divided by the additional capacity to be provided by these projects to derive a cost per GPD (for the Incremental Approach) as shown in Exhibit 5.

**Exhibit 5 – Capital Improvement Costs for the Water System**

<b>Water System Expansion Projects</b>	<b>Capital Improvement Costs</b>
Northwest Water Plant Expansion to 12 MGD	\$134,599,600
54" LCFWSA Parallel Raw Water Main	\$39,560,000
Total Expansion Costs	\$174,159,600
Less: Revenue Credit (NVP of future debt principal)	\$(112,472,773)
<b>A. Net Capital Improvement Costs</b>	<b>\$61,686,827</b>
<b>B. Capacity Provided by Expansion (GPD)</b>	<b>12,000,000</b>
<b>Cost per GPD (A/B)</b>	<b>\$5.14</b>

**Combined Cost Calculation**

The cost per GPD calculated under the Buy-In Approach and the Incremental Approach are then combined using the weighted average of the respective cost per GPD numbers, as illustrated in Exhibit 6 to derive the cost per gallon per day for the water system.

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<sup>4</sup> Water expansion projects were assumed to be funded with a 20-year revenue bond with a 4% interest rate.

**Exhibit 6 – Water Weighted Cost/gallon/day under Combined Approach**

	Water System		
	Net RCNLD	Expansion Projects	Total
Cost of Assets	\$176,928,412	\$61,686,827	\$238,615,239
Capacity of Assets (GPD)	30,000,000	12,000,000	42,000,000
<b>Combined Cost per GPD</b>	<b>\$5.68</b>		

**Equivalent Residential Unit (ERU) Calculation**

The weighted average cost per GPD becomes the basic building block or starting point for determining the *maximum cost-justified level* of the water and wastewater capacity development fees. Fees for different types of customers are based on this cost of capacity multiplied by the amount of capacity needed to serve each type or class of customer, as discussed in the following section.

The next step is to define the level of demand associated with a typical, or average, residential customer, often referred to as an Equivalent Residential Unit, or ERU. The level of demand associated with a typical residential customer is often estimated using wastewater design flow rates as specified by the North Carolina Administrative Code Title 15A (Department of Environment and Natural Resources) Subchapter 2T, which states that the sewage from dwelling units is 120 gallons per day per bedroom. However, the County has received a flow reduction from NCDEQ for residential usage of 70 gpd/bedroom. Because this usage represents average use, a peaking factor (based on historic water production data) is applied to derive the adjusted ERU for the water system, and an inflow and infiltration factor (based on historic data) is applied to derive an adjusted ERU for the wastewater system. The County has chosen to assess its system development fee for residential customers based on the number of bedrooms per building (Exhibit 7).

### Exhibit 7 – Adjusted Equivalent Residential Unit

Number of Bedrooms (1)	GPD	Peaking Factor	Adjusted ERU for Water System	Inflow & Infiltration Factor	Adjusted ERU for Wastewater System
1	70	1.73	<b>121</b>	1.33	<b>93</b>
2	140	1.73	<b>242</b>	1.33	<b>186</b>
3	210	1.73	<b>362</b>	1.33	<b>279</b>
4	280	1.73	<b>483</b>	1.33	<b>372</b>

(1) Residential units with more than four bedrooms will be calculated by adding 70 gallons per day for each additional bedroom, multiplied by the peaking factor.

### Assessment Methodology

The analysis provides a maximum cost-justified level of system development fees that can be assessed by the County. For residential customers, the calculation of the system development fee is based on the cost per gallon per day multiplied by the number of gallons per day required to serve each ERU, as shown below in Exhibit 8.

### Exhibit 8 – Calculated Maximum Cost Justified System Development Fees for Residential Customers (rounded to the nearest dollar)

Number of Bedrooms (1)	WATER			WASTEWATER		
	Cost per Gallon per Day of Capacity	Adjusted ERU	Maximum SDF	Cost per Gallon per Day of Capacity	Adjusted ERU	Maximum SDF
1	\$5.68	121	<b>\$687</b>	\$19.17	93	<b>\$1,783</b>
2	\$5.68	242	<b>\$1,375</b>	\$19.17	186	<b>\$3,566</b>
3	\$5.68	362	<b>\$2,056</b>	\$19.17	279	<b>\$5,348</b>
4	\$5.68	483	<b>\$2,743</b>	\$19.17	372	<b>\$7,131</b>

(1) Residential units with more than four bedrooms will be calculated by adding 70 gallons per day for each additional bedroom, multiplied by the peaking factor and cost per gallon per day.

For commercial customers, the County uses the permitted flow specified by the North Carolina Administrative Code Title 15A for non-residential customers. For the County, the average number of bedrooms for a typical residential home is 3 bedrooms. The adjusted ERU for a 3-bedroom home is 362 gallons per day for water and 279 gallons per day for wastewater. These adjusted ERUs will be used to calculate a commercial customer's system development fee, so that the fee complies with Section 162A-205 (6) of the General Statute that specifies the need for "an equivalency or conversion table for use in determining the fees applicable for various categories of demand." For example, assume a commercial customer's flow using the North Carolina Administrative Code Title 15A results in estimated flow of 1,000 gallons per day. The calculation for the commercial customer would be as follows:

**Exhibit 9 – Example of Calculated Maximum Cost Justified System Development Fees for Non-Residential Customer with 1,000 gallons per day of water use**

	WATER	WASTEWATER
A. Estimated Flow	1,000 gallons per day	
B. 3-bedroom ERU (GPD)	362	279
C. Number of Residential ERUs (A/B)	2.76	3.58
D. Residential SDF for 3-bedroom house	\$2,056	\$5,348
<b>Equals Commercial SDF (C*D)</b>	<b>\$5,674</b>	<b>\$19,168</b>

Exhibit 10 shows the maximum cost justified system development fees. The County may elect to charge a cost per gallon that is less than the maximum cost justified cost documented in this report. If the County elects to charge a fee that is less, all customers must be treated equally, meaning the same reduced cost per gallon per day must be used for all customers.



**Exhibit 10 – Maximum Cost Justified System Development Fees**

	WATER		WASTEWATER	
Number of Bedrooms	Existing Fees	Maximum Cost Justified	Existing Fees	Maximum Cost Justified
1	\$766	<b>\$687</b>	\$2,667	<b>\$1,783</b>
2	\$766	<b>\$1,375</b>	\$2,667	<b>\$3,566</b>
1 or 2 bedrooms <sup>1</sup>	\$766	<b>\$1,031</b>	\$2,667	<b>\$2,675</b>
3	\$1,150	<b>\$2,056</b>	\$4,000	<b>\$5,348</b>
4	\$1,534	<b>\$2,743</b>	\$5,333	<b>\$7,131</b>
Commercial – Relative to 3-bedroom ERU	\$1,150	<b>\$2,056</b>	\$4,000	<b>\$5,348</b>

(1) The County currently assesses the same system development fee for either a 1 or 2-bedroom home. If the County continues this practice, the maximum cost justified system development fee for the 1 and 2 bedrooms will be averaged.

We appreciate the opportunity to assist Brunswick County with this important engagement. Should you have questions, please do not hesitate to contact me at (704) 936-4436.

Sincerely,  
**RAFTELIS FINANCIAL CONSULTANTS, INC.**



**Elaine Conti**  
*Senior Manager*

**Appendix:**  
**Select Schedules for Capacity Development Fee Calculations**

**Figure 1: Buy-In Cost per Gallon per Day: Water System**

<b>Fixed Assets</b>		<b>RCNLD (1)</b>
Water Buildings	\$	21,043,693
Water Distribution System		170,913,835
Water Equipment		11,076,966
Water Land		760,138
Water Land Improvements		6,022,755
Water Operating Plant-Improvement		20,004,466
Water Operating Plants		3,291,688
Water Tanks		9,278,240
Water Vehicles		375,040
Total Asset Value	\$	242,766,823
<b>Adjustments to Fixed Assets</b>		
Donated/Contributed (2)	\$	(53,530,409)
Credit for Developer Reimbursements (3)		1,012,309
Meter-Related Assets classified as Water Distribution (4)		(190,658)
Special Assessment Districts (5)		(7,046,398)
Equipment (including AMR) (6)		(11,076,966)
Vehicles (7)		(375,040)
Total Adjustments	\$	(71,207,163)
Net Assets Eligible for Inclusion	\$	171,559,661
<b>Plus: Construction Work in Progress (8)</b>		
Southeast Water Tank	\$	50,550
Aquifer Storage Recovery Project		483,853
FY16 Top 7 Water Mains & Apollo		342,093
211 Water Plant Improvements		3,384,421
Middleton Road Water Main		943,920
US 74/76 Fire Protection Project		86,373
Gilbert Road and Shallotte Water		61,885
Bailey Road Project		7,200
Carolina Shores North Water Main		8,455
Total CWIP	\$	5,368,751
<b>Deductions from RCNLD</b>		
Total outstanding principal	\$	23,043,240
% principal to deduct (9)		0%
Total Deductions	\$	-
<b>Net Water System Value</b>	\$	176,928,412
<b>Plant Capacity (GPD)</b>		
Northwest Water Treatment Plant		24,000,000
NC 211 Water Treatment Plant		6,000,000
Total Capacity (GPD)		30,000,000
<b>Cost per Gallon per day of water capacity</b>	\$	5.90

- (1) Asset net book values as of June 30, 2017 are escalated to today's dollars to calculate replacement cost new less depreciation (RCNLD).
- (2) All assets that were donated by developers or funded through grants must be removed, as the County did not pay for these assets.
- (3) Reimbursements to developers are added back since the reimbursement represents the portion of the asset paid by the County.
- (4) Assets related to meter installation are removed since these assets are recovered from tap/connection fees.
- (5) Assets paid by special assessments are removed since these assets were not paid by the County but rather through the assessments.
- (6) Small equipment is generally deducted from fixed asset calculations.
- (7) Vehicles are considered rolling stock rather than fixed assets, and therefore they are deducted from the calculation.
- (8) Construction work in progress is added to the value of total fixed assets.
- (9) Annual debt service paid is covered entirely through revenues generated from system development fees. Therefore there is no debt credit.

**Figure 2: Revenue Credit Calculation: Water Debt**

<u>Fiscal Year</u>	<u>Capital Recovery</u>	<u>Transmission</u>	<u>Total SDF Revenues</u>	<u>Actual Principal</u>	<u>% of Principal Covered</u>
2015	880,218	331,619	\$ 1,211,837	910,009	133%
2016	1,126,735	358,629	\$ 1,485,364	1,072,675	138%
2017	1,109,276	362,263	\$ 1,471,539	1,159,140	127%

**Figure 3: Buy-In Cost per Gallon per Day: Wastewater System**

<b>Fixed Assets</b>	<b>RCNLD (1)</b>
Wastewater Building Improvements	\$ 65,839
Wastewater Buildings	598,094
Wastewater Collection System	124,167,981
Wastewater Equipment	898,467
Wastewater Land	2,116,677
Wastewater Land Improvements	202,267
Wastewater Operating Plant-Improvement	20,765,634
Wastewater Operating Plants	152,458,389
Wastewater Vehicles	380,432
<b>Total Asset Value</b>	<b>\$ 301,653,779</b>
<b>Adjustments to Fixed Assets</b>	
Donated/Contributed (2)	\$ (62,386,310)
Credit for Developer Reimbursements (3)	31,233,671
Meter-Related Assets (4)	(38,315)
Special Assessment Districts (5)	(43,348,601)
Equipment (6)	(898,467)
Vehicles (7)	(380,432)
<b>Total Adjustments</b>	<b>\$ (75,818,454)</b>
<b>Net Assets Eligible for Inclusion</b>	<b>\$ 225,835,326</b>
<b>Plus: Construction Work in Progress (8)</b>	
SAD 29 Carolina Shores North	\$ 1,197,530
2016 Enterprise Funded Main Extension	594,268
<b>Total CWIP</b>	<b>\$ 1,791,797</b>
<b>Less: Debt Credit (9)</b>	
Outstanding principal paid by County <i>through retail rates only</i>	\$ (19,525,722)
Outstanding principal paid by partners <i>through wholesale rate (capacity charge)</i>	
Outstanding principal paid by assessments (10)	\$ -
<b>Total Deductions</b>	<b>\$ (19,525,722)</b>
<b>Net Sewer System Value</b>	<b>\$ 208,101,401</b>
<b>Total capacity in sewer system (GPD) (10)</b>	<b>10,855,000</b>
<b>Cost per gallon per day of sewer capacity</b>	<b>\$ 19.17</b>

- (1) Asset net book values as of June 30, 2017 are escalated to today's dollars to calculate replacement cost new less depreciation (RCNLD).
- (2) All assets that were donated by developers or funded through grants must be removed, as the County did not pay for these assets.
- (3) Reimbursements to developers are added back since the reimbursement represents the portion of the asset paid by the County.
- (4) Assets related to meter installation are removed.
- (5) Assets paid by special assessments are removed since these assets were not paid by the County but rather through the assessments.
- (6) Small equipment is generally deducted from fixed asset calculations.
- (7) Vehicles are considered rolling stock rather than fixed assets, and therefore they are deducted from the calculation.
- (8) Construction work in progress is added to the value of total fixed assets.
- (9) The County issues debt that is covered through three sources: 1) system development fees collected within the County's service area 2) through a monthly capital charge paid by participants or 3) through special assessments.  
Approximately 51% of County's share of debt is covered through revenues generated from system development fees. Therefore the debt credit is only for the remaining portion covered through retail rates and charges. The participants pay for their portion of debt service.  
Since this debt is covered through the capacity charge, and since the County is not collecting a system development fee in the partner's service area, no debt credit is required. For the debt paid through assessments, there is no debt credit because an asset was booked when debt was issued to fund the projects. This asset has been removed from the net asset value since it will to be paid through assessments.  
Since the asset value has been removed, the debt associated with these assets does not need to be credited.
- (10) Represents the total sewer capacity including that provided to the the County's partners.

**Figure 4: Revenue Credit Calculation: Wastewater Debt**

	2013	2014	2015	2016	2017	Average
Principal Debt Service	7,865,153	8,382,977	8,987,044	9,200,137	9,564,223	8,799,907
Capital Recovery & Transmission	1,640,429	1,551,713	2,214,151	3,202,006	3,173,774	2,356,415
Participant Offsets - Principal only	3,173,264	3,455,959	3,606,278	3,712,920	3,833,125	3,556,309
Total County credits Debt Service	4,813,693	5,007,672	5,820,430	6,914,925	7,006,900	5,912,724
Debt Paid by Retail Customers	3,051,460	3,375,305	3,166,614	2,285,212	2,557,324	2,887,183
	63%	67%	54%	33%	36%	49%

Sewer Outstanding Debt:	
Total Principal Outstanding	\$ 103,138,961
Less Participant Share	\$ (50,052,644)
Less Assessment debt	\$ (13,099,172)
County Portion of Debt	\$ 39,987,145
% paid by user fees	\$ 19,525,722

**Figure 5: Incremental Cost per Gallon per Day: Water System**

<b>Projects that add capacity:</b>	
Northwest Water Plant Expansion 12 MGD	\$ 134,599,600
54" LCFWSA Parallel Raw Water Main	\$ 39,560,000
Total Expansion Project Costs	\$ 174,159,600
<b>Less Debt Credit:</b>	\$ (112,472,773)
<b>Net Capital Projects after Adjustment for Credit</b>	\$ 61,686,827
<b>Capacity added (MGD)</b>	12,000,000
<b>Cost per gallon per day</b>	<b>\$ 5.14</b>

**Calculation of Debt Credit**

Term (years)	20
Interest Rate	4.0%
Period	1 2 3 4 5 6 7 8 9 10
Fiscal Year	FY 2022 FY 2023 FY 2024 FY 2025 FY 2026 FY 2027 FY 2028 FY 2029 FY 2030 FY 2031
Principal Payment	\$ 5,848,584 \$ 6,082,528 \$ 6,325,829 \$ 6,578,862 \$ 6,842,016 \$ 7,115,697 \$ 7,400,325 \$ 7,696,338 \$ 8,004,191 \$ 8,324,359
<b>Net Present Value of All Payments (1)</b>	<b>\$ 112,472,773</b>

(1) Net present value includes all 20 years of the loan; only the first ten years are shown for brevity.

**Figure 6: Combined Cost per Gallon per Day: Water System**

<b>Overall Fee: Water System</b>					
	<b>WATER</b>	<b>Buy-In System Value</b>	<b>CIP Project Costs</b>		<b>Total</b>
A.	Cost of Assets	\$ 176,928,412	\$ 61,686,827	\$	238,615,239
B.	Capacity (gal/day)	30,000,000	12,000,000		42,000,000
<b>Weighted Cost/gal/day (A/B)</b>				<b>\$</b>	<b>5.68</b>

**Figure 7: Water Peaking Factor Calculation**

	<b>FY 15</b>	<b>FY 16</b>	<b>FY 17</b>	<b>AVG</b>
Total	5,079.31	5,314.76	5,170.77	
Average	13.92	14.60	15.48	
Peak	26.24	25.00	24.43	
Peaking Factor	1.89	1.71	1.58	<b>1.73</b>

**Figure 8: Wastewater I&I Calculation**

	<b>County Plant Flow Per</b>	<b>County</b>			
	<b>Plant Flow Net of</b>	<b>Industrial/Large</b>	<b>County Retail</b>	<b>Total County Billed</b>	<b>Calculated I &amp; I</b>
	<b>Participant (wholesale)</b>	<b>Commercial Billed</b>	<b>Billed excludes</b>	<b>excluding</b>	<b>(Plant Flow vs</b>
	<b>Billed</b>	<b>excludes Wholesale</b>	<b>Wholesale</b>	<b>Wholesale</b>	<b>Billing)</b>
FY 14/15	940,661,785	118,328,893	520,933,268	639,262,161	1.47
FY15/16	898,812,228	151,423,342	566,617,419	718,040,761	1.25
FY16/17	911,700,189	120,256,770	601,909,669	722,166,439	1.26
				<b>Average</b>	<b>1.33</b>



The County separates its system development fee into two components: a capital recovery fee and a transmission fee. To estimate the appropriate per-unit cost for each type of fee under the Buy-In Approach, the percent of assets categorized as "Distribution" or "Collection" was multiplied by the overall cost per GPD to yield the transmission cost per GPD, while the percent of non-transmission assets was multiplied by the overall cost per GPD to obtain the capital recovery cost per GPD. The transmission allocation was estimated based on the number of feet for each line size (diameter), as shown in Figure 10. For the Incremental Approach, the project costs were identified as either transmission or non-transmission.

**Figure 9: Inch Feet Analysis**

Classification of Lines	Inch Feet (Diameter X Feet)	Percentage
<b>Sewer Transmission:</b>	15,468,156	<b>61.9%</b>
<b>Sewer Collection:</b>	9,510,478	<b>38.1%</b>
<b>Subtotal:</b>	24,978,635	<b>100.0%</b>
<b>Water Transmission:</b>	25,436,087	<b>50.6%</b>
<b>Water Distribution</b>	24,806,032	<b>49.4%</b>
<b>Subtotal:</b>		<b>100.0%</b>

**Figure 10: Allocation of Water System**

	Buy-In Allocation	Buy-In System Value	Incremental Allocation	CIP Project Costs	Total
<b>Cost of Assets</b>					
<i>Capital Recovery</i>	63%	\$ 110,744,307	77%	\$ 47,674,789	\$ 158,419,096
<i>Transmission</i>	37%	\$ 66,184,105	23%	\$ 14,012,038	\$ 80,196,143
Total Cost of Assets		\$ 176,928,412		\$ 61,686,827	\$ 238,615,239
<b>Capacity</b>					
Existing Capacity (GPD)		30,000,000	Planned Additions (GPD)	12,000,000	42,000,000
<b>Weighted Cost/gal/day</b>					
<i>Capital Recovery</i>	\$	3.77			
<i>Transmission</i>	\$	1.91			
Overall Cost per gallon per day	\$	5.68			

**Figure 11: Allocation of Wastewater System**

	Buy-In Allocation	Buy-In System Value	Incremental Allocation	CIP Project Costs	Total
<b>Cost of Assets</b>					
<i>Capital Recovery</i>	74%	\$ 154,989,265			\$ 154,989,265
<i>Transmission</i>	26%	\$ 53,112,136			\$ 53,112,136
Total Cost of Assets		\$ 208,101,401		\$ -	\$ 208,101,401
<b>Capacity</b>					
Existing Capacity		10,855,000			10,855,000
<b>Weighted Cost/gal/day</b>					
<i>Capital Recovery</i>	\$	14.28			
<i>Transmission</i>	\$	4.89			
Overall Cost per gallon per day	\$	19.17			

**Figure 12: Water Fee Summary**

	EXISTING			MAXIMUM COST JUSTIFIED		
	WATER			WATER		
	<u>Capital Recovery</u>	<u>Transmission</u>	<u>Total</u>	<u>Capital Recovery</u>	<u>Transmission</u>	<u>Total</u>
<b>Residential (per residence):</b>						
One bedroom	\$ 573	\$ 193	\$ 766	\$ 456	\$ 231	\$ 687
Two bedrooms	\$ 573	\$ 193	\$ 766	\$ 912	\$ 462	\$ 1,375
Three bedrooms	\$ 860	\$ 290	\$ 1,150	\$ 1,365	\$ 691	\$ 2,056
Four bedrooms	\$ 1,147	\$ 387	\$ 1,534	\$ 1,821	\$ 923	\$ 2,743

**Figure 13: Wastewater Fee Summary**

	EXISTING			MAXIMUM COST JUSTIFIED		
	SEWER			SEWER		
	<u>Capital Recovery</u>	<u>Transmission</u>	<u>Total</u>	<u>Capital Recovery</u>	<u>Transmission</u>	<u>Total</u>
<b>Residential (per residence):</b>						
One bedroom	\$ 2,000	\$ 667	\$ 2,667	\$ 1,328	\$ 455	\$ 1,783
Two bedrooms	\$ 2,000	\$ 667	\$ 2,667	\$ 2,656	\$ 910	\$ 3,566
Three bedrooms	\$ 3,000	\$ 1,000	\$ 4,000	\$ 3,983	\$ 1,365	\$ 5,348
Four or more bedrooms	\$ 4,000	\$ 1,333	\$ 5,333	\$ 5,310	\$ 1,820	\$ 7,131



**Brunswick County Board of Commissioners**  
**ACTION AGENDA ITEM**  
**April 16, 2018**

**Action Item # VIII. - 2.**

**From:**  
Ann Hardy, County Manager

Administration - Resolution For The Issuance of \$52,950,000  
General Obligation Bonds (Ann Hardy, County Manager)

**Issue/Action Requested:**

Request that the Board of Commissioners approve the Bond Resolution Providing For The Issuance Of Not To Exceed \$52,950,000 General Obligation School Bonds, Series 2018.

**Background/Purpose of Request:**

A Bond Order authorizing the issuance of \$152,000,000 general obligation school bonds has been adopted to pay the costs of constructing, improving, and renovating school facilities.

The Bond Resolution is to authorize the issuance of not to exceed \$52,950,000 General Obligation Bonds as planned for phase I of the approved \$152,000,000 bond referendum. Phase I will provide estimated funding for the New Town Creek Middle School \$22.5 million, Lincoln Elementary 6 Classroom Addition \$3.7 million, Town Creek Elementary School 6 Classroom Addition \$2.2 million, and the remaining to be used for design costs for future projects, District Wide Athletic, Interior and Exterior Building Improvements \$24.6 million.

The 2018 Bonds will pay interest semiannually on February 1 and August 1, beginning August 1, 2019.

**Fiscal Impact:**

Reviewed By Director of Fiscal Operations

**Approved By County Attorney:**

Yes

**County Manager's Recommendation:**

Recommend that the Board of Commissioners approve the Bond Resolution Providing For The Issuance Of Not To Exceed \$52,950,000 General Obligation School Bonds, Series 2018.

**ATTACHMENTS:**

Description

- ☐ Bond Resolution - County of Brunswick GO Bonds 2018
- ☐ GO Bonds Project Financing Model
- ☐ Resolution for Chair's Signature

EXTRACTS FROM MINUTES OF THE BOARD OF COMMISSIONERS

Extract of Minutes of a regular meeting of the Board of Commissioners of the County of Brunswick, North Carolina held in the Commissioners' Chambers, David R. Sandifer Administration Building, 30 Government Center Drive NE, Bolivia, North Carolina, at 6:00 pm on April 16, 2018.

The following members were present:

The following members were absent:

\* \* \* \* \*

Commissioner \_\_\_\_\_ moved that the following resolution, copies of which having been made available to the Board of Commissioners, be adopted:

**RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE COUNTY OF BRUNSWICK, NORTH CAROLINA PROVIDING FOR THE ISSUANCE OF NOT TO EXCEED \$52,950,000 GENERAL OBLIGATION SCHOOL BONDS, SERIES 2018 OF THE COUNTY OF BRUNSWICK, NORTH CAROLINA**

*WHEREAS*, the Bond Order hereinafter-described has been adopted, and it is desirable to make provision for the issuance of the bonds authorized by said Bond Order;

*NOW, THEREFORE, BE IT RESOLVED* by the Board of Commissioners of the County of Brunswick, North Carolina (the "*Board*") as follows:

**Section 1.** For purposes of this Resolution, the following words have the meanings ascribed to them below:

*"Arbitrage and Tax Regulatory Agreement"* means the Arbitrage and Tax Regulatory Agreement executed by the County related to the 2018 Bonds.

*"Bond Order"* means the Bond Order authorizing \$152,000,000 General Obligation School Bonds, adopted by the Board on August 1, 2016, effective when approved by the voters of the County at a referendum duly called and held on November 8, 2016.

*"Code"* means the Internal Revenue Code of 1986, as amended, and the rulings and regulations (including temporary and proposed regulations) promulgated thereunder, or any successor statute thereto.

*“Federal Securities”* means (a) direct obligations of the United States of America for the timely payment of which the full faith and credit of the United States of America is pledged; (b) obligations issued by any agency controlled or supervised by and acting as an instrumentality of the United States of America, the timely payment of the principal of and interest on which is fully guaranteed as full faith and credit obligations of the United States of America (including any securities described in (a) or (b) issued or held in the name of the Trustee in book-entry form on the books of the Department of Treasury of the United States of America), which obligations, in either case, are held in the name of a trustee and are not subject to redemption or purchase prior to maturity at the option of anyone other than the holder; (c) any bonds or other obligations of the State of North Carolina or of any agency, instrumentality or local governmental unit of the State of North Carolina which are (i) not callable prior to maturity or (ii) as to which irrevocable instructions have been given to the trustee or escrow agent with respect to such bonds or other obligations by the obligor to give due notice of redemption and to call such bonds for redemption on the date or dates specified, and which are rated by Moody’s, if the 2018 Bonds are rated by Moody’s, S&P, if the 2018 Bonds are rated by S&P and Fitch Ratings, if the 2018 Bonds are rated by Fitch Ratings, within the highest rating category and which are secured as to principal, redemption premium, if any, and interest by a fund consisting only of cash or bonds or other obligations of the character described in clause (a) or (b) hereof which fund may be applied only to the payment of such principal of and interest and redemption premium, if any, on such bonds or other obligations on the maturity date or dates thereof or the specified redemption date or dates pursuant to such irrevocable instructions, as appropriate; (d) direct evidences of ownership of proportionate interests in future interest and principal payments on specified obligations described in (a) held by a bank or trust company as custodian, under which the owner of the investment is the real party in interest and has the right to proceed directly and individually against the obligor on the underlying obligations described in (a), and which underlying obligations are not available to satisfy any claim of the custodian or any person claiming through the custodian or to whom the custodian may be obligated; or (e) any other obligations permitted under State law for the defeasance of local government bonds.

*“Fiscal Year”* means a twelve-month period commencing on the first day of July of any year and ending on the 30th day of June of the succeeding year, or such other twelve-month period which may subsequently be adopted as the Fiscal Year of the County.

*“Fitch Ratings”* means Fitch Ratings, Inc., its successors and their assigns, and, if such corporation for any reason no longer performs the functions of a securities rating agency, *“Fitch”* will be deemed to refer to any other nationally recognized securities rating agency other than Moody’s and S&P designated by the City.

*“Moody’s”* means Moody’s Investors Service, a corporation organized and existing under the laws of the State of Delaware, its successors and their assigns and, if such corporation for any reason no longer performs the functions of a securities rating agency, *“Moody’s”* will be deemed to refer to any other nationally recognized rating agency other than S&P designated by the County.

*“Pricing Certificate”* means the certificate of the Director of Fiscal Operations of the County delivered in connection with the issuance of the 2018 Bonds which establishes the final maturity amounts, the interest payment dates and the provisions for redemption.

*“Projects”* means constructing, improving, and renovating school facilities, specifically including, among other things, the construction and renovation of classroom facilities and district-wide improvements for safety, security, technology and building infrastructure, the acquisition and installation of furnishings and equipment, and the acquisition of land or rights-in-land required therefor, pursuant to and in accordance with the Bond Order.

“S&P” means S&P Global Ratings, a business unit of Standard & Poor’s Financial Services LLC, its successors and their assigns and, if such corporation for any reason no longer performs the functions of a securities rating agency, “S&P” will be deemed to refer to any other nationally recognized rating agency other than Moody’s designated by the County.

“2018 Bonds” means the County’s General Obligation School Bonds, Series 2018 authorized under the Bond Order.

**Section 2.** The County will issue not to exceed \$52,950,000 in total aggregate principal amount of its 2018 Bonds.

**Section 3.** The 2018 Bonds will be dated their date of issuance and pay interest semiannually on February 1 and August 1, beginning August 1, 2019, unless the Director of Fiscal Operations of the County establishes different dates in her Pricing Certificate. The 2018 Bonds are being issued to provide funds (1) to finance the capital costs of the Projects pursuant to and in accordance with the Bond Order and (2) to pay the costs of issuing the 2018 Bonds.

**Section 4.** The Board has ascertained and hereby determines that the average period of usefulness of the capital projects being financed by the proceeds of the 2018 Bonds is not less than 25 years computed from the date of issuance of the 2018 Bonds.

**Section 5.** Unless changed by the Director of Fiscal Operations of the County in her Pricing Certificate, the 2018 Bonds are payable in annual installments on August 1 in each year, as follows:

<u>YEAR</u>	<u>AMOUNT</u>	<u>YEAR</u>	<u>AMOUNT</u>
2019	\$2,650,000	2029	\$2,650,000
2020	2,650,000	2030	2,650,000
2021	2,650,000	2031	2,650,000
2022	2,650,000	2032	2,650,000
2023	2,650,000	2033	2,650,000
2024	2,650,000	2034	2,650,000
2025	2,650,000	2035	2,650,000
2026	2,650,000	2036	2,650,000
2027	2,650,000	2037	2,650,000
2028	2,650,000	2038	2,600,000

**Section 6.** The 2018 Bonds are to be numbered from “R-1” consecutively and upward. All 2018 Bonds will bear interest from their date at a rate or rates which will be hereafter determined on the sale thereof computed on the basis of a 360-day year of twelve 30-day months.

**Section 7.** The 2018 Bonds are to be registered as to principal and interest, and the Director of Fiscal Operations of the County is directed to maintain the registration records with respect thereto. The 2018 Bonds will bear the original or facsimile signatures of the County Manager or the Chairman of the Board and the Clerk to the Board of the County. An original or facsimile of the seal of the County will be imprinted on each of the 2018 Bonds.

**Section 8.** The 2018 Bonds will initially be issued by means of a book-entry system with no physical distribution of bond certificates made to the public. One bond certificate for each maturity will be issued to The Depository Trust Company, New York, New York (“DTC”), and immobilized in its

custody. A book-entry system will be employed, evidencing ownership of the 2018 Bonds in principal amounts of \$5,000 or integral multiples thereof, with transfers of beneficial ownership effected on the records of DTC and its participants pursuant to rules and procedures established by DTC. Interest on the 2018 Bonds will be payable to DTC or its nominee as registered owner of the 2018 Bonds in immediately available funds. The principal of and interest on the 2018 Bonds will be payable to owners of 2018 Bonds shown on the records of DTC at the close of business on the 15th day of the month preceding an interest payment date or a bond payment date. The County will not be responsible or liable for maintaining, supervising or reviewing the records maintained by DTC, its participants or persons acting through such participants.

If (a) DTC determines not to continue to act as securities depository for the 2018 Bonds or (b) the Director of Fiscal Operations of the County determines that the continuation of the book-entry system of evidence and transfer of ownership of the 2018 Bonds would adversely affect the interests of the beneficial owners of the 2018 Bonds, the County will discontinue the book-entry system with DTC in accordance with the rules and procedures of DTC. If the County fails to identify another qualified securities depository to replace DTC, the County will authenticate and deliver replacement bonds in accordance with the rules and procedures of DTC.

**Section 9.** Unless changed by the Director of Fiscal Operations of the County in her Pricing Certificate, the 2018 Bonds maturing on or before August 1, 2028 will not be subject to redemption prior to maturity. The 2018 Bonds maturing on and after August 1, 2029 will be subject to redemption prior to maturity, at the option of the County, from any money that may be made available for such purpose, either in whole or in part on any date on or after August 1, 2028, at the redemption price of the principal amount of 2018 Bonds to be so redeemed, plus accrued interest to the redemption date.

If less than all of the 2018 Bonds are called for redemption, the County will select the maturity or maturities of the 2018 Bonds to be redeemed in such manner as the County in its discretion may determine and DTC and its participants will determine which of the 2018 Bonds within a maturity are to be redeemed in accordance with its rules and procedures; provided, however, that the portion of any 2018 Bond to be redeemed will be in principal amount of \$5,000 or integral multiples thereof and that, in selecting 2018 Bonds for redemption, each 2018 Bond will be considered as representing that number of 2018 Bonds which is obtained by dividing the principal amount of such 2018 Bond by \$5,000. Whenever the County elects to redeem 2018 Bonds, notice of such redemption of 2018 Bonds, stating the redemption date, redemption price and any conditions to the redemption and identifying the 2018 Bonds or portions thereof to be redeemed by reference to their numbers and further stating that on such redemption date there will become due and payable on each 2018 Bond or portion thereof so to be redeemed, the principal thereof, and interest accrued to the redemption date and that from and after such date interest thereon will cease to accrue, will be given not less than 30 days nor more than 60 days before the redemption date in writing to DTC or its nominee as the registered owner of the 2018 Bonds, by prepaid certified or registered United States mail (or by such other means as permitted by DTC's rules and procedures), at the address provided to the County by DTC, but any failure or defect in respect of such mailing will not affect the validity of the redemption. If DTC is not the registered owner of the 2018 Bonds, the County will give notice at the time set forth above by prepaid first class United States mail, to the then-registered owners of the 2018 Bonds or portions thereof to be redeemed at the last address shown on the registration books kept by the County. The County will also mail or transmit by facsimile or in electronic format a copy of the notice of redemption within the time set forth above (1) to the Local Government Commission of North Carolina (the "*Local Government Commission*") and (2) to the Municipal Rulemaking Securities Board through the EMMA system.

If at the time of mailing of the notice of redemption there is not on deposit money sufficient to redeem the 2018 Bonds called for redemption, such notice may state that it is conditional on the deposit

of money for the redemption on the date of redemption as set forth in the notice. Any notice, once given, may be withdrawn by notice delivered in the same manner as the notice of redemption was given.

**Section 10.** The 2018 Bonds and the provisions for the registration of the 2018 Bonds and for the approval of the 2018 Bonds by the Secretary of the Local Government Commission are to be in substantially the form set forth in Exhibit A hereto, the terms of which may be changed by the Director of Fiscal Operations of the County in her Pricing Certificate.

**Section 11.** The Director of Fiscal Operations of the County is hereby authorized to execute a non-arbitrage certificate with respect to the 2018 Bonds in order to comply with Section 148 of the Code and the applicable Income Tax Regulations thereunder.

**Section 12.** The Director of Fiscal Operations of the County is hereby directed to create and establish a special fund to be designated "*County of Brunswick, North Carolina General Obligation Bonds, Series 2018 Project Fund*" (the "*Project Fund*") and may establish separate accounts within the Project Fund to track the expenditures related to each of the Projects. The Director of Fiscal Operations of the County will deposit the proceeds from the sale of the 2018 Bonds in the Project Fund. The Director of Fiscal Operations of the County will invest and reinvest any money held in the Project Fund as permitted by the laws of the State of North Carolina and the income, to the extent permitted by the Code, is to be retained in the Project Fund and applied with the proceeds of the 2018 Bonds to pay the costs of the Projects, as directed by the Director of Fiscal Operations of the County. The Director of Fiscal Operations of the County will keep and maintain adequate records pertaining to the Project Fund and all disbursements therefrom so as to satisfy the requirements of the laws of the State of North Carolina and to assure that the County maintains its covenants with respect to the exclusion of the interest on the 2018 Bonds from gross income for purposes of federal income taxation.

**Section 13.** Actions taken by officials of the County to select paying and transfer agents, and a bond registrar, or alternate or successor agents and registrars pursuant to Section 159E-8 of the Registered Public Obligations Act, Chapter 159E of the General Statutes of North Carolina, as amended, are hereby authorized and approved.

**Section 14.** The Local Government Commission is hereby requested to sell the 2018 Bonds through a competitive sale to the bidder whose bid results in the lowest interest cost to the County, determined on the basis of the net interest cost method.

**Section 15.** The Chairman of the Board, the County Manager, the Clerk to the Board and the Director of Fiscal Operations of the County (the "*Authorized Officers*"), individually and collectively, are hereby authorized, empowered and directed to cause the 2018 Bonds to be prepared and, when they have been duly sold by the Local Government Commission, to execute the 2018 Bonds and to turn the 2018 Bonds over to the registrar and transfer agent of the County, if any, for delivery through the facilities of DTC to the purchaser or purchasers to whom they may be sold by the Local Government Commission.

**Section 16.** The form and content of the Notice of Sale and the Preliminary Official Statement together with the final Official Statement related to the 2018 Bonds are in all respects authorized, approved and confirmed. The Authorized Officers, individually and collectively, are authorized, empowered and directed to execute and deliver the Official Statement in substantially the form and content presented to the Board, but with such changes, modifications, additions or deletions therein as to them seem necessary, desirable or appropriate, their execution thereof to constitute conclusive evidence of the approval of the Board of any and all changes, modifications, additions or deletions therein from the form and content of the Official Statement presented to the Board.



**Section 17.** The Authorized Officers, individually and collectively, are authorized, empowered and directed to execute and deliver for and on behalf of the County any and all additional certificates, documents, opinions or other papers and perform all other acts as may be required by the documents contemplated hereinabove or as may be deemed necessary or appropriate in order to implement and carry out the intent and purposes of this Resolution.

**Section 18.** The County agrees, in accordance with Rule 15c2-12 (the “Rule”) promulgated by the Securities and Exchange Commission (the “SEC”) and for the benefit of the registered owners and beneficial owners of the 2018 Bonds, as follows:

(1) by not later than seven months after the end of each Fiscal Year to the Municipal Securities Rulemaking Board (the “MSRB”) in an electronic format as prescribed by the MSRB, the audited financial statements of the County for the preceding Fiscal Year, if available, prepared in accordance with Section 159-34 of the General Statutes of North Carolina, as it may be amended from time to time, or any successor statute, or if such audited financial statements are not then available, unaudited financial statements of the County for such Fiscal Year to be replaced subsequently by audited financial statements of the County to be delivered within 15 days after such audited financial statements become available for distribution;

(2) by not later than seven months after the end of each Fiscal Year to the MSRB, (a) the financial and statistical data as of a date not earlier than the end of the preceding Fiscal Year for the type of information included under the captions “**THE COUNTY--DEBT INFORMATION**” and “**--TAX INFORMATION**” (excluding information on overlapping units and the subsection entitled *Debt Outlook*) in the Official Statement referred to in Section 16 and (b) the combined budget of the County for the current Fiscal Year to the extent such items are not included in the financial statements referred to in clause (1) above;

(3) in a timely manner not in excess of 10 business days after the occurrence of the event, to the MSRB, notice of any of the following events with respect to the 2018 Bonds:

- (a) principal and interest payment delinquencies;
- (b) non-payment related defaults, if material;
- (c) unscheduled draws on the debt service reserves reflecting financial difficulties;
- (d) unscheduled draws on any credit enhancements reflecting financial difficulties;
- (e) substitution of any credit or liquidity providers, or their failure to perform;
- (f) adverse tax opinions, the issuance by the Internal Revenue Service of proposed or final determinations of taxability, Notices of Proposed Issue (IRS Form 5701-TEB) or other material notices or determinations with respect to the tax status of the 2018 Bonds or other material events affecting the tax status of the 2018 Bonds;
- (g) modification of the rights of the beneficial owners of the 2018 Bonds, if material;

- (h) call of any of the 2018 Bonds, if material, and tender offers;
  - (i) defeasance of any of the 2018 Bonds;
  - (j) release, substitution or sale of any property securing repayment of the 2018 Bonds, if material;
  - (k) rating changes;
  - (l) bankruptcy, insolvency, receivership or similar event of the County;
  - (m) the consummation of a merger, consolidation, or acquisition involving the County or the sale of all or substantially all of the assets of the obligated person, other than in the ordinary course of business, the entry into a definitive agreement to undertake such an action or the termination of a definitive agreement relating to such actions, other than pursuant to its terms, if material; and
  - (n) the appointment of a successor or additional trustee, or the change in the name of a trustee, if material; and
- (4) in a timely manner to the MSRB, notice of the failure by the County to provide the required annual financial information described in (1) and (2) above on or before the date specified.

The County agrees that its undertaking under this Paragraph is intended to be for the benefit of the registered owners and the beneficial owners of the 2018 Bonds and is enforceable by any of the registered owners and the beneficial owners of the 2018 Bonds, including an action for specific performance of the County's obligations under this Paragraph, but a failure to comply will not be an event of default and will not result in acceleration of the payment of the 2018 Bonds. An action must be instituted, had and maintained in the manner provided in this Paragraph for the benefit of all of the registered owners and beneficial owners of the 2018 Bonds.

All documents provided to the MSRB as described in this Paragraph will be provided in an electronic format as prescribed by the MSRB and accompanied by identifying information as prescribed by the MSRB. The County may discharge its undertaking described above by providing such information in a manner the SEC subsequently authorizes in lieu of the manner described above.

The County may modify from time to time, consistent with the Rule, the information provided or the format of the presentation of such information, to the extent necessary or appropriate in the judgment of the County, but:

- (1) any such modification may only be made in connection with a change in circumstances that arises from a change in legal requirements, change in law or change in the identity, nature or status of the County;
- (2) the information to be provided, as modified, would have complied with the requirements of the Rule as of the date of the Official Statement, after taking into account any amendments or interpretations of the Rule as well as any changes in circumstances;

(3) any such modification does not materially impair the interest of the registered owners or the beneficial owners, as determined by nationally recognized bond counsel or by the approving vote of the registered owners of a majority in principal amount of the 2018 Bonds.

Any annual financial information containing modified operating data or financial information will explain, in narrative form, the reasons for the modification and the impact of the change in the type of operating data or financial information being provided.

The provisions of this Paragraph terminate on payment, or provision having been made for payment in a manner consistent with the Rule, in full of the principal of and interest on the 2018 Bonds.

**Section 19.** Those portions of this Resolution other than Paragraph 18 may be amended or supplemented, from time to time, without the consent of the owners of the 2018 Bonds if in the opinion of nationally recognized bond counsel, such amendment or supplement would not adversely affect the interests of the owners of the 2018 Bonds and would not cause the interest on the 2018 Bonds to be included in the gross income of a recipient thereof for federal income tax purposes. This Resolution may be amended or supplemented with the consent of the owners of a majority in aggregate principal amount of the outstanding 2018 Bonds, exclusive of 2018 Bonds, if any, owned by the County, but a modification or amendment (1) may not, without the express consent of any owner of 2018 Bonds, reduce the principal amount of any 2018 Bond, reduce the interest rate payable on it, extend its maturity or the times for paying interest, change the monetary medium in which principal and interest is payable, or reduce the percentage of consent required for amendment or modification and (2) as to an amendment to Paragraph 18, must be limited as described therein.

Any act done pursuant to a modification or amendment consented to by the owners of the 2018 Bonds is binding on all owners of the 2018 Bonds and will not be deemed an infringement of any of the provisions of this Resolution, whatever the character of the act may be, and may be done and performed as fully and freely as if expressly permitted by the terms of this Resolution. After consent has been given, no owner of a 2018 Bond has any right or interest to object to the action, to question its propriety or to enjoin or restrain the County from taking any action pursuant to a modification or amendment.

If the County proposes an amendment or supplemental resolution to this Resolution requiring the consent of the owners of the 2018 Bonds, the registrar for the 2018 Bonds will, on being satisfactorily indemnified with respect to expenses, cause notice of the proposed amendment to be sent to each owner of the 2018 Bonds then outstanding by first-class mail, postage prepaid, to the address of such owner as it appears on the registration books; but the failure to receive such notice by mailing by any owner, or any defect in the mailing thereof, will not affect the validity of any proceedings pursuant hereto. Such notice will briefly set forth the nature of the proposed amendment and will state that copies thereof are on file at the designated office of the registrar for the 2018 Bonds for inspection by all owners of the 2018 Bonds. If, within 60 days or such longer period as may be prescribed by the County following the giving of such notice, the owners of a majority in aggregate principal amount of 2018 Bonds then outstanding have consented to the proposed amendment, the amendment will be effective as of the date stated in the notice.

**Section 20.** The County covenants that it will not take or permit, or omit to take or cause to be taken, any action that would adversely affect the exclusion from gross income of the recipient therefor for federal income tax purposes of the interest on the 2018 Bonds and, if it should take or permit, or omit to take or cause to be taken, any such action, the County will take or cause to be taken all lawful actions within its power necessary to rescind or correct such actions or omissions promptly on having knowledge thereof. The County covenants that it will comply with all the requirements of Section 148 of the Code, including the rebate requirements, and that it will not permit at any time any of the proceeds of the 2018

Bonds or other funds under their control be used, directly or indirectly, to acquire any asset or obligation, the acquisition of which would cause the 2018 Bonds to be “*arbitrage bonds*” for purposes of Section 148 of the Code. The County covenants that it will comply with the provisions of the Arbitrage and Tax Regulatory Certificate.

**Section 21.** Nothing in this Resolution precludes (a) the payment of the 2018 Bonds from the proceeds of refunding bonds or (b) the payment of the 2018 Bonds from any legally available funds.

If the County causes to be paid, or has made provisions to pay, on maturity or on redemption before maturity, to the owners of the 2018 Bonds the principal of the 2018 Bonds (including interest to become due thereon), through setting aside trust funds or setting apart in a reserve fund or special trust account created pursuant to this Resolution or otherwise, or through the irrevocable segregation for that purpose in some sinking fund or other fund or trust account with an escrow agent or otherwise, money sufficient therefor, including, but not limited to, interest earned or to be earned on Federal Securities, the County will so notify Moody’s and S&P, and then such 2018 Bonds will be considered to have been discharged and satisfied, and the principal of the 2018 Bonds (including interest thereon) will no longer be deemed to be outstanding and unpaid; provided, however, that nothing in this Resolution requires the deposit of more than such Federal Securities as may be sufficient, taking into account both the principal amount of such Federal Securities and the interest to become due thereon, to implement any such defeasance.

If such a defeasance occurs and after the County receives an opinion of a nationally recognized accounting or verification firm that the segregated money or Federal Securities together with interest earnings thereon is sufficient to effect a defeasance, the County will execute and deliver all such instruments as may be necessary to effect such a defeasance and desirable to evidence such release, discharge and satisfaction. The County will make provisions for the mailing of a notice to the owners of the 2018 Bonds that such money is available for such payment.

**Section 22.** If any one or more of the agreements or provisions herein contained is held contrary to any express provision of law or contrary to the policy of express law, though not expressly prohibited, or against public policy, or for any reason whatsoever is held invalid, then such covenants, agreements or provisions are null and void and separable from the remaining agreements and provisions and will in no way affect the validity of any of the other agreements and provisions hereof or of the 2018 Bonds authorized hereunder.

**Section 23.** All resolutions or parts thereof of the Board in conflict with the provisions herein contained are, to the extent of such conflict, hereby superseded and repealed.

**Section 24.** This Resolution is effective on its adoption.

On motion of Commissioner \_\_\_\_\_, seconded by Commissioner \_\_\_\_\_, the foregoing resolution entitled “**RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE COUNTY OF BRUNSWICK, NORTH CAROLINA PROVIDING FOR THE ISSUANCE OF NOT TO EXCEED \$52,950,000 GENERAL OBLIGATION SCHOOL BONDS, SERIES 2018 OF THE COUNTY OF BRUNSWICK, NORTH CAROLINA**” was duly adopted by the following vote:

AYES:

NAYS:

STATE OF NORTH CAROLINA

COUNTY OF BRUNSWICK

) ss:  
)

I, *Andrea G. White*, Clerk to the Board of Commissioners of the County of Brunswick, North Carolina, ***DO HEREBY CERTIFY*** that the foregoing is a true and exact copy of a resolution entitled “**RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE COUNTY OF BRUNSWICK, NORTH CAROLINA PROVIDING FOR THE ISSUANCE OF NOT TO EXCEED \$52,950,000 GENERAL OBLIGATION SCHOOL BONDS, SERIES 2018 OF THE COUNTY OF BRUNSWICK, NORTH CAROLINA**” adopted by the Board of Commissioners of the County of Brunswick, North Carolina, at a meeting held on the 16th day of April, 2018.

***WITNESS*** my hand and the corporate seal of the County of Brunswick, North Carolina, this the \_\_\_\_ day of \_\_\_\_\_, 2018.

\_\_\_\_\_  
Andrea G. White  
Clerk to the Board  
County of Brunswick, North Carolina

**APPENDIX A****FORM OF 2018 BOND**

No. R-

\$

**UNITED STATES OF AMERICA  
STATE OF NORTH CAROLINA  
COUNTY BRUNSWICK**

**INTEREST**  
**RATE**

**MATURITY DATE**  
**AUGUST 1, 20\_\_**

**DATED DATE**  
**JUNE 19, 2018**

**CUSIP**

**REGISTERED OWNER: CEDE & CO.**

**PRINCIPAL SUM: DOLLARS**

**GENERAL OBLIGATION SCHOOL BONDS, SERIES 2018**

*THE COUNTY OF BRUNSWICK, NORTH CAROLINA* (the “County”) acknowledges itself indebted and for value received hereby promises to pay to the Registered Owner named above, on the Maturity Date specified above, upon surrender hereof, the Principal Sum shown above and to pay to the Registered Owner hereof interest thereon from the date of this 2018 Bond until it matures at the Interest Rate per annum specified above, payable on August 1, 2019 and semiannually thereafter on February 1 and August 1 of each year. Principal of and interest on this 2018 Bond are payable in immediately available funds to The Depository Trust Company (“DTC”) or its nominee as Registered Owner of the 2018 Bonds and is payable to the owner of the 2018 Bonds shown on the records of DTC at the close of business on the 15<sup>th</sup> day of the month preceding an interest payment date or a bond payment date. The County is not responsible or liable for maintaining, supervising or reviewing the records maintained by DTC, its participants or persons acting through such participants.

This 2018 Bond is issued in accordance with and pursuant to the Registered Public Obligations Act, Chapter 159E of the General Statutes of North Carolina, as amended, The Local Government Finance Act, as amended and the Bond Order relating to the Projects (as defined below) adopted by the Board and approved by the vote of a majority of the voters who voted thereon at a referendum duly called and held. The 2018 Bonds are being issued to provide funds (1) to finance the capital costs of constructing, improving, and renovating school facilities, specifically including, among other things, the construction and renovation of classroom facilities and district-wide improvements for safety, security, technology and building infrastructure, the acquisition and installation of furnishings and equipment, and the acquisition of land or rights-in-land required therefor (the “Projects”) and (2) to pay the costs of issuing the 2018 Bonds.

The 2018 Bonds maturing on or before August 1, 2028 will not be subject to redemption prior to maturity. The 2018 Bonds maturing on and after August 1, 2029 will be subject to redemption prior to maturity, at the option of the County, from any money that may be made available for such purpose, either in whole or in part on any date on or after August 1, 2028, at the redemption price of the principal amount of 2018 Bonds to be so redeemed, plus accrued interest to the redemption date.

If less than all of the 2018 Bonds are called for redemption, the County will select the maturity or maturities of the 2018 Bonds to be redeemed in such manner as the County in its discretion may determine and DTC and its participants will determine which of the 2018 Bonds within a maturity are to be redeemed in accordance with its rules and procedures; provided, however, that the portion of any 2018 Bond to be redeemed will be in principal amount of \$5,000 or integral multiples thereof and that, in selecting 2018 Bonds for redemption, each 2018 Bond will be considered as representing that number of 2018 Bonds which is obtained by dividing the principal amount of such 2018 Bond by \$5,000. Whenever the County elects to redeem 2018 Bonds, notice of such redemption of 2018 Bonds, stating the redemption date, redemption price and any conditions to the redemption and identifying the 2018 Bonds or portions thereof to be redeemed by reference to their numbers and further stating that on such redemption date there will become due and payable on each 2018 Bond or portion thereof so to be redeemed, the principal thereof, and interest accrued to the redemption date and that from and after such date interest thereon will cease to accrue, will be given not less than 30 days nor more than 60 days before the redemption date in writing to DTC or its nominee as the Registered Owner of the 2018 Bonds, by prepaid certified or registered United States mail (or by such other means as permitted by DTC's rules and procedures), at the address provided to the County by DTC, but any failure or defect in respect of such mailing will not affect the validity of the redemption. If DTC or its nominee is not the Registered Owner of the 2018 Bonds, the County will give notice at the time set forth above by prepaid first class United States mail, to the then-registered owners of the 2018 Bonds or portions thereof to be redeemed at the last address shown on the registration books kept by the County. The County will also mail or transmit by facsimile or in electronic format a copy of the notice of redemption within the time set forth above (1) to the Local Government Commission of North Carolina (the "*Local Government Commission*") and (2) to the Municipal Rulemaking Securities Board through the EMMA system.

It is hereby certified and recited that all conditions, acts and things required by the constitution or statutes of the State of North Carolina to exist, be performed or happen precedent to or in the issuance of this 2018 Bond, exist, have been performed and have happened, and that the amount of this 2018 Bond, together with all other indebtedness of the County, is within every debt and other limit prescribed by said constitution or statutes of the State of North Carolina. The faith and credit of the County are hereby pledged to the punctual payment of the principal of and interest on this 2018 Bond in accordance with its terms.

This 2018 Bond will not be valid or become obligatory for any purpose until the certification hereon is signed by an authorized representative of the Local Government Commission.

*IN WITNESS WHEREOF*, the County has caused this 2018 Bond to bear the original or facsimile of the signatures of the following officers of the County and an original or facsimile of the seal of the County to be imprinted hereon and this 2018 Bond to be dated its date of issuance.

(SEAL)

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Clerk to the Board

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Chairman of the Board

Date of Execution: June 19, 2018

The issue hereof has been approved under the  
provisions of The Local Government Bond Act.

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Secretary of the Local Government Commission



**FORM OF ASSIGNMENT**

**ASSIGNMENT**

*FOR VALUE RECEIVED* the undersigned hereby sells, assigns and transfers unto

---

(Please print or typewrite Name and Address,  
including Zip Code, and Federal Taxpayer Identification or  
Social Security Number of Assignee)

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the within 2018 Bond and all rights thereunder, and hereby irrevocably constitutes and appoints

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Attorney to register the transfer of the within 2018 Bond on the books kept for registration thereof,  
with full power of substitution in the premises.

Dated: \_\_\_\_\_  
Signature guaranteed by:

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NOTICE: Signature must be guaranteed by  
a Participant in the Securities Transfer  
Agent Medallion Program ("Stamp") or  
similar program.

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NOTICE: The signature to this assignment must  
correspond with the name as it appears on the  
face of the within Bond in every particular,  
without alteration, enlargement or any change  
whatever.

**TRANSFER FEE MAY BE REQUIRED**

Fiscal Year	Total Taxable Assed Value	Growth Rate (%)	Dedicated Property Tax (Cents)	Value of Dedicated Tax	Collections (%)	Projected Collected Value	Phase I FY19 (\$52.95M)	Phase II FY21 (\$47.55M)	Phase III FY23 (\$51.50M)	Total Estimated Debt Service
2012	24,528,578,000	0.00		-	99.30	-	-	-	-	
2013	24,599,009,000	0.29		-	99.10	-	-	-	-	
2014	25,259,045,000	2.68		-	98.70	-	-	-	-	
2015	25,326,216,000	0.27		-	98.40	-	-	-	-	
2016	23,458,514,000	(7.37)		-	97.60	-	-	-	-	
2017	24,273,557,000	3.47		-	97.70	-	-	-	-	-
2018	24,516,292,570	1.00	-	-	97.60	-	-	-	-	-
2019	24,761,455,496	1.00	-	-	97.60	0	-	-	-	-
2020	25,009,070,051	1.00	2.44	6,092,858	97.60	5,946,629	5,946,629	-	-	5,946,629
2021	25,259,160,751	1.00	2.29	5,789,831	97.60	5,650,875	4,462,125	1,188,750	-	5,650,875
2022	25,511,752,359	1.00	3.63	9,260,118	97.60	9,037,875	4,339,875	4,698,000	-	9,037,875
2023	25,766,869,882	1.00	4.01	10,332,095	97.60	10,084,125	4,217,625	4,579,000	1,287,500	10,084,125
2024	26,024,538,581	1.00	5.37	13,976,434	97.60	13,641,000	4,095,375	4,460,000	5,085,625	13,641,000
2025	26,284,783,967	1.00	5.17	13,597,336	97.60	13,271,000	3,973,125	4,341,000	4,956,875	13,271,000
2026	26,547,631,807	1.00	4.98	13,218,238	97.60	12,901,000	3,850,875	4,222,000	4,828,125	12,901,000
2027	26,813,108,125	1.00	4.79	12,839,139	97.60	12,531,000	3,728,625	4,103,000	4,699,375	12,531,000
2028	27,081,239,206	1.00	4.60	12,460,041	97.60	12,161,000	3,606,375	3,984,000	4,570,625	12,161,000
2029	27,352,051,598	1.00	4.42	12,080,943	97.60	11,791,000	3,484,125	3,865,000	4,441,875	11,791,000
2030	27,625,572,114	1.00	4.24	11,714,370	97.60	11,433,225	3,374,100	3,746,000	4,313,125	11,433,225
2031	27,901,827,835	1.00	4.07	11,360,323	97.60	11,087,675	3,276,300	3,627,000	4,184,375	11,087,675
2032	28,180,846,113	1.00	3.90	11,001,281	97.60	10,737,250	3,178,500	3,503,125	4,055,625	10,737,250
2033	28,462,654,575	1.00	3.74	10,647,490	97.60	10,391,950	3,080,700	3,384,375	3,926,875	10,391,950
2034	28,747,281,120	1.00	3.58	10,293,699	97.60	10,046,650	2,982,900	3,265,625	3,798,125	10,046,650
2035	29,034,753,931	1.00	3.42	9,939,908	97.60	9,701,350	2,885,100	3,146,875	3,669,375	9,701,350
2036	29,325,101,471	1.00	3.27	9,586,117	97.60	9,356,050	2,787,300	3,028,125	3,540,625	9,356,050
2037	29,618,352,486	1.00	3.12	9,232,326	97.60	9,010,750	2,689,500	2,909,375	3,411,875	9,010,750
2038	29,914,536,010	1.00	2.97	8,878,535	97.60	8,665,450	2,591,700	2,790,625	3,283,125	8,665,450
2039	30,213,681,370	1.00	2.82	8,524,744	97.60	8,320,150	2,493,900	2,671,875	3,154,375	8,320,150
2040	30,515,818,184	1.00	1.87	5,715,932	97.60	5,578,750	-	2,553,125	3,025,625	5,578,750
2041	30,213,681,370	1.00	1.81	5,462,346	97.60	5,331,250	-	2,434,375	2,896,875	5,331,250
2042	30,515,818,184	1.00	0.93	2,836,194	97.60	2,768,125	-	-	2,768,125	2,768,125
2043	30,820,976,366	1.00	0.88	2,704,278	97.60	2,639,375	-	-	2,639,375	2,639,375
							71,044,754	72,501,250	78,537,500	222,083,504

*County of Brunswick*  
*Office of the County Commissioners*



**RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE COUNTY OF BRUNSWICK,  
NORTH CAROLINA PROVIDING FOR THE ISSUANCE OF NOT TO EXCEED \$52,950,000  
GENERAL OBLIGATION SCHOOL BONDS, SERIES 2018 OF THE COUNTY OF  
BRUNSWICK, NORTH CAROLINA**

*WHEREAS*, the Bond Order hereinafter-described has been adopted, and it is desirable to make provision for the issuance of the bonds authorized by said Bond Order;

*NOW, THEREFORE, BE IT RESOLVED* by the Board of Commissioners of the County of Brunswick, North Carolina (the "*Board*") as follows:

**Section 1.** For purposes of this Resolution, the following words have the meanings ascribed to them below:

*"Arbitrage and Tax Regulatory Agreement"* means the Arbitrage and Tax Regulatory Agreement executed by the County related to the 2018 Bonds.

*"Bond Order"* means the Bond Order authorizing \$152,000,000 General Obligation School Bonds, adopted by the Board on August 1, 2016, effective when approved by the voters of the County at a referendum duly called and held on November 8, 2016.

*"Code"* means the Internal Revenue Code of 1986, as amended, and the rulings and regulations (including temporary and proposed regulations) promulgated thereunder, or any successor statute thereto.

*"Federal Securities"* means (a) direct obligations of the United States of America for the timely payment of which the full faith and credit of the United States of America is pledged; (b) obligations issued by any agency controlled or supervised by and acting as an instrumentality of the United States of America, the timely payment of the principal of and interest on which is fully guaranteed as full faith and credit obligations of the United States of America (including any securities described in (a) or (b) issued or held in the name of the Trustee in book-entry form on the books of the Department of Treasury of the United States of America), which obligations, in either case, are held in the name of a trustee and are not subject to redemption or purchase prior to maturity at the option of anyone other than the holder; (c) any bonds or other obligations of the State of North Carolina or of any agency, instrumentality or local governmental unit of the State of North Carolina which are (i) not callable prior to maturity or (ii) as to which irrevocable instructions have been given to the trustee or escrow agent with respect to such bonds or other obligations by the obligor to give due notice of redemption and to call such bonds for redemption on the date or dates specified, and which are rated by Moody's, if the 2018 Bonds are rated by Moody's, S&P, if the 2018 Bonds are rated by S&P and Fitch Ratings, if the 2018 Bonds are rated by Fitch Ratings, within the highest rating category and which are secured as to principal, redemption premium, if any, and

interest by a fund consisting only of cash or bonds or other obligations of the character described in clause (a) or (b) hereof which fund may be applied only to the payment of such principal of and interest and redemption premium, if any, on such bonds or other obligations on the maturity date or dates thereof or the specified redemption date or dates pursuant to such irrevocable instructions, as appropriate; (d) direct evidences of ownership of proportionate interests in future interest and principal payments on specified obligations described in (a) held by a bank or trust company as custodian, under which the owner of the investment is the real party in interest and has the right to proceed directly and individually against the obligor on the underlying obligations described in (a), and which underlying obligations are not available to satisfy any claim of the custodian or any person claiming through the custodian or to whom the custodian may be obligated; or (e) any other obligations permitted under State law for the defeasance of local government bonds.

*“Fiscal Year”* means a twelve-month period commencing on the first day of July of any year and ending on the 30th day of June of the succeeding year, or such other twelve-month period which may subsequently be adopted as the Fiscal Year of the County.

*“Fitch Ratings”* means Fitch Ratings, Inc., its successors and their assigns, and, if such corporation for any reason no longer performs the functions of a securities rating agency, *“Fitch”* will be deemed to refer to any other nationally recognized securities rating agency other than Moody’s and S&P designated by the City.

*“Moody’s”* means Moody’s Investors Service, a corporation organized and existing under the laws of the State of Delaware, its successors and their assigns and, if such corporation for any reason no longer performs the functions of a securities rating agency, *“Moody’s”* will be deemed to refer to any other nationally recognized rating agency other than S&P designated by the County.

*“Pricing Certificate”* means the certificate of the Director of Fiscal Operations of the County delivered in connection with the issuance of the 2018 Bonds which establishes the final maturity amounts, the interest payment dates and the provisions for redemption.

*“Projects”* means constructing, improving, and renovating school facilities, specifically including, among other things, the construction and renovation of classroom facilities and district-wide improvements for safety, security, technology and building infrastructure, the acquisition and installation of furnishings and equipment, and the acquisition of land or rights-in-land required therefor, pursuant to and in accordance with the Bond Order.

*“S&P”* means S&P Global Ratings, a business unit of Standard & Poor’s Financial Services LLC, its successors and their assigns and, if such corporation for any reason no longer performs the functions of a securities rating agency, *“S&P”* will be deemed to refer to any other nationally recognized rating agency other than Moody’s designated by the County.

*“2018 Bonds”* means the County’s General Obligation School Bonds, Series 2018 authorized under the Bond Order.

**Section 2.** The County will issue not to exceed \$52,950,000 in total aggregate principal amount of its 2018 Bonds.

**Section 3.** The 2018 Bonds will be dated their date of issuance and pay interest semiannually on February 1 and August 1, beginning August 1, 2019, unless the Director of Fiscal Operations of the County establishes different dates in her Pricing Certificate. The 2018 Bonds are being

issued to provide funds (1) to finance the capital costs of the Projects pursuant to and in accordance with the Bond Order and (2) to pay the costs of issuing the 2018 Bonds.

**Section 4.** The Board has ascertained and hereby determines that the average period of usefulness of the capital projects being financed by the proceeds of the 2018 Bonds is not less than 25 years computed from the date of issuance of the 2018 Bonds.

**Section 5.** Unless changed by the Director of Fiscal Operations of the County in her Pricing Certificate, the 2018 Bonds are payable in annual installments on August 1 in each year, as follows:

<u>YEAR</u>	<u>AMOUNT</u>	<u>YEAR</u>	<u>AMOUNT</u>
2019	\$2,650,000	2029	\$2,650,000
2020	2,650,000	2030	2,650,000
2021	2,650,000	2031	2,650,000
2022	2,650,000	2032	2,650,000
2023	2,650,000	2033	2,650,000
2024	2,650,000	2034	2,650,000
2025	2,650,000	2035	2,650,000
2026	2,650,000	2036	2,650,000
2027	2,650,000	2037	2,650,000
2028	2,650,000	2038	2,600,000

**Section 6.** The 2018 Bonds are to be numbered from “R-1” consecutively and upward. All 2018 Bonds will bear interest from their date at a rate or rates which will be hereafter determined on the sale thereof computed on the basis of a 360-day year of twelve 30-day months.

**Section 7.** The 2018 Bonds are to be registered as to principal and interest, and the Director of Fiscal Operations of the County is directed to maintain the registration records with respect thereto. The 2018 Bonds will bear the original or facsimile signatures of the County Manager or the Chairman of the Board and the Clerk to the Board of the County. An original or facsimile of the seal of the County will be imprinted on each of the 2018 Bonds.

**Section 8.** The 2018 Bonds will initially be issued by means of a book-entry system with no physical distribution of bond certificates made to the public. One bond certificate for each maturity will be issued to The Depository Trust Company, New York, New York (“DTC”), and immobilized in its custody. A book-entry system will be employed, evidencing ownership of the 2018 Bonds in principal amounts of \$5,000 or integral multiples thereof, with transfers of beneficial ownership effected on the records of DTC and its participants pursuant to rules and procedures established by DTC. Interest on the 2018 Bonds will be payable to DTC or its nominee as registered owner of the 2018 Bonds in immediately available funds. The principal of and interest on the 2018 Bonds will be payable to owners of 2018 Bonds shown on the records of DTC at the close of business on the 15th day of the month preceding an interest payment date or a bond payment date. The County will not be responsible or liable for maintaining, supervising or reviewing the records maintained by DTC, its participants or persons acting through such participants.

If (a) DTC determines not to continue to act as securities depository for the 2018 Bonds or (b) the Director of Fiscal Operations of the County determines that the continuation of the book-entry system of evidence and transfer of ownership of the 2018 Bonds would adversely affect the interests of the beneficial owners of the 2018 Bonds, the County will discontinue the book-entry system with DTC in

accordance with the rules and procedures of DTC. If the County fails to identify another qualified securities depository to replace DTC, the County will authenticate and deliver replacement bonds in accordance with the rules and procedures of DTC.

**Section 9.** Unless changed by the Director of Fiscal Operations of the County in her Pricing Certificate, the 2018 Bonds maturing on or before August 1, 2028 will not be subject to redemption prior to maturity. The 2018 Bonds maturing on and after August 1, 2029 will be subject to redemption prior to maturity, at the option of the County, from any money that may be made available for such purpose, either in whole or in part on any date on or after August 1, 2028, at the redemption price of the principal amount of 2018 Bonds to be so redeemed, plus accrued interest to the redemption date.

If less than all of the 2018 Bonds are called for redemption, the County will select the maturity or maturities of the 2018 Bonds to be redeemed in such manner as the County in its discretion may determine and DTC and its participants will determine which of the 2018 Bonds within a maturity are to be redeemed in accordance with its rules and procedures; provided, however, that the portion of any 2018 Bond to be redeemed will be in principal amount of \$5,000 or integral multiples thereof and that, in selecting 2018 Bonds for redemption, each 2018 Bond will be considered as representing that number of 2018 Bonds which is obtained by dividing the principal amount of such 2018 Bond by \$5,000. Whenever the County elects to redeem 2018 Bonds, notice of such redemption of 2018 Bonds, stating the redemption date, redemption price and any conditions to the redemption and identifying the 2018 Bonds or portions thereof to be redeemed by reference to their numbers and further stating that on such redemption date there will become due and payable on each 2018 Bond or portion thereof so to be redeemed, the principal thereof, and interest accrued to the redemption date and that from and after such date interest thereon will cease to accrue, will be given not less than 30 days nor more than 60 days before the redemption date in writing to DTC or its nominee as the registered owner of the 2018 Bonds, by prepaid certified or registered United States mail (or by such other means as permitted by DTC's rules and procedures), at the address provided to the County by DTC, but any failure or defect in respect of such mailing will not affect the validity of the redemption. If DTC is not the registered owner of the 2018 Bonds, the County will give notice at the time set forth above by prepaid first class United States mail, to the then-registered owners of the 2018 Bonds or portions thereof to be redeemed at the last address shown on the registration books kept by the County. The County will also mail or transmit by facsimile or in electronic format a copy of the notice of redemption within the time set forth above (1) to the Local Government Commission of North Carolina (the "*Local Government Commission*") and (2) to the Municipal Rulemaking Securities Board through the EMMA system.

If at the time of mailing of the notice of redemption there is not on deposit money sufficient to redeem the 2018 Bonds called for redemption, such notice may state that it is conditional on the deposit of money for the redemption on the date of redemption as set forth in the notice. Any notice, once given, may be withdrawn by notice delivered in the same manner as the notice of redemption was given.

**Section 10.** The 2018 Bonds and the provisions for the registration of the 2018 Bonds and for the approval of the 2018 Bonds by the Secretary of the Local Government Commission are to be in substantially the form set forth in Exhibit A hereto, the terms of which may be changed by the Director of Fiscal Operations of the County in her Pricing Certificate.

**Section 11.** The Director of Fiscal Operations of the County is hereby authorized to execute a non-arbitrage certificate with respect to the 2018 Bonds in order to comply with Section 148 of the Code and the applicable Income Tax Regulations thereunder.

**Section 12.** The Director of Fiscal Operations of the County is hereby directed to create and establish a special fund to be designated "*County of Brunswick, North Carolina General Obligation*

*Bonds, Series 2018 Project Fund*” (the “*Project Fund*”) and may establish separate accounts within the Project Fund to track the expenditures related to each of the Projects. The Director of Fiscal Operations of the County will deposit the proceeds from the sale of the 2018 Bonds in the Project Fund. The Director of Fiscal Operations of the County will invest and reinvest any money held in the Project Fund as permitted by the laws of the State of North Carolina and the income, to the extent permitted by the Code, is to be retained in the Project Fund and applied with the proceeds of the 2018 Bonds to pay the costs of the Projects, as directed by the Director of Fiscal Operations of the County. The Director of Fiscal Operations of the County will keep and maintain adequate records pertaining to the Project Fund and all disbursements therefrom so as to satisfy the requirements of the laws of the State of North Carolina and to assure that the County maintains its covenants with respect to the exclusion of the interest on the 2018 Bonds from gross income for purposes of federal income taxation.

**Section 13.** Actions taken by officials of the County to select paying and transfer agents, and a bond registrar, or alternate or successor agents and registrars pursuant to Section 159E-8 of the Registered Public Obligations Act, Chapter 159E of the General Statutes of North Carolina, as amended, are hereby authorized and approved.

**Section 14.** The Local Government Commission is hereby requested to sell the 2018 Bonds through a competitive sale to the bidder whose bid results in the lowest interest cost to the County, determined on the basis of the net interest cost method.

**Section 15.** The Chairman of the Board, the County Manager, the Clerk to the Board and the Director of Fiscal Operations of the County (the “*Authorized Officers*”), individually and collectively, are hereby authorized, empowered and directed to cause the 2018 Bonds to be prepared and, when they have been duly sold by the Local Government Commission, to execute the 2018 Bonds and to turn the 2018 Bonds over to the registrar and transfer agent of the County, if any, for delivery through the facilities of DTC to the purchaser or purchasers to whom they may be sold by the Local Government Commission.

**Section 16.** The form and content of the Notice of Sale and the Preliminary Official Statement together with the final Official Statement related to the 2018 Bonds are in all respects authorized, approved and confirmed. The Authorized Officers, individually and collectively, are authorized, empowered and directed to execute and deliver the Official Statement in substantially the form and content presented to the Board, but with such changes, modifications, additions or deletions therein as to them seem necessary, desirable or appropriate, their execution thereof to constitute conclusive evidence of the approval of the Board of any and all changes, modifications, additions or deletions therein from the form and content of the Official Statement presented to the Board.

**Section 17.** The Authorized Officers, individually and collectively, are authorized, empowered and directed to execute and deliver for and on behalf of the County any and all additional certificates, documents, opinions or other papers and perform all other acts as may be required by the documents contemplated hereinabove or as may be deemed necessary or appropriate in order to implement and carry out the intent and purposes of this Resolution.

**Section 18.** The County agrees, in accordance with Rule 15c2-12 (the “*Rule*”) promulgated by the Securities and Exchange Commission (the “*SEC*”) and for the benefit of the registered owners and beneficial owners of the 2018 Bonds, as follows:

- (1) by not later than seven months after the end of each Fiscal Year to the Municipal Securities Rulemaking Board (the “*MSRB*”) in an electronic format as prescribed by the MSRB, the audited financial statements of the County for the preceding Fiscal Year, if available, prepared in accordance with Section 159-34 of the General Statutes of North Carolina, as it may

be amended from time to time, or any successor statute, or if such audited financial statements are not then available, unaudited financial statements of the County for such Fiscal Year to be replaced subsequently by audited financial statements of the County to be delivered within 15 days after such audited financial statements become available for distribution;

(2) by not later than seven months after the end of each Fiscal Year to the MSRB, (a) the financial and statistical data as of a date not earlier than the end of the preceding Fiscal Year for the type of information included under the captions “**THE COUNTY--DEBT INFORMATION**” and “**--TAX INFORMATION**” (excluding information on overlapping units and the subsection entitled *Debt Outlook*) in the Official Statement referred to in Section 16 and (b) the combined budget of the County for the current Fiscal Year to the extent such items are not included in the financial statements referred to in clause (1) above;

(3) in a timely manner not in excess of 10 business days after the occurrence of the event, to the MSRB, notice of any of the following events with respect to the 2018 Bonds:

- (a) principal and interest payment delinquencies;
- (b) non-payment related defaults, if material;
- (c) unscheduled draws on the debt service reserves reflecting financial difficulties;
- (d) unscheduled draws on any credit enhancements reflecting financial difficulties;
- (e) substitution of any credit or liquidity providers, or their failure to perform;
- (f) adverse tax opinions, the issuance by the Internal Revenue Service of proposed or final determinations of taxability, Notices of Proposed Issue (IRS Form 5701-TEB) or other material notices or determinations with respect to the tax status of the 2018 Bonds or other material events affecting the tax status of the 2018 Bonds;
- (g) modification of the rights of the beneficial owners of the 2018 Bonds, if material;
- (h) call of any of the 2018 Bonds, if material, and tender offers;
- (i) defeasance of any of the 2018 Bonds;
- (j) release, substitution or sale of any property securing repayment of the 2018 Bonds, if material;
- (k) rating changes;
- (l) bankruptcy, insolvency, receivership or similar event of the County;
- (m) the consummation of a merger, consolidation, or acquisition involving the County or the sale of all or substantially all of the assets of the obligated person, other than in the ordinary course of business, the entry into a definitive agreement to undertake



such an action or the termination of a definitive agreement relating to such actions, other than pursuant to its terms, if material; and

(n) the appointment of a successor or additional trustee, or the change in the name of a trustee, if material; and

(4) in a timely manner to the MSRB, notice of the failure by the County to provide the required annual financial information described in (1) and (2) above on or before the date specified.

The County agrees that its undertaking under this Paragraph is intended to be for the benefit of the registered owners and the beneficial owners of the 2018 Bonds and is enforceable by any of the registered owners and the beneficial owners of the 2018 Bonds, including an action for specific performance of the County's obligations under this Paragraph, but a failure to comply will not be an event of default and will not result in acceleration of the payment of the 2018 Bonds. An action must be instituted, had and maintained in the manner provided in this Paragraph for the benefit of all of the registered owners and beneficial owners of the 2018 Bonds.

All documents provided to the MSRB as described in this Paragraph will be provided in an electronic format as prescribed by the MSRB and accompanied by identifying information as prescribed by the MSRB. The County may discharge its undertaking described above by providing such information in a manner the SEC subsequently authorizes in lieu of the manner described above.

The County may modify from time to time, consistent with the Rule, the information provided or the format of the presentation of such information, to the extent necessary or appropriate in the judgment of the County, but:

(1) any such modification may only be made in connection with a change in circumstances that arises from a change in legal requirements, change in law or change in the identity, nature or status of the County;

(2) the information to be provided, as modified, would have complied with the requirements of the Rule as of the date of the Official Statement, after taking into account any amendments or interpretations of the Rule as well as any changes in circumstances;

(3) any such modification does not materially impair the interest of the registered owners or the beneficial owners, as determined by nationally recognized bond counsel or by the approving vote of the registered owners of a majority in principal amount of the 2018 Bonds.

Any annual financial information containing modified operating data or financial information will explain, in narrative form, the reasons for the modification and the impact of the change in the type of operating data or financial information being provided.

The provisions of this Paragraph terminate on payment, or provision having been made for payment in a manner consistent with the Rule, in full of the principal of and interest on the 2018 Bonds.

**Section 19.** Those portions of this Resolution other than Paragraph 18 may be amended or supplemented, from time to time, without the consent of the owners of the 2018 Bonds if in the opinion of nationally recognized bond counsel, such amendment or supplement would not adversely affect the

interests of the owners of the 2018 Bonds and would not cause the interest on the 2018 Bonds to be included in the gross income of a recipient thereof for federal income tax purposes. This Resolution may be amended or supplemented with the consent of the owners of a majority in aggregate principal amount of the outstanding 2018 Bonds, exclusive of 2018 Bonds, if any, owned by the County, but a modification or amendment (1) may not, without the express consent of any owner of 2018 Bonds, reduce the principal amount of any 2018 Bond, reduce the interest rate payable on it, extend its maturity or the times for paying interest, change the monetary medium in which principal and interest is payable, or reduce the percentage of consent required for amendment or modification and (2) as to an amendment to Paragraph 18, must be limited as described therein.

Any act done pursuant to a modification or amendment consented to by the owners of the 2018 Bonds is binding on all owners of the 2018 Bonds and will not be deemed an infringement of any of the provisions of this Resolution, whatever the character of the act may be, and may be done and performed as fully and freely as if expressly permitted by the terms of this Resolution. After consent has been given, no owner of a 2018 Bond has any right or interest to object to the action, to question its propriety or to enjoin or restrain the County from taking any action pursuant to a modification or amendment.

If the County proposes an amendment or supplemental resolution to this Resolution requiring the consent of the owners of the 2018 Bonds, the registrar for the 2018 Bonds will, on being satisfactorily indemnified with respect to expenses, cause notice of the proposed amendment to be sent to each owner of the 2018 Bonds then outstanding by first-class mail, postage prepaid, to the address of such owner as it appears on the registration books; but the failure to receive such notice by mailing by any owner, or any defect in the mailing thereof, will not affect the validity of any proceedings pursuant hereto. Such notice will briefly set forth the nature of the proposed amendment and will state that copies thereof are on file at the designated office of the registrar for the 2018 Bonds for inspection by all owners of the 2018 Bonds. If, within 60 days or such longer period as may be prescribed by the County following the giving of such notice, the owners of a majority in aggregate principal amount of 2018 Bonds then outstanding have consented to the proposed amendment, the amendment will be effective as of the date stated in the notice.

**Section 20.** The County covenants that it will not take or permit, or omit to take or cause to be taken, any action that would adversely affect the exclusion from gross income of the recipient therefor for federal income tax purposes of the interest on the 2018 Bonds and, if it should take or permit, or omit to take or cause to be taken, any such action, the County will take or cause to be taken all lawful actions within its power necessary to rescind or correct such actions or omissions promptly on having knowledge thereof. The County covenants that it will comply with all the requirements of Section 148 of the Code, including the rebate requirements, and that it will not permit at any time any of the proceeds of the 2018 Bonds or other funds under their control be used, directly or indirectly, to acquire any asset or obligation, the acquisition of which would cause the 2018 Bonds to be “*arbitrage bonds*” for purposes of Section 148 of the Code. The County covenants that it will comply with the provisions of the Arbitrage and Tax Regulatory Certificate.

**Section 21.** Nothing in this Resolution precludes (a) the payment of the 2018 Bonds from the proceeds of refunding bonds or (b) the payment of the 2018 Bonds from any legally available funds.

If the County causes to be paid, or has made provisions to pay, on maturity or on redemption before maturity, to the owners of the 2018 Bonds the principal of the 2018 Bonds (including interest to become due thereon), through setting aside trust funds or setting apart in a reserve fund or special trust account created pursuant to this Resolution or otherwise, or through the irrevocable segregation for that purpose in some sinking fund or other fund or trust account with an escrow agent or otherwise, money sufficient therefor, including, but not limited to, interest earned or to be earned on Federal Securities, the County will so notify Moody's and S&P, and then such 2018 Bonds will be considered to have been

discharged and satisfied, and the principal of the 2018 Bonds (including interest thereon) will no longer be deemed to be outstanding and unpaid; provided, however, that nothing in this Resolution requires the deposit of more than such Federal Securities as may be sufficient, taking into account both the principal amount of such Federal Securities and the interest to become due thereon, to implement any such defeasance.

If such a defeasance occurs and after the County receives an opinion of a nationally recognized accounting or verification firm that the segregated money or Federal Securities together with interest earnings thereon is sufficient to effect a defeasance, the County will execute and deliver all such instruments as may be necessary to effect such a defeasance and desirable to evidence such release, discharge and satisfaction. The County will make provisions for the mailing of a notice to the owners of the 2018 Bonds that such money is available for such payment.

**Section 22.** If any one or more of the agreements or provisions herein contained is held contrary to any express provision of law or contrary to the policy of express law, though not expressly prohibited, or against public policy, or for any reason whatsoever is held invalid, then such covenants, agreements or provisions are null and void and separable from the remaining agreements and provisions and will in no way affect the validity of any of the other agreements and provisions hereof or of the 2018 Bonds authorized hereunder.

**Section 23.** All resolutions or parts thereof of the Board in conflict with the provisions herein contained are, to the extent of such conflict, hereby superseded and repealed.

**Section 24.** This Resolution is effective on its adoption.

On motion of Commissioner \_\_\_\_\_, seconded by Commissioner N/A, the foregoing resolution entitled **“RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE COUNTY OF BRUNSWICK, NORTH CAROLINA PROVIDING FOR THE ISSUANCE OF NOT TO EXCEED \$52,950,000 GENERAL OBLIGATION SCHOOL BONDS, SERIES 2018 OF THE COUNTY OF BRUNSWICK, NORTH CAROLINA”** was duly adopted by the following vote:

AYES:

NAYS:

This the 16<sup>th</sup> day of April, 2018.

\_\_\_\_\_  
Frank Williams, Chairman  
Brunswick County Commissioners

Attest:

\_\_\_\_\_  
Andrea White, NCCCC  
Clerk to the Board



**Brunswick County Board of Commissioners**  
**ACTION AGENDA ITEM**  
**April 16, 2018**

**Action Item # VIII. - 3.**

**From:** Engineering - Carolina Shores North Sewer SAD (29) Project  
Wm. L. Pinnix, P.E. - Engineering Director Closeout (Bill Pinnix, P.E., Director of Engineering)

**Issue/Action Requested:**

Request that the Board of Commissioners certify the CSN Sewer SAD (29) project cost, establish the cost assessment method, approve the assessment payment terms, adopt the Final Assessment Resolution and schedule the Final Public Hearing for the confirmation of the assessment roll for 6pm on May 21, 2018 in the Commissioner's Chambers.

**Background/Purpose of Request:**

On March 16, 2015 the Board of Commissioners authorized the creation of Special Assessment District (29) to install a public sewer system within the Carolina Shores North neighborhood.

The Carolina Shores North SAD (29) project is complete and the sewer system has full approval from NCDEQ-Division of Water Quality to be placed in operation to serve the neighborhood.

Attached for Board review and approval is the Final Assessment Resolution, a Preliminary Roll of Benefited Parcels, and the Preliminary Roll Map.

The total cost of the project is \$1,896,314.59. Other costs are \$350 for advertising the final Public Hearing and \$500 for mailing of legal and assessment notices. The total certified cost of the sewer project, which is assessed to property owners, is \$1,897,164.59.

The recommended method of assessment is per parcel. Based on the current roll, the per parcel assessment is \$4,071.17 for each of the (466) parcels.

Included in the approved Final Assessment Resolution:

100% of the cost of the work will be assessed and the parcels assessed may be subject to any system impact fees. The proposed terms of payment are payment in full sixty (60) days following the date of the publication of notice of the confirmation of the assessment roll. Assessments paid in full within the sixty days shall receive a five (5) percent discount. Any assessment not paid in full within the sixty days shall be divided into three annual installments with simple interest of eight (8) percent annually as allowed in NCGS §153A-200 (a). The first installment shall be due within sixty (60) days following the publication of notice of the confirmation of the assessment roll. Each subsequent installment shall be due one year thereafter.

Per the Sewer Assessment Policy, property owners with existing structures or have obtained a building permit on their property who make application for service and pay their assessment in full within one (1) year of the notice of confirmation of the Final Assessment Roll will have the Sewer Capital Recovery Fee waived. The property owner will still be required to pay the Sewer Transmission Fee. All property owners with existing structures connecting after the expiration of the one year period will be required to pay the Sewer Capital Recovery Fee and Sewer Transmission Fee in effect at the time of application for service.

Staff recommends that the Board of Commissioners certify the final project cost at \$1,897,164.59, establish the cost assessment method as per parcel, approve the assessment payment terms of payment in full within sixty (60) days from the date of notice of confirmation of the Final Assessment Roll, set the annual principal installments to three (3) years with simple interest of eight (8%) percent, approve the Final Assessment Resolution, and schedule the Final Public Hearing for the confirmation of the assessment roll for 6pm at the May 21, 2018 Board of Commissioners meeting.

**Fiscal Impact:**

Reviewed By Director of Fiscal Operations

**Approved By County Attorney:**

Yes

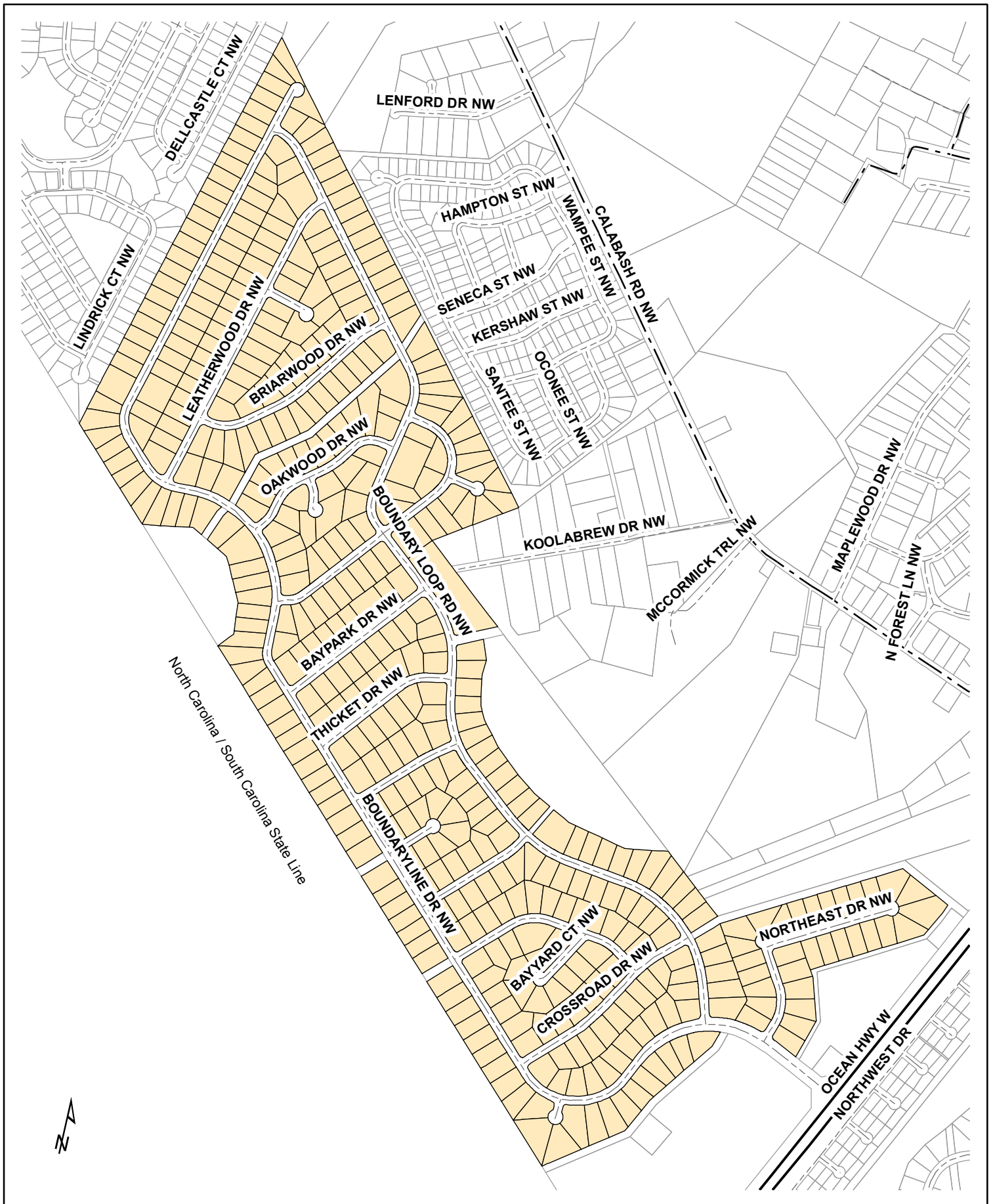
**County Manager's Recommendation:**

Request that the Board of Commissioners certify the CSN Sewer SAD (29) project cost, establish the cost assessment method, approve the assessment payment terms, adopt the Final Assessment Resolution and schedule the Final Public Hearing for the confirmation of the assessment roll for 6pm on May 21, 2018 in the Commissioner's Chambers.

**ATTACHMENTS:**

Description

- ☐ CSN Sewer SAD 29 Final Roll Map
- ☐ Preliminary Roll
- ☐ Final Resolution
- ☐ 2015 Preliminary Resolution
- ☐ April 2013 Utility Board Minutes
- ☐ Sewer Assessment Policy



## SAD 29 Carolina Shores North

### Parcels in 2018 Scroll

#### Legend

- 2018 Scroll Parcels
- Parcel boundaries

Brunswick County assumes no legal responsibility for nature of, contents of or accuracy of any information contained on this map. This map may not be accurate or up-to-date. All map information must be verified by recipient.

**CSN Sewer SAD (29) Preliminary Assessment Roll**

**Assessment Method: Per Parcel**

**Per Parcel Assessment Amount: \$4,017.17**

**Assessment Payment Terms:**

**The terms of payment shall be payment in full sixty (60) days following the date of the publication of notice of the confirmation of the assessment roll. Assessments paid in full within the sixty days shall receive a five (5) percent discount. Any assessment not paid in full within the sixty days shall be divided into three annual installments with simple interest of eight (8) percent annually as allowed in NCGS §153A-200 (a). The first installment shall be due within sixty (60) days following the publication of notice of the confirmation of the assessment roll. Each subsequent installment shall be due one year thereafter.**

<u>ParcelNumb</u>	<u>LegalDescr</u>	<u>Name1</u>	<u>Name2</u>	<u>Address1</u>	<u>Address2</u>	<u>City</u>	<u>State</u>	<u>ZipCode</u>
240AA001	L-387 CAROLINA SHORES PLAT K/194-196	MULLINS MICHAEL L		1515 JEFFERSON DAVIS HWY	APT 1516	ARLINGTON	VA	22202
240AA002	L-388 CAROLINA SHORES PLAT K/194-196	TAYLOR DOUGLAS WAYNE ET NANETE M			PO BOX 6278	OCEAN ISLE BEACH	NC	28469
240AA003	L-389 CAROLINA SHORES PLAT K/194-196	EVANS CHARISSA			PO BOX 25	STONEVILLE	NC	27048
240AA004	L-390 CAROLINA SHORES PLAT K/194-196	VON TOUSSAINT ELLEN CORRADO			73 TYLER DRIVE	RIVERHEAD	NY	11901
240AA005	L-391 CAROLINA SHORES PLAT K/194-196	BLITCH WILLIAM E ETUX MARIE W			2835 RICE ROAD	MATTHEWS	NC	28105
240AA006	L-392 CAROLINA SHORES PLAT K/194-196	LSF9 MASTER PARTICIPATION TRUST		C/O CALIBER HOME LOANS	13801 WIRELESS WAY	OKLAHOMA CITY	OK	73134-2500
240AA007	L-393 CAROLINA SHORES PLAT K/194-196	VON TOUSSAINT ELLEN CORRADO			73 TYLER DRIVE	RIVERHEAD	NY	11901
240AA008	L-394 CAROLINA SHORES PLAT K/194-196	FRYE JESSE F ET LUCILLE T			1790 CHINA GROVE RD	CHINA GROVE	NC	28023
240AA009	L-395 CAROLINA SHORES PLAT K/194-196	COYLE THOMAS C ETUX BARBARA C			64 ROSE PLACE	SELDEN	NY	11784
240AA010	L-396 CAROLINA SHORES PLAT K/194	WALL RANDY L & RICHARD BRUNETE			PO BOX 4162	N MYRTLE BEACH	SC	29597
240AA011	L-397 CAROLINA SHORES PLAT K/194-196	BROWN BELINDA TR		C/O BROWN FAMILY TRUST	PO BOX 13	HAMBURG	NJ	07419
240AA012	L-398 CAROLINA SHORES PLAT K/196	CEDARCREST ESTATES LLC		% L R HAMMERSCHLAG	145 S ANNAPOLIS AVE	ATLANTIC CITY	NJ	08401
240AA013	L-399 CAROLINA SHORES PLAT K/194-196	TAYLOR DOUGLAS WAYNE II ETUX	TAYLOR AMANDA MARTIN		398 GREENBAY RD	OCEAN ISLE BEACH	NC	28469
240AA014	L-400 CAROLINA SHORES PLAT K/194-196	WHITFIELD ETHEL MELITA AND	GOULD MAURICE STEPHENSON III		731 BOUNDARYLINE DR NW	CALABASH	NC	28467-1724
240AA015	L-401 CAROLINA SHORES PLAT K/194-196	ACORN ASSOCIATES LLC			141 BLACKMAN ROAD	EGG HARBOR TWP	NJ	08234
240AA016	L-402 CAROLINA SHORES PLAT K/196	KEITH WILLIAM L & BOYD LARRY			5718 HOLLIROSE DR	CHARLOTTE	NC	28212
240AA017	L-403 CAROLINA SHORES NORTH PLAT K/194-196	MARSHALL HERBERT J ETUX	MARSHALL EUN HEE SUN		3722 DURHAM RD	RALEIGH	NC	27614-8121
240AA018	L-404 CAROLINA SHORES PLAT K/196	MCSHANE PATRICK J ET	MCSHANE CLAUDIA M		7421 SIDBURY CIRCLE	SAN ANTONIO	TX	78250
240AA019	L-405 CAROLINA SHORES PLAT K/194-196	STEWART JOHN R			693 BOUNDARYLINE DR NW	CALABASH	NC	28467
240AA020	L-406 CAROLINA SHORES PLAT K/196	CEDARCREST ESTATES LLC		% L R HAMMERSCHLAG	145 S ANNAPOLIS AVE	ATLANTIC CITY	NJ	08401
240AA021	L-407 CAROLINA SHORES PLAT K/194-196	GIPPLE WILLIAM L ET LOUISE			671 BOUNDARYLINE DR	CALABASH	NC	28467
240AA022	L-408 CAROLINA SHORES PLAT K/196	BARNES KEITH & ELAINE			PO BOX 1904	CARY	NC	27512
240AA023	L-409 CAROLINA SHORES NORTH PLAT K/194-196	MILLER JAMES D ET LORI A			645 BOUNDARYLINE DR	CALABASH	NC	28467
240AA024	L-410 CAROLINA SHORES PLAT K/194-196	RODNEY L THORPE & DOBORAH L THORPE	REVOCABLE LIVING TRUST		635 BOUNDARYLINE DR NW	CALABASH	NC	28467
240AA025	L-411&412 CAROLINA SHORES PLAT K/196	GAVRILIS NIKOLAOS ET TRACY L			623 BOUNDARYLINE DRIVE NW	CALABASH	NC	28467
240AA027	L-317 CAROLINA SHORES PLAT K/195	GAVRILIS MIHAIL N ETUX	GAVRILIS MARIA		143 ABCAW BLVD	MYRTLE BEACH	SC	29579-6554
240AA028	L-316 CAROLINA SHORES NORTH PL 99/48&K/195	PARKER R CONSTANCE ETVIR	PARKER HAROLD LEE		4208 CAPE LANDING RD	CASTLE HAYNE	NC	28429-4531
240AA029	L-315 CAROLINA SHORES NORTH PL 99/48& K/195	BARTKOWICZ SOPHIE			10 CABOT ST	NEW BRITAIN	CT	06053
240AA030	L-314 CAROLINA SHORES NORTH PL 99/48& K/195	HORWITZ CHARLES M			20653 HELENA LANE	LAKEVILLE	MN	55044
240AA031	L-313 CAROLINA SHORES NORTH PL 99/48&K/195	BROWN WADELL ET JESSIE M			709 ASHBURTON DR	FAYETTEVILLE	NC	28301
240AA032	L-312 CAROLINA SHORES NORTH PL 99/48&K/195	CHANCLER JOSEPH A ET	CHANCLER CARMELA M		10 CLYDE RD	WATERTOWN	MA	02472-1316
240AA033	L-311 CAROLINA SHORES NORTH PL 99/48&K/195	TURNER DEAN B ET KIMBERLY A			102 EATON PLACE	CARY	NC	27513
240AA034	L-310 CAROLINA SHORES NORTH PL 99/48&K/195	CHAND RAM ET PREM M			13516 PALM PL	CERRITOS	CA	90703
240AA035	L-309 CAROLINA SHORES NORTH PL 99/48&K/195	COOKE STUART AND	COOKE C & MALLARD H	ATTN: LOMIE COOKE	1 CAUSEWAY DRIVE SW	OCEAN ISLE BEACH	NC	28469
240AA036	L-308 CAROLINA SHORES PLAT K/194-196	HEDRICK ROBERT ETUX MARY			PO BOX 4547	CALABASH	NC	28467
240AA037	L-307 CAROLINA SHORES PLAT K/195	KIM GUNIL G			402 AIKEN HUNT CIR	COLUMBIA	SC	29223-8429
240AA038	L-306 CAROLINA SHORES PLAT K/194-196	ALLEN MICHAEL JAMES ETALS			519 BOUNDARYLINE DRIVE	CALABASH	NC	28467
240AA039	L-233 CAROLINA SHORES PLAT K/194	PHALAN RICHARD A ET DENISE S			104 CLEVINGER CT	WINCHESTER	VA	22601
240AA040	L-231&232 1.03AC CAROLINA SHORES PL K/194-196	WENTLAND WALTER W ETUX SUZANNE			499 NW BOUNDARYLINE DR	CALABASH	NC	28467
240AA042	L-230 CAROLINA SHORES PLAT K/194	BICKLEY PATSY MARIE			600 ORIOLE ST	AIKEN	SC	29801
240AA043	L-229 CAROLINA SHORES PLAT K/194	HENDRIX GERALD T ET MARJORIE E			1651 TRYON DRIVE	FAYETTEVILLE	NC	28303
240AA044	L-228 CAROLINA SHORES PLAT K/194	BUTLER PAUL W JR ETUX APRIL B			2273 STARDUST LANE	LITTLE RIVER	SC	29566
240AA045	L-227 CAROLINA SHORES PLAT K/194	NOE ALEXANDER B ET KIMBERLY W			154 LIGHTWOOD KNOT	COLUMBIA	SC	29223
240AA046	L-226 CAROLINA SHORES PLAT K/194	BONNER BRUCE R ET JULIANNE P			2649 ALANBY LN	CHARLOTTE	NC	28270
240AA047	L-225 CAROLINA SHORES PLAT K/194	KATZENBERGER HAROLD R ET CAROLYN F			7198 MARKER PLACE SW	OCEAN ISLE BEACH	NC	28469
240AA048	L-224 CAROLINA SHORES NORTH PL 99/48&K/194	GIBSON LEE G			435 BOUNDARYLINE DR NW	CALABASH	NC	28467
240AA049	L-223 CAROLINA SHORES NORTH PL 99/48&K/194-196	KAUNE DIETER			206 PARLIAMENT DRIVE	WILMINGTON	NC	28411

**CSN Sewer SAD (29) Preliminary Assessment Roll**

240AB001	L-318 CAROLINA SHORES NORTH PLAT K/195	OCEAN 7 INC		316 FAIRWOOD TER	MYRTLE BEACH	SC	29588-6382
240AB002	L-413 CAROLINA SHORES PLAT K/194-196	SNYDER ROY P ETUX DONNA M		80 SOUTH MOUNTAIN RD	WALLKILL	NY	12589
240AB003	L-414&415 CAROLINA SHORES PLAT K/194-196	QUESENBERRY JOHN A ET KATHLEEN B		624 BOUNDARYLINE DR	CALABASH	NC	28467
240AB005	L-416 CAROLINA SHORES PLAT K/194-196	CEDARCREST ESTATES LLC	% L R HAMMERSCHLAG	145 S ANNAPOLIS AVE	ATLANTIC CITY	NJ	08401
240AB006	L-417 CAROLINA SHORES PLAT K/196	TABASZEWSKI TADEUSZ ETUX URSZULA		23 BERKSHIRE DR	FARMINGTON	CT	06032
240AB007	L-418 CAROLINA SHORES PLAT K/196	MEHTA PRAFUL ET MALTI P		4428 CAMERON OAKS DRIVE	CHARLOTTE	NC	28211
240AB008	L-419 CAROLINA SHORES PLAT K/194-196	HURST MARK H ET ROBIN		684 BOUNDARY LINE DR	CALABASH	NC	28467
240AB009	L-420 CAROLINA SHORES PLAT K/196	ACORN ASSOCIATES LLC		141 BLACKMAN ROAD	EGG HARBOR TWP	NJ	08234
240AB010	L-421 CAROLINA SHORES PLAT K/196	RUSS KIMBERLY SUE		700 BOUNDARY LINE DRIVE	CALABASH	NC	28467
240AB011	L-422 CAROLINA SHORES PLAT K/196	THOMAS GEORGE ETALS		1529 PAISLEY AVE	FAYETTEVILLE	NC	28304
240AB012	L-423 CAROLINA SHORES PLAT K/196	PARKER HAROLD L ETUX R CONSTANCE		306 SIERRA DRIVE	WILMINGTON	NC	28409
240AB013	L-424 CAROLINA SHORES PLAT K/196	STEVENS CURTIS A ET DESMA		13214 BELLE GROVE MANOR	MATTHEWS	NC	28105
240AB014	L-425 CAROLINA SHORES PLAT K/194	MCPEEK KEITH ET THERESA		140 PINE ST	RAMSEY	NJ	07446
240AB015	L-426 CAROLINA SHORES PLAT K/194-196	COOK STEVEN		6235 ST FRANCIS DRIVE	SEVEN HILLS	OH	44137
240AB016	L-427 CAROLINA SHORES PLAT K/194-196	CEDARCREST ESTATES LLC	% L R HAMMERSCHLAG	145 S ANNAPOLIS AVE	ATLANTIC CITY	NJ	08401
240AB017	L-428 CAROLINA SHORES PLAT K/194-196	CONNOLLY LAWRENCE M ET JANET E	% LAWRENCE CONNOLLY JR	606 PRITCHHARDS HILL CT	WINCHESTER	VA	22601-2653
240AB018	L-429 CAROLINA SHORES PLAT K/196	WOLK JOSEPH J JR ETUX	WOLK CAROL M	2 BAISLEY FARM CT	STONY POINT	NY	10980-2130
240AB019	L-430 CAROLINA SHORES PLAT K/194-196	REILLY JIMMY ETUX	REILLY FIONA	772 BOUNDARYLINE DR NW	CALABASH	NC	28467
240AB020	L-431 CAROLINA SHORES PLAT K/194-196	LAWRENCE JEFFREY G		1841 TANGLEWOOD DR NE	ST PETERSBURG	FL	33702-4733
240AB021	L-432 CAROLINA SHORES PLAT K/196	FRIED WILLIAM JR ET SALLY N		11 ANTELOPE TRAIL	BILLINGS	MT	59101
240AB022	L-433 CAROLINA SHORES PLAT K/196	PROPEs ALAN ETUX FRANCES		2304 MORNING GLORY DR	RICHARDSON	TX	75082
240AB024	L-434 & 435 CAROLINA SHORES NORTH PL K/196	KELLY MICHAEL B ETUX	KELLY SUZANNE J	505 NW LEATHERWOOD DRIVE	CAROLINA SHORES	NC	28467
240AB025	L-436 CAROLINA SHORES PLAT K/196	EASLEY WILLIAM D III		P O BOX 758	OAK ISLAND	NC	28465
240AB026	L-437 CAROLINA SHORES PLAT K/196	GALDAMEZ JUAN ALBERTO ET KAREN		4104 JEFFERSON ST	HYATTSVILLE	MD	20781
240AB027	L-438 CAROLINA SHORES PLAT K/196	GALDAMEZ JUAN ALBERTO ET KAREN		4104 JEFFERSON ST	HYATTSVILLE	MD	20781
240AB028	L-439 CAROLINA SHORES PLAT K/196	PLANT LEE B ETUX JEANNE R		435 E EL VALLE	GREEN VALLEY	AZ	85614
240AB029	L-440 CAROLINA SHORES PLAT K/196	MCNEELY GREG W ET REBECCA		P O BOX 8	PECKS MILL	WV	25547
240AB030	L-441 CAROLINA SHORES PLAT K/196	VARLAMOFF IVAN		3730 WINDHURST DR SW	LILBURN	GA	30247
240AB031	L-442 CAROLINA SHORES PLAT K/194-196	BARTKOWICZ SOPHIE		10 CABOT ST	NEW BRITAIN	CT	06053
240AB032	L-443 CAROLINA SHORES PLAT K/194	LIDDELL LARRY JOHN ETUX LINDA J		13981 WALLABI AVE	SYLMAR AREA	CA	91342
240AB033	L-444 CAROLINA SHORES PLAT K/196	EVANS CHARISSA		PO BOX 25	STONEVILLE	NC	27048
240AB034	L-445 CAROLINA SHORES PLAT K/196	MAYNARD THOMAS M JR ETUX NANCY B		108 BOTTLE NECK TRAIL	HOLLY SPRINGS	NC	27540
240AB035	L-446 CAROLINA SHORES PLAT K/196	HARDY MICHAEL Z		107 KIRKFIELD DRIVE	CARY	NC	27518
240AB036	L-447 CAROLINA SHORES PLAT K/196	MOORE TIMOTHY S ET KELLY C		543 LEATHERWOOD DR NW	CALABASH	NC	28467
240AB037	L-448 CAROLINA SHORES PLAT K/194-196	PETOSKY LESLIE ET CLAUDIA		1754 JACKSON STREET	LINESVILLE	PA	16424
240AB038	L-449 CAROLINA SHORES PLAT K/196	REDDY SATTY N AND	REDDY SATTY A	352 ABBEY GARDENS LN	SIMPSONVILLE	SC	29681-6816
240AB039	L-450 CAROLINA SHORES PLAT K/196	HEDRICK ROBERT C ETUX MARY		PO BOX 4547	CALABASH	NC	28467
240AB040	L-451 CAROLINA SHORES PLAT K/194-196	TAYLOR DOUGLAS W		P O BOX 6278	OCEAN ISLE BEACH	NC	28469
240AB041	L-319 CAROLINA SHORES PLAT K/195	WALDEN JERRY D ET MELITA		PO BOX 50361	MYRTLE BEACH	SC	29579
240AB042	L-320 CAROLINA SHORES PLAT K/194-196	SUMPTER DIONNE ETALS		111 HADDINGTON DR	COLUMBIA	SC	29229-8786
240AB043	L-321 CAROLINA SHORES PLAT K/194-196	CATALANO ANTHONY JR		580 BOUNDARYLINE DR NW	CALABASH	NC	28467
240BA001	L-350 CAROLINA SHORES PLAT K/195	HAYES JOE C		433 DEROSE DR	FAYETTEVILLE	NC	28311
240BA002	L-379 CAROLINA SHORES PLAT K/195	KAIB WILLIAM F & NOREEN M TRUSTEES		306 HUNTING HILL CIRCLE	GREER	SC	29650
240BA003	L-378 CAROLINA SHORES PLAT K/195	PATE RICHARD L		1014 ANNE STREET	NORTH MYRTLE BEACH	SC	29582
240BA004	L-377 CAROLINA SHORES PLAT K/195	PAGE EARLE L ET ELLEN		8717 STONEGATE	RALEIGH	NC	27615
240BA005	L-376 CAROLINA SHORES PLAT K/194	FOLEY DONALD ET ANNA		41 EAKMAN DRIVE	GARNERVILLE	NY	10923
240BA006	L-375 CAROLINA SHORES PLAT K/195	LUECK EDWIN C		3237 GROVEWOOD DRIVE	FORT COLLINS	CO	82525
240BA007	L-374 CAROLINA SHORES PLAT K/194-196	SHOFFNER JOSEPH D ETUX	SHOFFNER SANDRA S	3703 DERBYSHIRE DRIVE	GREENSBORO	NC	27410
240BA008	L-373 CAROLINA SHORES PLAT K/195	SHERRILL ARCHIE B & KERRY B		1370 HORNSBY CIRCLE	LUGOFF	SC	29078
240BA009	L-372 CAROLINA SHORES PLAT K/195	DEJONG ROBERT J ET DONNA M		526 LEATHERWOOD DRIVE	CALABASH	NC	28467
240BA010	L-371 CAROLINA SHORES PLAT K/195	LUECK JAMES DONALD & EDWIN C		530 LEATHERWOOD DR NW	CALABASH	NC	28467
240BA011	L-370 CAROLINA SHORES PLAT K/195	CUOMO LINDA		3258 RANGERS GATE	MARIETTA	GA	30062
240BA012	L-369 CAROLINA SHORES PLAT K/195	KALRA BAL K & SHASHI		1 BARNARD PLACE	PRINCETON JUNCTION	NJ	08550
240BA013	L-368 CAROLINA SHORES NORTH PLAT K/194-196	COGHLAN CAROLYN SUE ETALS		81 MAPLEWOOD AVE	WAYNE	NJ	07470-5131
240BA014	L-367 CAROLINA SHORES NORTH PL K/195	DELGUERICO HERY A ET SUS DAN O		546 LEATHERWOOD DR NW	CALABASH	NC	28467



**CSN Sewer SAD (29) Preliminary Assessment Roll**

240BA015	L-366 CAROLINA SHORES PLAT K/194-196	ANASTASI VINCENT F ET ROSE M		550 LEATHERWOOD DR NW	CALABASH	NC	28467
240BA016	L-365 CAROLINA SHORES NORTH PLAT K/195	KILROE JOHN J ET LUCY M		541 BRIARWOOD DR N.W.	CALABASH	NC	28467
240BA017	L-364 CAROLINA SHORES PLAT K/194-196	COGHLAN CAROLYN SUE ETALS		81 MAPLEWOOD AVE	WAYNE	NJ	07470-5131
240BA018	L-363 CAROLINA SHORES PLAT K/195	BIGELOW INC GENERAL CONTRACTOR	C/O ELAINE BIGELOW	5105 GRAND LOOP #613	TACOMA	WA	98407
240BA019	L-362 CAROLINA SHORES PLAT K/194-196	SMITH LEHNER LINDA L		50 CAROLINA SHORES DR	CAROLINA SHORES	NC	28467
240BA020	L-361 CAROLINA SHORES PLAT K/194-196	FISCHER BRIAN DONALD		1024 E STOTTLER CT	GILBERT	AZ	85296-3619
240BA021	L-360 CAROLINA SHORES PLAT K/195	BELL LEONARD K JR ET LISA		511 BRIARWOOD DR NW	CALABASH	NC	28467
240BA022	L-359 CAROLINA SHORES PLAT K/195	WINGERD PATTI A		507 BRIARWOOD DR NW	CALABASH	NC	28467
240BA023	L-358 CAROLINA SHORES PLAT K/195	BOLAND LINDA A TERRIO		6702 FORMOSA COLUMBIA	COLUMBIA	SC	29206
240BA024	L-357 CAROILINA SHORES PLAT K/195	LUTZ JOSEPH J ET DOREEN R		85 SHEILA DR	SATELLITE BEACH	FL	32937
240BA025	L-356 CAROLINA SHORES PLAT K/194-196	DEMPSTER LAWRENCE S		2808 FAIRWAY VILLAGE DR	SOUTHPORT	NC	28461-8086
240BA026	L-355 CAROLINA SHORES PLAT K/194-196	TABASZEWSKI PAWEL		87 KNOLL RIDGE COURT	MIDDLTETOWN	CT	06457
240BA027	L-354 CAROLINA SHORES PLAT K/194-196	PIETKA WIESHLAW JR ETUX DOROTA		219 CAMBRIA AVENUE	NEWINGTON	CT	06111
240BA028	L-353 CAROLINA SHORES PLAT K/195	TABASZEWSKI TADEUSZ ETUX URSZULA		23 BERKSHIRE DR	FARMINGTON	CT	06032
240BA029	L-352 CAROLINA SHORES PLAT K/195	MILLER DAVID & MILLER TRINDELL S		9684 PEBBLE CREEK BLVD	SUMMERVILLE	SC	29485
240BA030	L-351 CAROLINA SHORES PLAT K/194-196	WURTZ CLEMENT F JR ETUX	WURTZ JOAN	685 BOUNDARY LOOP RD NW	CALABASH	NC	28467-1877
240BB001	L-339 CAROLINA SHORES PLAT K/194-196	TESH RANDY S ETUX VICKY G		585 BOUNDARY LOOP ROAD	CALABASH	NC	28467
240BB002	L-338 CAROLINA SHORES PLAT K/195	OCEAN 7 INC		316 FAIRWOOD TER	MYRTLE BEACH	SC	29588-6382
240BB003	L-337 CAROLINA SHORES PLAT K/194-196	LEWIS JAMES L ETUX VICKI F		508 BRIARWOOD DR	CALABASH	NC	28467
240BB004	L-336 CAROLINA SHORES PLAT K/195	DARAGJATI MICHAEL G		133 MAIN STREET	STATEN ISLAND	NY	10307
240BB005	L-335 CAROLINA SHORES PLAT K/194-196	KUBACKI HENRY ET MARIANNE		72 CALABASH DR	CAROLINA SHORES	NC	28467
240BB006	L-334 CAROLINA SHORES PLAT K/194-196	HINTZ DAVID ETUX	HINTZ MARIOLA	520 BRIARWOOD DRIVE NW	CALABASH	NC	28467
240BB007	L-333 CAROLINA SHORES PLAT K/195	BRADY JILL R		2815 KELLY COURT	WALDROF	MD	20603
240BB008	L-332 CAROLINA SHORES PLAT K/195	BRADY JILL R		2815 KELLY COURT	WALDROF	MD	20603
240BB009	L-331 CAROLINA SHORES PLAT K/195	NATH VIRENDRA ET VEENA		15511 ECORIO DRIVE	AUSTIN	TX	78728
240BB010	L-330 CAROLINA SHORES PLAT K/195	WILSON DONALD G & WILSON MARY L		2407 UNION CHAPEL ROAD	BUFFALO JUNCTION	VA	24529
240BB011	L-329 CAROLINA SHORES PLAT K/195	BISHOP PERRY	% JOHN EATON	348 SOUTH WOODFIN DR	INMAN	SC	29349
240BB012	L-328 CAROLINA SHORES PLAT K/195	MCLAUGHLIN MICHAEL		12 BICENTENNIAL WAY	PROVIDENCE	RI	02911-1335
240BB013	L-327 CAROLINA SHORES PLAT K/195	REDDY NARAYAN S ETUX	REDDY AHALYA S	352 ABBEY GARDENS LN	SIMPSONVILLE	SC	29681-6816
240BB014	L-326 CAROLINA SHORES PLAT K/195	OWENS EDDIE L ET BIRDIE M		726 BRAXFIELD DR	CHARLOTTE	NC	28217
240BB015	L-325 CAROLINA SHORES PLAT K/195	BARBERA PATRICK		420 3RD STREET	BEACH HAVEN	NJ	08008
240BB016	L-322 CAROLINA SHORES PLAT K/194-196	BLITCH WILLIAM E ETUX MARIE W		2835 RICE ROAD	MATTHEWS	NC	28105
240BB017	L-323 CAREOLINA SHORES PLAT K/195	MADISON WILLIAM L ETUX CAROL		21 OAKBARK CT	CAROLINA SHORES	NC	28467
240BB018	L-324 CAROLINA SHORES PLAT K/195	BARBERA PATRICK		420 3RD STREET	BEACH HAVEN	MI	08008
240BB019	L-234 CAROLINA SHORES PLAT K/194	CASBARRO ARTHUR J		4383 PT VISTA PLACE SW	SHALLOTTE	NC	28470-5556
240BB020	L-235 CAROLINA SHORES NORTH PLAT K/194	ROSS JAY K ETUX STACEY L		4 SHERRWOOD DRIVE	WALKKILL	NY	12589
240BB021	L-236 CAROLINA SHORES NORTH PLAT K/194-196	WINBERG GEORGE C ET DEBORAH		490 OAKWOOD DR	CALABASH	NC	28467
240BB022	L-237 CAROLINA SHORES PLAT K/194	PATE RICHARD L		1014 ANNE STREET	NORTH MYRTLE BEACH	SC	29582
240BB023	L-238 CAROLINA SHORES PLAT K/194	BRADY JUSTIN D		2625 SHILOH CHURCH RD	BRYANS ROAD	MD	20616
240BB024	L-239 CAROLINA SHORES PLAT K/194	LASSITER FELECIA V ET ALS		2827 COLUMBIA AVE	COLUMBIA	SC	29201
240BB025	L-240 CAROLINA SHORES PLAT K/194	STRONG DONLEY E		374 PARK BLVD	WORTHINGTON	OH	43085
240BB026	L-241 CAROLINA SHORES PLAT K/194	BOROWSKY KIMBERLY K		190 FAIRVIEW AVE	BRICK	NJ	08742
240BB027	L-242 CAROLINA SHORES PLAT K/194-196	MOORE LEWIS M ET JUDY A		273 KILGORE RD	SCOTT DEPOT	WV	25560
240BB028	L-243 CAROLINA SHORES PLAT K/194	BOROWSKY KIMBERLY		190 FAIRVIEW AVE	BRICK	NJ	08742
240BB029	L-244 CAROLINA SHORES PLAT K/19444-196	SHUSTER GARY JO ET NANCY		474 OAKWOOD DR NW	CALABASH	NC	28467
240BB030	L-245 CAROLINA SHORES PLAT K/194	ADKINS GREGORY G ETUX	ADKINS DEBRA	5066 US ROUTE 66	HURRICANE	WV	25526-6704
240BB031	L-246 CAROLINA SHORES PLAT K/194	COLLINS CHARLES ET BREN		511 1ST AVE S	N MYRTLE BEACH	SC	29582
240BB033	L-247-248 CAROLINA SHORES PLAT K/194	LEGO GEORGE E ETUX LAURA J		555 BOUNDARY LOOP RD NW	CALABASH	NC	28467
240BC001	L-290 CAROLINA SHORES PLAT K/194	MOSHOURES CHRISTOPHER J DR		P O BOX 867	SHALLOTTE	NC	28459
240BC002	L-289 CAROLINA SHORES PLAT K/194	HUBBELL JEFFREY J		216 NORTH RIDGE RD	COLUMBIA	SC	29223-6913
240BC003	L-288 CAROLINA SHORES PLAT K/194-196	ROTH JON R ETUX	ROTH JOANN L	13 W CHERRY LN	ROYERSFORD	PA	19468-1301
240BC005	L-286 & 287 .87 AC CAROLINA SHORES N K/194	NOLAN JIMMY R		3065 CHANNEL DR SE	BOLIVIA	NC	28422
240BC006	L-285 CAROLINA SHORES PLAT K/194	OCEAN 7 INC		316 FAIRWOOD TER	MYRTLE BEACH	SC	29588-6382
240BC007	L-284 CAROLINA SHORES PLAT K/194-196	WHEATON JONATHAN RICHARD		487 OAKWOOD DRIVE NW	CAROLINA SHORES	NC	28467
240BC008	L-283 CAROLINA SHORES PLAT K/194	PALKA DAVID		11336 WEMBLEY RD	LOS ALAMITOS	CA	90720

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240BC009	L-282 CAROLINA SHORES PLAT K/194-196	SWARTZ GEORGE W II		5442 BRANINBURG COURT	CARMICHAEL	CA	95608
240BC010	L-281 CAROLINA SHORES PLAT K/194	WILLIFORD STEVEN		3680 EXPRESS DRIVE	SHALLOTTE	NC	28470
240BC011	L-280 CAROLINA SHORES PLAT K/194-196	CHANCLER JOSEPH A ET	CHANCLER CARMELA M	10 CLYDE RD	WATERTOWN	MA	02472-1316
240BC012	L-279 CAROLINA SHORES PLAT K/194	CAPARELLI JAMES F		64 FOLAN RD	AMENIA	NY	12501-5202
240BC013	L-297 CAROLINA SHORES PLAT K/194	YANDO TIMOTHY D ET HEATHER MARIE		433 SANDLEWOOD DR NW	CALABASH	NC	28467
240BC014	L-296 CAROLINA SHORES PLAT K/194-196	DOLAN TOM		10499 WINGED ELM LN	FORT MYERS	FL	33913
240BC015	L-295 CAROLINA SHORES PLAT K/194	SIBLEY WILLIAM L		429 SANDLEWOOD DR	CALABASH	NC	28467
240BC016	L-294 CAROLINA SHORES PLAT K/194	ADKINS GREGORY G ETUX	ADKINS DEBRA	5066 US ROUTE 66	HURRICANE	WV	25526-6704
240BC017	L-293 CAROLINA SHORES PLAT K/194	ROSARIO JOSE ETUX ANA M		700 PIETRAS COURT	MURRELLS INLET	SC	29576
240BC018	L-292 CAROLINA SHORES PLAT K/194	ROBINSON JOHN J & PATSY		3702 TRUMAN ST	COLUMBIA	SC	29204
240BC019	L-291 CAROLINA SHORES PLAT K/194-196	SIENKIEWICZ CHRISTIAN L ET CATHIE M		63 CALVERT CT	PAWLEYS ISLAND	SC	29585
240BC020	L-298 CAROLINA SHORES PLAT K/194	GOODBOLD GERARD & CARLA L TRUSTEES		2130 EAST 226TH STREET	CICERO	IN	46034
240BC021	L-299 CAROLINA SHORES PLAT K/194	CAPARELLI JAMES F		64 FOLAN RD	AMENIA	NY	12501-5202
240BC023	L-300-302 CAROLINA SHORES NORTH PL K/194	DEBENEDITTIS THOMAS		476 BOUNDARY LOOP RD NW	CAROLINA SHORES	NC	28467
240BC025	L-303 CAROLINA SHORES NORTH PL K/194	SCHARRER MARGARET G TRUSTEE		1908 E YACHT DRIVE	OAK ISLAND	NC	28465
240BC026	L-304 CAROLINA SHORES PLAT K/194	COOPER PHILLIP P ETUX	COOPER THERESA L	407 SANDLEWOOD DRIVE NW	CALABASH	NC	28467
240BC027	L-305 CAROLINA SHORES PLAT K/194	MOON WILLIAM J		704 BRAMBLEWOOD DRIVE	MYRTLE BEACH	SC	29588
240BD001	L-268 CAROLINA SHORES PLAT K/194	TATA PASQUALE L ET JOSEHINE A		15940-A E MULLNIX ROAD	WOODBINE	MD	21797
240BD002	L-267 CAROLINA SHORES PLAT K/194	DE NOBREGA GARY E ET JACQUELINE		420 SANDLEWOOD DRIVE	CALABASH	NC	28467
240BD003	L-266 CAROLINA SHORES PLAT K/194	CETRO DONALD F SR ET JUNE A		4 FOX DRIVE	OAK RIDGE	NJ	07438
240BD004	L-265 CAROLINA SHORES PLAT K/194	SARAIYA HASUMATI D		7008 PLYMOUTH COURT	TINLEY PARK	IL	60477
240BD005	L-264 CAROLINA SHORES PLAT K-194	PARIKH VIJAY G ET ANJOO		9702 W 56TH ST	COUNTRYSIDE	IL	60525
240BD006	L-263 CAROLINA SHORES NORTH PLAT K/194	OCEAN 7 INC		316 FAIRWOOD TER	MYRTLE BEACH	SC	29588-6382
240BD007	L-262 CAROLINA SHORES PLAT K/194	WITHROW DAVID AND	VOTA AMY	413 LAUREL CT NW	CALABASH	NC	28467-1829
240BD008	L-261 CAROLINA SHORES PLAT K/194-196	TAYLOR WAYNE & NANETTE		PO BOX 6278	OCEAN ISLE BEACH	NC	28469
240BD009	L-260 CAROLINA SHORES PLAT K/194	TAYLOR DOUGLAS WAYNE & NANET		PO BOX 6278	OCEAN ISLE BEACH	NC	28469
240BD010	L-259 CAROLINA SHORES PLAT K/194	JAYNE KATE HEARNE TRUSTEE		316 SURRETT COVE ROAD	LEICESTER	NC	28748
240BD011	L-258 CAROLINA SHORES NORTH PLAT K/194	HEARNE JONATHAN		255 WILLOW COVE ROAD	LEICESTER	NC	28748
240BD012	L-257 CAROLINA SHORES PLAT K/194	HAWKINS HUNTER ETALS		6122 PASEO JAQUITA	CARLSBAD	CA	92009
240BD013	L-256 CAROLINA SHORES PLAT K/194	SNYDER ROY		80 S MOUNTAIN ROAD	WALL KILL	NY	12589
240BD014	L-255 CAROLINA SHORES PLAT K/194	KIRK DONALD J		106 CLEVINGER DR	CLAYTON	NJ	08312
240BD015	L-254 CAROLINA SHORES PLAT K/194	PASSARELLI ROBERT J ET DEBORAH		394 SANDLEWOOD DR NW	CALABASH	NC	28467
240BD016	L-253 CAROLINA SHORES PLAT K/194-196	GARBADE FAMILY LLC		1908 EAST YACHT DRIVE	OAK ISLAND	NC	28465
240BD017	L-252 CAROLINA SHORES PLAT K/194	LYLES GEORGE ET SANDRA		237 TOM LUCAS LANE	PELION	SC	29123
240BD018	L-251 CAROLINA SHORES PLAT K-194-196	ESHLEMAN JOHN B		157 WOODMEADOW DR	DENVER	PA	17517
240BD019	L-250 CAROLINA SHORES PLAT K/194	STRONG WILLIAM J		77 CENTER STREET	JACKSON	OH	45640
240BD020	L-249 CAROLINA SHORES NORTH PLAT K/194-196	ALLEN THOMAS LYNN		568 BOUNDARY LOOP RD NW	CALABASH	NC	28467
240BD021	L-340 CAROLINA SHORES PLAT K/195	SLAYTON CHARLES W & BONNIE		5635 SUGAR & WINE RD	MONROE	NC	28110
240BD022	L-341 CAROLINA SHORES PLAT K/194-196	SNYDER ROY		80 S MOUNTAIN ROAD	WALL KILL	NY	12589
240BD023	L-342 CAROLINA SHORES PLAT K/194-196	LALLY JAMES ETUX JULIA		2832 S OAKLAND CIR W	AURORA	CO	80014-3120
240BD024	L-343 CAROLINA SHORES PLAT K/195	HERBERT CAROL A		5101 NORTH 25TH RD	ARLINGTON	VA	22207
240BD025	L-344 CAROLINA SHORES PLAT K/194-196	DANIELS RENTALS INC	% DAN THOMPSON	PO BOX 3125	N MYRTLE BEACH	SC	29582
240BD026	L-345 CAROLINA SHORES PLAT K/194-196	CINQUEMANI JOSEPH		1287 MINERVA AVE	WEST ISLIP	NY	11795
240BD027	L-346 CAROLINA SHORES PLAT K/195	NEEDHAM PETER		3176 HIGHWAY 9 E	LITTLE RIVER	SC	29566-7829
240BD028	L-347 CAROLINA SHORES PLAT K/195	WILSON CHAD E ETUX	WILSON ALLISON B	8316 HARRELL ROAD	STANFIELD	NC	28163
240BD029	L-348 CAROLINA SHORES PLAT K/193-196	PERFITT WILLIAM F		P O BOX 611	MARATHOR	NY	13803
240BD030	L-349 CAROLINA SHORES PLAT K/195	ALOSI VERA		2741 DAY LILY RUN	THE VILLAGES	FL	32162-2051
240BD031	L-380 CAROLINA SHORES PLAT K/194-196	OCEAN 7 INC		316 FAIRWOOD TER	MYRTLE BEACH	SC	29588-6382
240BD032	L-381 CAROLINA SHORES PLAT K/196	OCEAN 7 INC		316 FAIRWOOD TER	MYRTLE BEACH	SC	29588-6382
240BD033	L-382 CAROLINA SHORES PLAT K/194-196	WILSON DONALD G & WILSON MARY L		2407 UNION CHAPEL ROAD	BUFFALO JUNCTION	VA	24529
240BD034	L-383 CAROLINA SHORES PLAT K/194-196	TAYLOR DOUGLAS WAYNE ET NANET		PO BOX 6278	OCEAN ISLE BEACH	NC	28469
240BD035	L-384 CAROLINA SHORES PLAT K/196	TUNNELL JOHN CARL 2007 TRUST THE		4931 RESERVATION ROAD	OSWEGO	IL	60543
240BD036	L-385 CAROLINA SHORES PLAT K/196	BROWN KEVIN G		4227 FOWLER AVE	NOTTINGHAM	MD	21236-4009
240BD037	L-386 CAROLINA SHORES PLAT K/194-196	HILL JORDAN ANJANETTE DENEEN		814 BOUNDARYLINE DR NW	CALABASH	NC	28467-1743
240GA001	L-269 CAROLINA SHORES PLAT K/194	LUDDEN SHARON D & DEBRA LYNN BURKE		603 OYSTER BAY DRIVE	SUNSET BEACH	NC	28468

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240GA002	L-270 CAROLINA SHORES PLAT K/194	MOYLAN KEVIN R		426 SANDLEWOOD DRIVE NW	CALABASH	NC	28467
240GA003	L-271 CAROLINA SHORES PLAT K/194	SELLERS ROY D ETUX	MEESE JOANNE	PO BOX 4022	N MYRTLE BCH	SC	29597-4022
240GA004	L-272 CAROLINA SHORES PLAT K/194-196	FAHY JAMES M ETUX	FAHY DEBRA A	430 SANDLEWOOD DR NW # 432	CALABASH	NC	28467-1850
240GA005	L-273 CAROLINA SHORES PLAT K/194	FAHY JAMES M ETUX	FAHY DEBRA A	430 SANDLEWOOD DR NW # 432	CALABASH	NC	28467-1850
240GA006	L-274 CAROLINA SHORES PLAT K/194	DILL KEVIN E		71 GLENDALE RD	HEWITT	NJ	07421-2920
240GA007	L-275 CAROLINA SHORES PLAT K/194	CARLISLE CHRISTOPHER D & LINDA T TR		436 SANDLEWOOD DR NW	CALABASH	NC	28467
240GA008	L-276 CAROLINA SHORES PLAT K/194	THOMPSON DANIEL MITCHELL & CHRISTINE		PO BOX 3125	NORTH MYRTLE BEACH	SC	29582
240GA009	L-278 CAROLINA SHORES PLAT K/194	BYRNE NIALl ETUX PATRICIA		1209 CEDAR GROVE RD	MEDIA	PA	19063
240GA010	L-277 CAROLINA SHORES PLAT K/194-196	PIETSCHKER CHESTER L ET CAROLE J		1 PENNY PACKER LANE	PALM COAST	FL	32164
240GA011	L-166 CAROLINA SHORES PLAT K/62	VISCARRA JOSE L ET SUSIE A		420 BOUNDARYLINE DR NW	CALABASH	NC	28467
240GA012	L-167 CAROLINA SHORES NORTH PLAT K/60-62	UHRIG CHARLES M TRUSTEE		4221 NELSON ROAD	LITTLE RIVER	SC	29566
240GA013	L-168 CAROLINA SHORES PLAT K/62	BOWEN CAROLYN		215 BRYN MAWR CIR	HOUSTON	TX	77024
240GA014	L-169 CAROLINA SHORES PLAT K/60-62	WILKINSON LOIS M (LT)	* WILKINSON CHARLES F	405 BAYPARK DR NW	CALABASH	NC	28467-1853
240GA015	L-170 CAROLINA SHORES PLAT K/60-62	PROPEs ALAN M ET FRANCES C		2304 MORNING GLORY DR	RICHARDSON	TX	75082
240GA016	L-171 CAROLINA SHORES PLAT K/62	PHILLIPS HAMILTON Y ET GRACE		11900 BAIN SCHOOL ROAD	CHARLOTTE	NC	28212
240GA017	L-172-173 CAROLINA SHORES PL-R/62	REGIS B LYONS REV TRST AGRMNT THE		604 DERBY COURT	DURHAM	NC	27707
240GA019	L-174 CAROLINA SHORES PLAT K/62	WOOD SANDY L ETUX	WOOD JODI SHOE	395 BAYPARK DRIVE NW	CALABASH	NC	28467
240GA020	L-175 CAROLINA SHORES PLAT K/60-62	FRYE JESSE F ET LUCILLE T		1790 CHINA GROVE RD	CHINA GROVE	NC	28023
240GA025	L-176-181 3.25AC CAROLINA SHORES PL K/61	CAROLINA SHORES NORTH HOMEOWNERS	ASSOCIATION INC	400 BOUNDRY LOOP DR NW	CALABASH	NC	28467
240GA027	L-182 CAROLINA SHORES PLAT K/61	NGUYEN GERADO TAN		PO BOX 821	SHALLOTTE	NC	28459
240GA028	L-183 CAROLINA SHORES PLAT K/61	DOLAN TOM		10499 WINGED ELM LN	FORT MYERS	FL	33913
240GA029	L-184 CAROLINA SHORES PLAT K/62-62	CAWLEY CORNELL CHARLES III		49 HIGH STREET	PROCTOR	VT	05765
240GA030	L-185 CAROLINA SHORES PLAT K/60-62	TAHMASSEBI KOUROSH		660 CAROLYN LANE	GALLATIN	TN	37066
240GA031	L-186 CAROLINA SHORES PLAT K/62	LOUKELLIS IRENE ETVIR	COOPER JAMES W JR	40 WOODSIDE DRIVE	LONGMEADOW	MA	01106
240GA032	L-187 CAROLINA SHORES PLAT K/60-62	MARTIN WILLARD WALLACE ETUX		4905 WOOD VALLEY DR	RALEIGH	NC	27613
240GA033	L-188 CAROLINA SHORES PLAT K/62	MCNAMARA TERENCE M AND	MCNAMARA DAVID J	41 MARYLAND AVE	LONG BEACH	NY	11561-1221
240GA034	L-189 CAROLINA SHORES PLAT K/62	LEON FINKLIN JR REV INTERVIVOS TRST	% LEON FINKLIN JR	4011 ENSOR AVENUE	COLUMBIA	SC	29203
240GA035	L-190 CAROLINA SHORES PLAT K/62	WILLIAMS ELIZABETH FOSTER		117 NATIONAL DR	PINEHURST	NC	28374-8166
240GA036	L-191 CAROLINA SHORES PLAT K/60-62	CLARK LARRY W ET CAROL		P O BOX 1092	LITTLE RIVER	SC	29566
240GA037	L-192 CAROLINA SHORES PLAT K/60-62	TABASZEWSKI TADEUSZ ETUX URSZULA		23 BERKSHIRE DR	FARMINGTON	CT	06032
240GA038	L-193 CAROLINA SHORES PLAT K/62	CHARLESWORTH ROBERT H		308 WATERCRESS DRIVE	LONGS	SC	29568
240GA039	L-194 CAROLINA SHORES PLAT K/60-62	LARY DENNIS S ET ANDREA S	353 THICKET DR NW	CAROLINA SHORES NORTH	CALABASH	NC	28467
240GA040	L-195 CAROLINA SHORES PLAT K/62	TABASZEWSKI ALBERT		87 KNOLL RIDGE COURT	MIDDLETOWN	CT	06457
240GA041	L-196 CAROLINA SHORES PLAT K/62	DAVES PATRICIA GAIL		PO BOX 1059	BOILING SPRINGS	NC	28017
240GA042	L-197 CAROLINA SHORES PLAT K/62	YOUNG ROBERT ETUX	YOUNG DIANNA	783 HEATHER GLEN LN	CALABASH	NC	28467-1767
240GA043	L-198 CAROLINA SHORES PLAT K/62	MOON WILLIAM J		704 BRAMBLEWOOD DRIVE	MYRTLE BEACH	SC	29588
240GA044	L-199 CAROLINA SHORES PLAT K/62	MANGIERI KATHRYN L & CHRISTOPHER W	714 FIRST AVE N	APT D	SURFSIDE BEACH	SC	29575-3814
240GA045	L-200 CAROLINA SHORES PLAT K/62	MANGIERI KATHRYN L & CHRISTOPHER W	714 FIRST AVE N	APT D	SURFSIDE BEACH	SC	29575-3814
240GB001	L-153 CAROLINA SHORES NORTH PL 99/48&K/62	SOLOMON NOEL D		4 STOCUM AVE	MAHOPAC	NY	10541-3049
240GB002	L-154 CAROLINA SHORES NORTH PL 99/48&/62	BREWSTER JAMES L		161 HOLLAND AVENUE	TAZEWELL	VA	24651
240GB003	L-155 CAROLINA SHORES NORTH PL 99/48& K/62	HAMPTON KAREN L		79 BEESTON FIELDS	ROCKY MOUNT	NC	27804
240GB004	L-156 CAROLINA SHORES NORTH PL 99/48&K/62	POPE JOHN WALTER ETUX	POPE JEAN MARIE RABATIN	1468 NEW BEDFORD SHARON RD	W MIDDLESEX	PA	16159-4730
240GB005	L-157 CAROLINA SHORES NORTH PL 99/48& K/62	CEDARCREST ESTATES LLC	% L R HAMMERSCHLAG	145 S ANNAPOLIS AVE	ATLANTIC CITY	NJ	08401
240GB006	L-158 CAROLINA SHORES NORTH PL 99/48&K/62	LYONS KATHLEEN & KAREN S BRADY		391 BOUNDARYLINE DR NW	CALABASH	NC	28467
240GB007	L-159 CAROLINA SHORES NORTH PL 99/48&K/62	LOFLAND MARY LOU (LT)	* KATHLEEN LYONS & KAREN S BRADY	391 BOUNDARYLINE DRIVE	CALABASH	NC	28467
240GB008	L-160 CAROLINA SHORES NORTH PL 99/48& K/62	ALBERT JOHN A ET SARAH	% SHIRLEY A WALDROP POA	127 TIFFANY WAY	BEAUFORT	NC	28516-9432
240GB009	L-161 CAROLINA SHORES NORTH PL 99/48&K/62	TUCKER STEPHEN C		1551 1ST ST S UNIT 502	JACKSONVILLE BEACH	FL	32250
240GB010	L-162 CAROLINA SHORES NORTH PL 99/48&K/62	MACAULAY WILLIAM B ET CAROLE		20 PINewood DRIVE	CAROLINA SHORES	NC	28467
240GB011	L-163 CAROLINA SHORES PLAT K/60	SHERWOOD DANIEL E & SALLY A BALIS		27 LOUNSBURY RD	TRUMBULL	CT	06611
240GB012	L-164 CAROLINA SHORES NORTH PL 99/48&K/62	RYDER ANDREW J JR AND	RYDER GEORGE F	2723 QUAKER RD	YORKTOWN HGTS	NY	10598
240GB013	L-165 CAROLINA SHORES NORTH PL 99/48&K/62	RYDER ANDREW J JR AND	RYDER GEORGE F	2723 QUAKER RD	YORKTOWN HGTS	NY	10598
240GC001	L-208 CAROLINA SHORES NORTH PL K/62	FRYE JESSE JR		1790 CHINA GROVE RD	CHINA GROVE	NC	28023
240GC002	L-209 CAROLINA SHORES PLAT K/62	GALLAGHER PETER D	#C7	4490 COQUINA HARBOUR DR	LITTLE RIVER	SC	29566
240GC003	L-210 CAROLINA SHORES PLAT K/62	COWLES GEORGE W ET CAROLYN		11435 FERNSIDE DR	MINT HILL	NC	28227
240GC004	L-211 CAROLINA SHORES PLAT K/62	HOPE PAUL M ETALS		313 OCEAN FOREST DRIVE	CALABASH	NC	28467

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240GC005	L-212 CAROLINA SHORES PLAT K/62	ROSS JAY K ETUX STACEY L		4 SHERRWOOD DRIVE	WALLKILL	NY	12589
240GC006	L-213 CAROLINA SHORES PLAT K/62	COSTER MARK ET JANET COSTER		330 THICKET DRIVE	CALABASH	NC	28467
240GC007	L-214 CAROLINA SHORES PLAT K/60	JAMES BARRY WAYNE ETUX	JAMES NANCY LEE	320 THICKET DR NW	CALABASH	NC	28467-1855
240GC008	L-201 CAROLINA SHORES PLAT K/60-62	OCEAN 7 INC		316 FAIRWOOD TER	MYRTLE BEACH	SC	29588-6382
240GC009	L-202 CAROLINA SHORES PLAT K/60-62	PARRIS LETHA DIANE		285 BOUNDARY LOOP ROAD	CALABASH	NC	28467
240GC010	L-203 CAROLINA SHORES PLAT K/62	MILLER GERALD L ET PATTY		4005 CHELSA LANE	MARIETTA	GA	30062
240GC011	L-204 CAROLINA SHORES PLAT K/60-62	TAYLOR DOUGLAS WAYNE ET NANET		PO BOX 6278	OCEAN ISLE BEACH	NC	28469
240GC012	L-205 CAROLINA SHORES PLAT K/60-62	HAYES NED CLYDE ET ABIGAIL		145 ROBERTS LN	LENOIR	NC	28645-8926
240GC013	L-206 CAROLINA SHORES PLAT K/62	TAYLOR DOUGLAS WAYNE ET NANETE M		PO BOX 6278	OCEAN ISLE BEACH	NC	28469
240GC014	L-207 CAROLINA SHORES PLAT K/60-62	MILLER EDWARD N		370 BOUNDARYLINE DR NW	CALABASH	NC	28467
240GC015	L-148 CAROLINA SHORES PLAT K/60	REAMES ALEXA ANDREA		9 KOLB DRIVE	SAVANAH	GA	31406
240GC016	L-147 CAROLINA SHORES PLAT K/62	VASUDEVAN NARAYANAN		11256 GREEN WATCH WAY	GAITHERSBURG	MD	20878
240GC017	L-146 CAROLINA SHORES PLAT K/62	IYER RAMACHANDRAN R		7 FLORIE FARM RD	MENDHAM	NJ	07945
240GC018	L-145 CAROLINA SHORES PLAT K/62	TACCA KAREN		4470 COQUINA HARBOUR DR	UNIT A2	SC	29566-7984
240GC019	L-144 CAROLINA SHORES NORTH PLAT K/60-62	TAYLOR AMANDA M		PO BOX 6278	OCEAN ISLE BEACH	NC	28469
240GC020	L-143 CAROLINA SHORES PLAT K/60-62	WILKINSON CHARLES		2685 ASH LITTLE RIV RD NW	LONGWOOD	NC	28452-9797
240GC021	L-142 CAROLINA SHORES PLAT K/60-62	WHINNIE GREGORY A ETUX	WHINNIE BRANDEE G	2124 HAYSTACK WAY	MYRTLE BEACH	SC	29579-3275
240GC022	L-125 CAROLINA SHORES PLAT K/60-62	FULTZ WILLIAM LEE ET STEPHANIE DAVI		245 BOUNDARY LOOP RD NW	CALABASH	NC	28467
240GC023	L-124 CAROLINA SHORES PLAT K/60-62	LUCYK PATRICIA S & ROBERT DEANGELIS		235 BOUNDARY LOOP RD NW	CALABASH	NC	28467
240GC024	L-123 CAROLINA SHORES NORTH PL K/60-62	ACORN ASSOCIATES LLC		141 BLACKMAN ROAD	EGG HARBOR TWP	NJ	08234
240GC025	L-122 CAROLINA SHORES PLAT K/60-62	HEMINGWAY LEE D ETUX DEIRDRE O		231 BERRYKNOLL DR NW	CALABASH	NC	28467
240GC026	L-121 CAROLINA SHORES PLAT K/61	PETERSON ROBERT C & MARY L TRUSTEES		840 GREENWOOD CT	CALABASH	NC	28467
240GC027	L-120 CAROLINA SHORES PLAT K/61	CASBARRO ARTHUR J		4383 PT VISTA PLACE SW	SHALLOTTE	NC	28470-5556
240GC028	L-119 CAROLINA SHORES NORTH PLAT K/60-62	HAGER JOHN H ETUX LINDA K		249 BERRYKNOLL DR NW	CALABASH	NC	28467
240GC029	L-118 CAROLINA SHORES PLAT K/61	MONROE JACK J		808 ORANGE HIGH SCH RD	HILLSBOROUGH	NC	28278
240GC030	L-117 CAROLINA SHORES PLAT K/60-62	SANDFORD MELINDA		4474 BARCELONA LANE	LITTLE RIVER	SC	29566
240GC031	L-116 CAROLINA SHORES PLAT K/60-62	BRIMNER AMY M & BETSY J WHIELDON		320 BOUNDARYLINE DR NW	CALABASH	NC	28467
240GC032	L-115 CAROLINA SHORES PLAT K/61	LEWIS WILLIAM J ET LINDA		1012 CATAWBA SHORES DR	ROCK HILL	SC	29730
240GC033	L-114 CAROLINA SHORES PLAT K/60-62	WOODS MICHAEL W B &RYAN REAGH WOODS		605 WYNDHAM CT	CANTON	GA	30115
240GC034	L-113 CAROLINA SHORES PLAT K/61	NIKOPOULOS SERAFIM B		10313 CRESTWOOD DR	CHARLOTTE	NC	28277
240GC035	L-112 CAROLINA SHORES PLAT K/61	BENSON CHRISTOPHER A		102 BOUNDARYLINE DR NW	CALABASH	NC	28467-1803
240GC036	L-152 CAROLINA SHORES PLAT K/62	PARK JEFFREY T ET DIANNA		462 CLUB RANGE DRIVE	FORT MILL	SC	29715
240GC037	L-151 CAROLINA SHORES PLAT K/60-62	JONES GEORGE D		225 KOOLABREW DR #G	CALABASH	NC	28467
240GC038	L-150 CAROLINA SHORES PLAT K/62	TAYLOR DOUGLAS WAYNE II ETUX	TAYLOR AMANDA MARTIN	398 GREENBAY ROAD	OCEAN ISLE BEACH	NC	28469
240GC039	L-149 CAROLINA SHORES PLAT K/62	MARTIN AMANDA		398 GREEN BAY RD NW	OCEAN ISLE BEACH	NC	28469-3528
240GD001	L-215 CAROLINA SHORES PLAT K/60-62	PLUMMER ARTHUR K ET DAPHNE		350 BOUNDARY LOOP RD NW	CALABASH	NC	28467
240GD002	L-216 CAROLINA SHORES PLAT K/60-62	WEISGERBER ARTHUR ET BARBARA		340 BOUNDARY LOOP RD	CALABASH	NC	28467
240GD003	L-217 CAROLINA SHORES PLAT K/60-62	STUEHMER HART C P TRUSTEE		320 BOUNDARY LOOP DRIVE	CALABASH	NC	28467
240GD004	L-218 CAROLINA SHORES PLAT K/60-62	LIZAK MAJOR K		300 BOUNDARY LOOP RD NW	CALABASH	NC	28467
240GD005	L-219 CAROLINA SHORES PLAT K/60-62	LIZAK MAJOR K		300 BOUNDARY LOOP RD NW	CALABASH	NC	28467
240GD006	L-220 CAROLINA SHORES PLAT K/62	KENNEDY DENNIS J		104 HOMESTEAD PLACE	YORKTOWN	VA	23693
240GD007	L-221 CAROLINA SHORES PLAT K/62	GROVE JAMES ET MARY		257 NEEDLES DR	PATASKALA	OH	43062
240GD008	L-222 CAROLINA SHORES NORTH PLAT K/60	NELSON DANIEL R & CAROL M TRUSTEES		3972 LEWISTON ROAD	SUMMERFIELD	NC	27358
240GD009	L-126 CAROLINA SHORES PLAT K/61	BARTLETT PAMELA T ETVIR	BARTLETT TOMMY L	70 BOUNDARYLINE DR NW	CALABASH	NC	28467
240GD010	L-127 CAROLINA SHORES PLAT K/61-62	PATE RICHARD L		1014 ANNE STREET	NORTH MYRTLE BEACH	SC	29582
240GD011	L-128 CAROLINA SHORES PLAT K/60-62	ROSARIO JOSE ETUX ANA M		700 PIETRAS COURT	MURRELLS INLET	SC	29576
240GD012	L-129 CAROLINA SHORES PLAT K/61	BARROW LIVING TRUST		4758 S NORFOLK STREET	AURORA	CO	80015
240GD013	L-130&131 CAROLINA SHORES N PL K/61	DECKER PATRICK ET NINA		200 VERNON RD	MORRISVILLE	PA	19067
240GD015	L-132 CAROLINA SHORES PLAT K/61	CONROY STEPHEN E		129 HASKIN ROAD	KIRKWOOD	NY	13795
240GD016	L-133 CAROLINA SHORES PLAT K/61	SMITH STEVEN L ETUX	SMITH MARY JANE	564 W OAK CIRCLE DR	MYRTLE BEACH	SC	29588-6036
240GD017	L-134 CAROLINA SHORES PLAT K/61	SEBASTIAN SANDRA M TRUSTEE		338 AVON BELDEN ROAD	AVON LAKE	OH	44012
240GD018	L-135 CAROLINA SHORES PLAT K/61	DEW KAREN L		1012 SEA MOUNTAIN HWY	N MYRTLE BEACH	SC	29582
240GD019	L-136 CAROLINA SHORES PLAT K/61	BORTNER THOMAS D		12568 MCINTIRE DR	WOODBIDGE	VA	22192
240GD020	L-137 CAROLINA SHORES PLAT K/61	CATOE JOHN S		6965 PARKINGSON DR	COLUMBIA	SC	29223
240GD021	L-138 CAROLINA SHORES PLAT K/60-62	OCEAN 7 INC		316 FAIRWOOD TER	MYRTLE BEACH	SC	29588-6382

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240GD022	L-139 CAROLINA SHORES PLAT K/61	KLEINMAN MARCIA ETALS			5 COURT 8	CAROLINA SHORES	NC	28467
240GD023	L-140 CAROLINA SHORES PLAT K/61	WILLIFORD STEVEN			3680 EXPRESS DRIVE	SHALLOTTE	NC	28470
240GD024	L-141 CAROLINA SHORES PLAT K/61	BURFORD ROBERT E JR ETUX	BURFORD TERRI L		120 BRIDGEWATER DR	ADVANCE	NC	27006-7975
240GE001	L-91 CAROLINA SHORES PLAT K/61	MIRCHANDANI BALRAM ET PRIYA			701 MICHELLE CT	GRETNA	LA	70056
240GE002	L-90 CAROLINA SHORES PLAT K/61	WILKINSON CHARLES F			2236 JACKSON CIR	LITTLE RIVER	SC	29566-9122
240GE003	L-89 CAROLINA SHORES PLAT K/61	CUSTER LINDA K & TRACY CUPPETT		TENANTS	252 BERRY KNOLL DR NW	CALABASH	NC	28467
240GE004	L-88 CAROLINA SHORES PLAT K/61	WHITT DONALD SCOTT ETUX	WHITT SUSAN		244 BERRYKNOLL DR NW	CALABASH	NC	28467-1813
240GE005	L-87 CAROLINA SHORES PLAT K/61	BYRNE NIAL T ETUX PATRICIA K			1209 CEDAR GROVE RD	MEDIA	PA	19063
240GE006	L-86 CAROLINA SHORES PLAT K/61	KLEINMAN MARCIA J & CARA J WILLIAMS			5 COURT 8	CAROLINA SHORES	NC	28467
240GE007	L-85 CAROLINA SHORES PLAT K/61	HAWKS JAMES R			17246 SE 85TH WILLOWICK CIR	THE VILLAGES	FL	32162-2821
240GE008	L-84 CAROLINA SHORES PLAT K/60-62	C & E SWANN FAMILY TRUST			648 SETTLERS LANE	KURE BEACH	NC	28449
240GE009	L-83 CAROLINA SHORES PLAT K/61	BARRON THOMAS ETUX	BARRON ROBIN		115 BLACKPEPPER LOOP	LITTLE RIVER	SC	29566-8530
240GE010	L-82 CAROLINA SHORES PLAT K/61	ACORN ASSOCIATES LLC			141 BLACKMAN ROAD	EGG HARBOR TWP	NJ	08234
240GE011	L-81 CAROLINA SHORES PLAT K/61	DEW KAREN			1012 SEA MOUNTAIN HWY	N MYRTLE BEACH	SC	29582
240GE012	L-80 CAROLINA SHORES PLAT K/60-62	DEW KAREN			1012 SEA MOUNTAIN HWY	N MYRTLE BEACH	SC	29582
240GE013	L-79 CAROLINA SHORES PLAT K/61	DEW KAREN			1012 SEA MOUNTAIN HWY	N MYRTLE BEACH	SC	29582
240GE014	L-78 CAROLINA SHORES PLAT K/60-62	LIN QIU QUN ET YING HUANG			20 CAROLINA SHORES DR	CAROLINA SHORES	NC	28467
240GE015	L-77 CAROLINA SHORES PLAT K/61	MATACALE MARIANNE			369 MACARTHUR DR	BUFFALO	NY	14221
240GE016	L-76 CAROLINA SHORES PLAT K/61	LIN QUI Q ETUX YING			20 CAROLINA SHORES DRIVE	CAROLINA SHORES	NC	28467
240GE017	L-104 CAROLINA SHORES PLAT K/61	MADAN ASHOK ET MEERA			2927 WILLOWBRAE RD	CHARLOTTE	NC	28226
240GE018	L-103 CAROLINA SHORES PLAT K/60-62	LEGETTE HARVEY L ET JAYNA G			604 22ND AVE N	N MYRTLE BEACH	SC	29582
240GE019	L-102 CAROLINA SHORES PLAT K/61	ACKERSON DAVID A			297 ST ANDREWS RD	WALDEN	NY	12586
240GE020	L-101 CAROLINA SHORES PLAT K/61	RICHARDS CHRISTINA & R STELLER			6215 34TH PL E	PALMETTO	FL	34221-1941
240GE021	L-100 CAROLINA SHORES PLAT K/61	WEMZEL WILLIAM ETUX	WEMZEL MARCIA		37 LORRIGAN PL	N ARLINGTON	NJ	07031-5826
240GE022	L-99 CAROLINA SHORES PLAT K/61	CEDARCREST ESTATES LLC		% L R HAMMERSCHLAG	145 S ANNAPOLIS AVE	ATLANTIC CITY	NJ	08401
240GE023	L-98 CAROLINA SHORES PLAT K/60-62	MCNUTT FLOYD K ET SHERRILL R			199 WOODYARD DR NW	CALABASH	NC	28467
240GE024	L-97 CAROLINA SHORES PLAT K/61	MADDALUNA MICHAEL J ETUX SUSAN			6 SMOKE ROSE ROAD	HOPATCONG	NJ	07843
240GE025	L-96 CAROLINA SHORES PLAT K/60-62	WHITFORD DAVID B ETUX	WHITFORD ANDREA		446 DRAYTON HALL BLVD	DUNCAN	SC	29334-8707
240GE026	L-95 CAROLINA SHORES PLAT K/61	WHITFORD DAVID B ETUX	WHITFORD ANDREA		446 DRAYTON HALL BLVD	DUNCAN	SC	29334-8707
240GE027	L-94 CAROLINA SHORES PLAT K/61	SMITH DANIEL R 11			3003 DIANE CIRCLE	NORTH MYRTLE BEACH	SC	29582
240GE028	L-93 CAROLINA SHORES PLAT K/61	KELLY JOSEPH			112 CAMBRIDGE RD	BROOMALL	PA	19008
240GE029	L-92 CAROLINA SHORES PLAT K/61	ADKINS GREGORY ETUX	ADKINS DEBRA		5066 US ROUTE 60	HURRICANE	WV	25526-6704
240JA001	L-111 CAROLINA SHORES NORTH PL 99/48&K/60	TAYLOR DOUGLAS WAYNE & NANET			PO BOX 6278	OCEAN ISLE BEACH	NC	28469
240JA002	L-110 CAROLINA SHORES NORTH PL 99/48&K/61	TARQUINIO FILBERT ET RENE			311 BOUNDARYLINE DR	CAROLINA SHORES	NC	28467
240JA003	L-109 CAROLINA SHORES NORTH PL 99/48&K/61	GAVRILIS NEKTARIOS N ETUX MARIA			303 BOUNDARY LINE DR NW	CALABASH	NC	28467
240JA004	L-108 CAROLINA SHORES NORTH PL 99/48&K/60	JOHNSON JOHN T			BOX 125	ABERDEEN	NC	28315
240JA005	L-107 CAROLINA SHORES NORTH PL 99/48&K/60-62	GRADY SEAN A ETUX	GRADY JENNEFER R		289 BOUNDARYLINE DR NW	CALABASH	NC	28467-1819
240JA006	L-106 CAROLINA SHORES NORTH PL 99/48&K/60-62	MCIVER THOMAS J ETUX KAREN E			279 BOUNDARYLINE DRIVE NW	CALABASH	NC	28467
240JA007	L-105 CAROLINA SHORES NORTH PL 99/48&K/60-62	LINCOLN DAVID SCOTT			91 OLD ALBANY POST RD	OSSINING	NY	10562
240JA008	L-22 CAROLINA SHORES NORTH PL 99/48&K/60	WOODGEARD DONALD			2082 E TWISTED OAKS CIR	LITTLE RIVER	SC	29566
240JA009	L-21 CAROLINA SHORES NORTH PL 99/48&K/60	WOODGEARD DONALD			2082 E TWISTED OAKS CIR	LITTLE RIVER	SC	29566
240JA010	L-20 CAROLINA SHORES NORTH PL 99/48&K/60	SCHWARTZ OTTO			1045 FAYETTEVILLE AVE SW	CALABASH	NC	28467
240JA011	L-19 CAROLINA SHORES NORTH PL 99/48&K/60	GRAHAM DAVID W ETUX LISA J			416 TULIP TRAIL	CROWNSVILLE	MD	21032
240JA012	L-18 CAROLINA SHORES NORTH PL 99/48&K/60	MAHLER BENJAMIN JR ET ROSEMARY			100 KENSINGTON AVE	BAYPORT	NY	11705
240JA013	L-17 CAROLINA SHORES NORTH PL 99/48&K/60	DUFORD KATHY M ETUX	SHETLER LINDA M		207 BOUNDARYLINE DR	CALABASH	NC	28467-1819
240JA014	L-16 CAROLINA SHORES NORTH PL 99/48&K/60-62	ATKINSON JEAN M			205 BOUNDARLINE DRIVE	CAROLINA SHORES	NC	28467
240JA015	L-15 CAROLINA SHORES NORTH PL 99/48&K/60-62	ARMEL DONALD S ETUX SHIRLEY			191 BOUNDARYLINE DR NW	CAROLINA SHORES	NC	28467
240JA016	L-14 CAROLINA SHORES NORTH PL 99/48&K/60	PALKA SUSAN			15 COURT 9	CAROLINA SHORES	NC	28467
240JA017	L-13 CAROLINA SHORES NORTH PL 99/48&K/60	FRANCIS CURTIS L			12300 LILY GREEN WAY	UPPER MARLBORO	MD	20772
240JA018	L-12 CAROLINA SHORES NORTH PL 99/48&K/60	BARBOUR JEROME A			185 CRAVEN COURT	CALABASH	NC	28467
240JA019	L-11 CAROLINA SHORES NORTH PL 99/48&K/60	JOHNSON JEFFREY D ET DANA			1701 WATERSIDE BLVD	MONCKS CORNER	SC	29461
240JA020	L-10 CAROLINA SHORES PLAT K/60-62	JUSTICE BRIAN L			179 CRAVEN CT NW	CALABASH	NC	28467
240JA021	L-9 CAROLINA SHORES PLAT 60-62	JUSTICE BRIAN L			179 CRAVEN CT NW	CALABASH	NC	28467
240JA022	L-8 CAROLINA SHORES NORTH PLAT K/60-62	KASSIS NICHOLAS JAMES			163 BOUNDARYLINE DR	CALABASH	NC	28467
240JA023	L-7 CAROLINA SHORES PLAT K/60-62	TABASZEWSKI TADEUSZ ETUX URSZULA			23 BERKSHIRE DR	FARMINGTON	CT	06032

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240JA024	L-6 CAROLINA SHORES PLAT K/60	XU LING SHENG		6261 ALDERTON ST	REGO PARK	NY	11374
240JA025	L-5 CAROLINA SHORES PLAT K/60	BRANCIFORTE RONALD		504 ROUNTREE RD	CHARLOTTE	NC	28217
240JA026	L-4 CAROLINA SHORES PLAT K/60	TAYLOR DOUGLAS WAYNE ET NANET		PO BOX 6278	OCEAN ISLE BEACH	NC	28469
240JA027	L-3 CAROLINA SHORES PLAT K/60-62	HIMES FRANCIS ETUX	HIMES DIANE	115 BOUNDARYLINE DRIVE	CAROLINA SHORES	NC	28467
240JA028	L-2 CAROLINA SHORES PLAT K/60	SPARKS MICHAEL G ET DEBRA		3704 PERSIMMON RD	HOPE MILLS	NC	28348
240JA029	L-1 CAROLINA SHORES NORTH PLAT K/60-62	SHEMENSKI DEAN E ETUX LINDA K		99 BOUNDARYLINE DR NW	CALABASH	NC	28467
240JB001	L-23 CAROLINA SHORES PLAT K/60	WILLIAMS TIMOTHY J ET CATHERINE A		52 NEW BROADWAY	SLEEPY HOLLOW	NY	10591
240JB002	L-24 CAROLINA SHORES PLAT K/60-62	CHANEY MICHAEL D ET DONNA W		5112 OLD ADAMS RD	HOLLY SPRINGS	NC	27540
240JB003	L-25 CAROLINA SHORES PLAT K/60	PUTTBACH ROBERT PAUL ETUX MARGERY M		220 BOUNDARYLINE DRIVE NW	CALABASH	NC	28467
240JB004	L-26 CAROLINA SHORES PLAT K/60-62	TAYLOR HELEN S		230 BOUNDARYLINE DR NW	CALABASH	NC	28467
240JB005	L-27 CAROLINA SHORES PLAT K/60	SCHWARTZ OTTO		1045 FAYETTEVILLE AVE SW	CALABASH	NC	28467
240JB006	L-28 CAROLINA SHORES PLAT K/60-62	KOEMM CHARLES J ETUX DENISE M		91 UNION CENTER ROAD	ULSTER PARK	NY	12487
240JB007	L-29 CAROLINA SHORES PLAT K-60	HEDRICK ROBERT C ETUX MARY		PO BOX 4547	CALABASH	NC	28467
240JB008	L-30 CAROLINA SHORES PLAT K/61	LIU KAREN W		6261 ALDERTON ST	REGO PARK	NY	11374
240JB009	L-31-32 CAROLINA SHORES PLAT K/60	LEVAN DENNIS R & JOCELYN D TRUSTEES		481 PRATT LANE	MIDDLEBURG	PA	17842
240JB011	L-33 CAROLINA SHORES PLAT K/60	TARONCHER JORGE J		31 W MCKINLEY AVE	GALLOWAY	NJ	08205
240JB012	L-34 CAROLINA SHORES PLAT K/60-62	DAVID BARTON S SR ETUX DIANE S		711 SUNNYWOOD ROAD	YORK	SC	29745
240JB013	L-35 CAROLINA SHORES PLAT K/60-62	SCHWARTZ OTTO		1045 FAYETTEVILLE AVE SW	CALABASH	NC	28467
240JB014	L-36 CAROLINA SHORES PLAT K/60	LYONS JAMES J		21 RIDGEDALE AVENUE	FARMVILLE	NY	11738
240JB015	L-37 CAROLINA SHORES PLAT K/60	FITZJOHN BOON DOROTHY TRUSTEE		3812 BLUE CANYON DRIVE	STUDIO CITY	CA	91604
240JB016	L-38 CAROLINA SHORES NORTH PL K/60	ERNESTY DAVID ALLEN		282 MICHAEL DR	RAEFORD	NC	28376
240JB017	L-39 CAROLINA SHORES PLAT K/60	CEDARCREST ESTATES LLC	% L R HAMMERSCHLAG	145 S ANNAPOLIS AVE	ATLANTIC CITY	NJ	08401
240JB018	L-40 CAROLINA SHORES PLAT K/60	HATLEY DONALD EDWARD III ETUX	HATLEY JENNIFER I C	177 CAROLINA FARMS BLVD	CAROLINA SHOR	NC	28467-2292
240JB019	L-41 CAROLINA SHORES PLAT K/60-62	LUECK JAMES D		530 LEATHERWOOD DR NW	CALABASH	NC	28467
240JB020	L-42 CAROLINA SHORES PLAT K/60-62 BY MARRIA	PROPEs ALAN M ET FRANCES C		2304 MORNING GLORY DR	RICHARDSON	TX	75082
240JB021	L-43 CAROLINA SHORES PLAT K/60	CARBONE MIA		142 HUBBARDSTON RD	PRINCETON	MA	01541
240JB022	L-44 CAROLINA SHORES PLAT K/60	PATEL PARSHOTTAM H TRUSTEE		200 HIGHLANDS BLUFFS DR	CARY	NC	27518
240JB023	L-45 CAROLINA SHORES PLAT K/60	RAMANLAL MANILAL PATEL TRUST		3199 LOCK ERNE AVE	KANNAPOLIS	NC	28081
240JB024	L-46 CAROLINA SHORES PLAT K/60	BERNICK GEORGE J ET JOYCE		2316 CONTEST LANE	HAYMARKET	VA	22069
240JB025	L-47 CAROLINA SHORES PLAT K/60	HERLIHY RANDALL ETUX DIANE		2 EKLOF COURT	CROTONO-ON-HUDSON	NY	10520
240JC001	L-58 CAROLINA SHORES PLAT K/60	DIAZ MICHAEL A ETUX BARBARA E		23 MEYER AVENUE	POUGHKEEPSIE	NY	12603
240JC002	L-57 CAROLINA SHORES PLAT K/60-62	BARDINELLI DEAN G		45 HELEN PLACE	STRADFORD	CT	06614
240JC003	L-56 CAROLINA SHORES PLAT K/60	MCKMAHON PATRICIA M & R MANSBART TR		2978 WYNDHAM WAY	MELBOURNE	FL	32940-5974
240JC004	L-55 CAROLINA SHORES PLAT K/60	GILARDI RICHARD A ET DOROTHY		780 WILD OAK LANE NW	CALABASH	NC	28467
240JC005	L-54 CAROLINA SHORES PLAT K/60-62	QUINLAN JAMES D		5243 COLEWOOD DRIVE	PITTSBURGH	PA	15236
240JC006	L-53 CAROLINA SHORES PLAT K/60-62	BRIDGES JIMMY OLEN JR		PO BOX 20453	RALEIGH	NC	27619
240JC007	L-52 CAROLINA SHORES PLAT K/60-62	HOUCK EMMIT C		142 CROSSROAD DR NW	CALABASH	NC	28467-1820
240JC008	L-51 CAROLINA SHORES PLAT K/60	OCEAN SEVEN INC		316 FAIRWOOD TERRACE	MYRTLE BEACH	SC	29588
240JC009	L-50 CAROLINA SHORES PLAT K/60	HAIGLER POLLY G		521 HELMS EFIRD RD	MARSHVILLE	NC	28103
240JC010	L-49 CAROLINA SHORES PLAT K/60	DEJONG ROBERT J ET DONNA M		526 LEATHERWOOD DRIVE	CALABASH	NC	28467
240JC011	L-48 CAROLINA SHORES PLAT K/60-62	RAWLINS W SCOTT & DAVID C & SHARON		416 PATTON AVENUE	PISCATAWAY	NJ	08854
240JC012	L-70 CAROLINA SHORES PLAT K/60	QUINN ANDREW LLOYD ETUX	QUINN STEPHANIE CASTRO	99 BOUNDARY LOOP RD NW	CALABASH	NC	28467-1823
240JC013	L-69 CAROLINA SHORES PLAT K/60-62	LOCKLEAR BRADIE III		1028 ELIAS RD	MAXTON	NC	28364
240JC014	L-68 CAROLINA SHORES PLAT K/60-62	BENSON CHRISTOPHER A & ELLEN M		102 BOUNDARYLINE DR NW	CALABASH	NC	28467
240JC015	L-67 CAROLINA SHORES PLAT K/60	PARKER MILTON E		204 DOGWOOD DR SOUTH	GARDEN CITY BEACH	SC	29576
240JC016	L-66 CAROLINA SHORES PLAT K/60-62	SIMON CRAIG M ETUX PATRICIA A		116 BOUNDARYLINE DR NW	CALABASH	NC	28467
240JC017	L-65 CAROLINA SHORES PLAT K/60-62	ERNEST A GARBADE FAMILY LLC		1908 EAST YACHT DRIVE	OAK ISLAND	NC	28465
240JC018	L-64 CAROLINA SHORES PLAT K/60	COLE BOB		1010 NAUGATUCK AVENUE	MILLFORD	CT	06460
240JC019	L-63 CAROLINA SHORES PLAT K/60	TAYLOR DOUGLAS WAYNE II ETUX	TAYLOR AMANDA MARTIN	398 GREENBAY ROAD	OCEAN ISLE BEACH	NC	28469
240JC020	L-62 CAROLINA SHORES PLAT K/60 BY CERT	BUNTING CAROLYN F TRUST		96 MONTANA AVE	LYNN HAVEN	FL	32444
240JC021	L-61 CAROLINA SHORES PLAT K/60	COLLETTI JOSEPH B ETUX LINDA A S		96 CARPENTER AVENUE	STATEN ISLAND	NY	10314
240JC022	L-60 CAROLINA SHORES PLAT K/60	COLLETTI JOSEPH B ETUX LINDA A S		96 CARPENTER AVENUE	STATEN ISLAND	NY	10314
240JC023	L-59 CAROLINA SHORES PLAT K/60	DANIEL ELIZABETH H		134 ELM CREEK DR	CHAPIN	SC	29036-7694
240KB001	L-71 CAROLINA SHORES PLAT K/60-62	SMITH EARL W		62 HICKMAN RD NW	CALABASH	NC	28467
240KB002	L-72 CAROLINA SHORES PLAT K/60-62	AVALON BROTHERS LLC		301 NANTUCKET CT	WINTERVILLE	NC	28590

**CSN Sewer SAD (29) Preliminary Assessment Roll**

240KB003	L-73 CAROLINA SHORES PLAT K/60	KOSANOVICH JEAN		100 BOUNDARY LOOP RD	CALABASH	NC	28567
240KB004	L-74 CAROLINA SHORES PLAT K/60-62	CARLSON PAUL ET LAURA		90 BOUNDRY LOOP RD	CALABASH	NC	28467
240KB005	L-75 CAROLINA SHORES PLAT K/60	RILEY RICHARD ETUX WINIFRED		82 BOUNDARY LOOP ROAD	CAROLINA SHORES	NC	28467
240KB006	L-1 S-2 CAR SHORES PLAT L/157	BARTLETT T L & P D TOWNSLEY		70 BOUNDARY LINE DRIVE	CAROLINA SHORES	NC	28467
240KB007	L-2 T-2 CAROLINA SHORES PLAT L/157	MOORE LEWIS M ET JUDY A		273 KILGORE RD	SCOTT DEPOT	WV	25560
240KB008	L-3 B-2 CAROLINA SHORES PLAT L/157	KEENEY W MICHAEL ET CHARLENE		5244 BAILEY RD	CHARLESTON	WV	25313
240KB009	L-4 S-2 CAROLINA SHORES PLAT L/157	WALSH OWEN VINCENT & MARY WALSH		1047 BEAR CROSSING	HANOVER	PA	17331
240KB010	L-5 S 2 CAROLINA SHORES PLAT L/157	PROPEs ALAN M ET FRANCES C		2304 MORNING GLORY DR	RICHARDSON	TX	75082
240KB011	L-6 S-2 CAROLINA SHORES PLAT L/157	LANE CECIL N ETUX SHARON		67 NORTHEAST DRIVE NW	CALABASH	NC	28467
240KB012	L-7 S-2 CAROLINA SHORES PLAT L/157	SHEARER FRANKLIN A ET ELAINE		1906 SEVEN OAKS DR	KINGWOOD	TX	77339
240KB013	L-8 S-2 CAROLINA SHORES PLAT L/157	MORITZ MICHAEL F ET THERESA		300 FALCON CT	ELIZABETHTOWN	KY	42701
240KB014	L-9 S-2 CAROLINA SHORES PLAT L/157	JANNELLI MARC		20 MEADOWBROOK RD	BOONTON TOWNSHIP	NJ	07005
240KB015	L-10 TR 2 PLAT L/157	TAYLOR DOUGLAS W		P O BOX 6278	OCEAN ISLE BEACH	NC	28469
240KB016	L-11 S-2 CAROLINA SHORES PLAT L/157	MURPHY DANIEL P AND	MURPHY CAROLYN L	508 FOXCLOVE CIR	GLENMOORE	PA	19343-8924
240KB017	L-12 S-2 CAROLINA SHORES PLAT L/157	MCQUADE DAVID ETUX MELODY		83 NORTHEAST DR NW	CALABASH	NC	28467
240KB018	L-13 S-2 CAROLINA SHORES PLAT L/157	CANADEO HAROLD M JR		192 TIMBER LANE	MARQUETTE	MI	49855
240KB019	L-14 S-2 CAROLINA SHORES PLAT L/157	SUDBRINK MICHAEL ETUX DIANE		7128 GREENBANK ROAD	MIDDLE RIVER	MD	21220
240KB020	L-15 S-2 CAROLINA SHORES PLAT L/157	TAYLOR DOUGLAS W		P O BOX 6278	OCEAN ISLE BEACH	NC	28469
240KB021	L-16 S-2 CAROLINA SHORES PLAT L/157	PATEL JOITABHAI N ET KAMALA		PO BOX 79125	CHARLOTTE	NC	28271
240KB022	L-17 S-2 CAROLINA SHORES PLAT L/157	PETERSOHN LLOYD B ET CAROLYN		719 SPRING STREET	CARY	NC	27511
240KB024	L-18 S-2 CAROLINA SHORES PLAT L/157	FUSCO WILLIAM D		12 NARRAGANSETT AVE	MEDFORD	NY	11763
240KB025	L-19 S-2 CAROLINA SHORES PLAT L/157	KLEIST GARY C ET CHERYL		1125 COUNTY LINE RD NW	ACWORTH	GA	30101
240KB026	L-20 CAROLINA SHORES PLAT L/157	DOLAN THOMAS W JR ETUX	DOLAN MARILYN	10499 WINGED ELM LN	FORT MYERS	FL	33913
240KB027	L-21 S-2 CAROLINA SHORES PLAT L/157	FREEMAN W ERIC		9749 FAIRWOOD STREET	LITTLETON	CO	80125
240KB028	L-22 S 2 CAROLINA SHORES PLAT L/157	OSER RICHARD & JUANITA TRUSTEES		86 NORTHEAST DRIVE NW	CALABASH	NC	28467
240KB029	L-23 S-2 CAROLINA SHORES PLAT L/157	COYLE CHRISTOPHER T ETUX LOUISA O		10 BLACKPINE DRIVE	MEDFORD	NY	11763
240KB030	L-24 S-2 CAROLINA SHORES PLAT L/157	WARLICK PAUL P		101 BROOKWOOD FOREST DR	BLYTHEWOOD	SC	29016
240KB031	L-25 S-2 CAROLINA SHORES PLAT L/157	OCEAN 7 INC		316 FAIRWOOD TER	MYRTLE BEACH	SC	29588-6382
240KB032	L-26 S-2 CAROLINA SHORES PLAT L/157	NIEMAN LAWRENCE K ET MYRNA		70 NORTHEAST DRIVE NW	CALABASH	NC	28467
240KB033	L-27 S-2 CAROLINA SHORES PLAT L/157	BREWER APRIL		507 17TH AVE S	N MYRTLE BCH	SC	29582-4006
240KB034	L-28 S-2 CAROLINA SHORES PLAT L/157	THOMPSON DANIEL MITCHELL & APRIL		PO BOX 3125	NORTH MYRTLE BEACH	SC	29582
240KB035	L-29 CAROLINA SHORES NORTH TR-2 PLAT L-157	PARKER HAROLD L ETUX	PARKER R CONSTANCE	4208 CAPE LANDING RD	CASTLE HAYNE	NC	28429-4531
240KB036	L-30 S-2 CAROLINA SHORES PLAT L/157	CEDARCREST ESTATES LLC		145 S ANNAPOLIS AVE	ATLANTIC CITY	NJ	08401
240KB037	L-31 T-2 CAROLINA SHORES PLAT L/157	NEWMAN E HERBERT		803 GAYLE STREET	NORTH MYRTLE BEACH	SC	29582

*County of Brunswick*  
*Office of the County Commissioners*



**FINAL ASSESSMENT RESOLUTION FOR THE EXTENDING OF THE  
BRUNSWICK COUNTY UTILITY SYSTEM INTO THE AREA KNOWN AS  
CAROLINA SHORES NORTH SPECIAL SEWER ASSESSMENT (#29)**

The Brunswick County Board of Commissioners in regular session, duly assembled on April 16, 2018, do hereby resolve as follows:

1. This is a final assessment resolution enacted pursuant to the provisions of North Carolina General Statute 153A-192.
2. The Brunswick County Board of Commissioners has directed its staff, pursuant to North Carolina General Statute 153A-185 et. seq., to extend sewer collection lines into the area known as Carolina Shores North Special Sewer Assessment, which generally includes the development known as Carolina Shores North in Shallotte Township and areas in the development, generally shown on the attached map (Exhibit A), and an attached list of parcels served (Exhibit B), said documents open for public inspection.
3. The nature of the project is the construction of sewer collection lines and the location of the project is that area included in the description (Exhibit A), said exhibit showing all the affected parcels as described by the Brunswick County Geographic Information Services and the Brunswick County Tax Office, is on file with and available for inspection at the office of the Clerk to the Board of Commissioners and is hereby incorporated as if fully set out herein which area is hereby identified as the "benefit zone".
4. The basis for making assessments shall be one as set forth in North Carolina Statute 153A-186, specifically, the number of lots served or subject to being served by the project at an equal rate per



lot, which are all included in a general description of the boundaries of the area benefited and those outer boundaries are described in "Exhibit A".

5. The percentage of the costs of the work to be assessed is One Hundred Percent (100%), and the parcels assessed may be subject to any system impact fees.

6. Assessments will be held in abeyance in the discretion of the County.

7. The terms of payment shall be payment in full sixty (60) days following the date of the publication of notice of the confirmation of the assessment roll. Assessments paid in full within the sixty days shall receive a five (5) percent discount. Any assessment not paid in full within the sixty days shall be divided into three annual installments with simple interest of eight (8) percent annually as allowed in NCGS §153A-200 (a). The first installment shall be due within sixty (60) days following the publication of notice of the confirmation of the assessment roll. Each subsequent installment shall be due one year thereafter.

This the 16<sup>th</sup> day of April, 2018.

BRUNSWICK COUNTY BOARD OF COMMISSIONERS

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Frank Williams, Chairman

ATTEST:

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Andrea G. White, NCCCC  
Clerk to the Board



**PRELIMINARY ASSESSMENT RESOLUTION FOR THE EXTENDING OF THE  
BRUNSWICK COUNTY UTILITY SYSTEM INTO THE AREA KNOWN AS  
CAROLINA SHORES NORTH SPECIAL SEWER ASSESSMENT (#29)**

The Brunswick County Board of Commissioners in regular session, duly assembled on March 16, 2015, do hereby resolve as follows:

1. This is a preliminary assessment resolution enacted pursuant to the provisions of North Carolina General Statute 153A-190.
2. The Brunswick County Board of Commissioners does hereby state its intention to undertake actions pursuant to North Carolina General Statute 153A-185 et. seq. to extend sewer collection lines into the area known as Carolina Shores North Special Sewer Assessment, which generally includes the development known as Carolina Shores North in Shallotte Township and areas in the development, generally shown on the attached map (Exhibit A), and an attached list of parcels served (Exhibit B), said documents open for public inspection.
3. The nature of the project is the construction of sewer collection lines and the location of the project is that area included in the description (Exhibit A), said exhibit showing all the affected parcels as described by the Brunswick County Geographic Information Services and the Brunswick County Tax Office, is on file with and available for inspection at the office of the Clerk to the Board of Commissioners and is hereby incorporated as if fully set out herein which area is hereby identified as the "benefit zone".
4. The proposed basis for making assessments shall be one as set forth in North Carolina Statute 153A-186, specifically, the number of lots served or subject to being served by

the project at an equal rate per lot, which are all included in a general description of the boundaries of the area benefited and those outer boundaries are described in "Exhibit A".

5. The percentage of the costs of the work to be assessed is One Hundred Percent (100%), and the parcels assessed may also be subject to any system impact fees.

6. Assessments may be held in abeyance in the discretion of the County.

7. The proposed terms of payment shall be payment in full sixty (60) days following the date of the publication of notice of the confirmation of the assessment roll, unless an owner qualifies for installment payments upon such terms and conditions as determined by the County, which shall be liberally granted, with interest accruing thereafter at the rate as allowed in NCGS §153A-200 (a), which shall not exceed Eight percent (8%).

8. A public hearing on this matter is set for April 13, 2015, at 5:30 p.m. in the Training Room of the Brunswick County Public Utilities Operations Center, 250 Grey Water Road, NE, Supply, North Carolina.

This the 16<sup>th</sup> day of March, 2015.



BRUNSWICK COUNTY BOARD OF COMMISSIONERS

*Scott Phillips*  
\_\_\_\_\_  
Scott Phillips, Chairman

ATTEST:

*Marjorie Stephenson*  
\_\_\_\_\_  
Marjorie Stephenson, NCCCC  
Clerk to the Board

**COUNTY OF BRUNSWICK  
UTILITY BOARD  
PROPOSED MINUTES OF APRIL 13, 2015  
UTILITIES FIELD OPERATIONS CENTER**

MEMBERS PRESENT

Earl Andrews  
Retta Kennedy  
John Michaux  
Robert Wiltbank  
Jim Donnelly  
Wayne Holden  
Rick Tompkins

MEMBERS ABSENT

Joe James

STAFF PRESENT

William Pinnix, Engineering Director  
Jerry Pierce, Public Utilities Director  
Huey Marshall, County Attorney  
Beverly Adams, Engineering  
Jay Murray, Engineering

I. CALL TO ORDER

Mr. Andrews called the meeting to order at 5:30 P.M.

II. ROLL CALL

Mr. James was absent.

III. PUBLIC HEARING FOR CAROLINA SHORES NORTH SEWER SAD

There were approximately 75 people in attendance for the Public Hearing. Mr. Andrews introduced Mr. Huey Marshall, County Attorney, who gave a brief overview of the special assessment process. He stated that the final cost of the sewer assessment is unknown but cannot exceed \$6,700 per lot. He added that a copy of the special assessment laws of North Carolina were available to anyone who wished to have a copy. Mr. Marshall explained that the total cost of the project minus any grant money would be divided among the 476 parcels. Mr. Pierce stated that there may be one agency that may contribute some funding. After the costs are certified, each property owner will get a tax notice that there is an assessment attached to their tax bill. There will be a 5% discount if the whole assessment is paid at once. If not, the assessment will be attached to their tax bill with a 3 year repayment plan.

The public hearing was then open for comments:

Steve Brady from Maryland owns Lot A332. He stated that the lot will not perk. He and his wife have been coming to the area for 30 years and would like to retire here. He said that there would be current property owners talking this evening about the hardship of the cost of the sewer that they do not need. He wanted to point out that there are hardships for lot owners who have waited 38 years to build a home here and cannot. They have paid taxes and dues all that time. He also pointed out the Home Owners Association will suffer hardships when people walk away from their property.

Robin Barron bought her lot 10 years ago. She is from New Jersey and has had well and septic there. They had 2 septic systems fail and wanted to find a place with water and sewer. They retired 2 ½ years ago and moved here but since sewer is not available in CSN she bought a place in Little River, SC. She still wants the lot for her daughter to build a home there. She is in favor of the sewer.

Gary Kleist owned his lot since 1980. He is in favor of the sewer. He cannot do anything with the lot since it does not perk. He has now retired and would like to build a retirement home there. If sewer does not come in he will try to sell the lot and if it won't sell he will walk away.

Roger Haigler his Mom and Dad bought a lot in the mid70s. His Dad has passed and he had hoped that he would see sewer there before he died. He wonders about the current resident's fate if their septic fails. He would like to see the sewer installed not just for his Mom but for current homeowners whose septic may fail.

Polly Haigler bought her lot in the mid 70s and has been paying dues and taxes all this time. She would like to see the sewer system installed.

Parshottam Patel has owned his lot since 1979. He bought the lot for a retirement home. He retired 4 years ago but cannot move here because the lot will not perk. He would like the sewer installed so he can build a home in CSN.

Ramandal Patel has owned his lot since 1979. He has been paying HOA fees and County taxes since then. He would like to build a house but his lot won't perk. He would like the sewer system installed. He pointed out that a large number of lot owners live far away and cannot attend this meeting.

Don Cetro thanked the Utility Board for installing the water in CSN. There was a fire there shortly after the fire hydrants were installed. He also wanted to say that in today's world sewers are not a luxury they are a necessity.

Joseph Shoffner just bought a house in CSN and he cannot afford the extra expense to put the sewer in.

Dan Thompson has 3 lots in CSN that he bought in 1996. One of them will perk but he does not want a septic tank. They are trouble. Sewer is better for the environment and he feels septic tanks are like having an outhouse.

Barry James is appreciative of the public hearing input. He has owned his lot since March. He wants to build. He is working on design for a house. They love CSN. They have lived with septic and could not use the facilities when it rained. He would encourage the board to move forward with the sewer.

Vicky Tesh had paperwork to prove that this was a fraudulent vote again. The last vote people were accused of whiting out no votes and changing to yes. This time she felt that the votes were accepted past the deadline. She thanked the board for water and stated that now if your lot is not approved for a conventional septic system you can put in a

pump system. If you want to sell your lot, put in a pump system and advertise it as a buildable lot. She is a realtor and will sell for a reduced commission. She doesn't think the sewer system should be shoved down their throats. She also wanted to comment on the HOA. They have over \$600,000 in the kitty and they will survive just fine if people want to walk away from their lots. This is the other side of the story and she does believe it was a fraudulent vote.

Authur Weisgerber stated that CSN was established with septic tanks and with approval of the health department. He has been a resident of CSN for 21 years. For the past 52 years he has owned 4 homes all on septic. Brunswick County recently lowered the value of his home and now they want him to pay for sewer. He would like the Commissioners to meet with CSN homeowners to discuss sewer.

Vincent Anastasi is a resident of CSN. The lots in CSN have reduced in value 66% in 2014. He spoke with a septic installer for a Type B system which is the one most likely needed in CSN. The installer gave a quote of between \$20,000 - \$25,000 for the system. He stated that the County sewer installation would bring new homes and increase revenue to the County. He also gave statistics for new growth in Brunswick County. And stated that new growth equals new revenue.

Ivan Varlamoff has owned his lot since 1980 and has paid dues and taxes all this time. He retired 2 years ago and was planning to build in CSN. He hopes that the sewer will be installed.

Lloyd Petersohn bought his lot in 1980 and has paid dues and taxes. He hopes that the sewer is approved so he can build his dream house.

Carol Petersohn lives in Cary and has owned her lot for 35 years. She found out 10 years ago that their lot will not perk and was told that the only way they could build a home there was with a sewer system installed. She is 80 years old and really wants to build a home in CSN.

Keith Barnes along with his sister inherited the lot. They have been unable to sell the lot and he would like to see the sewer system installed not just for personal reasons but because it is better for the environment.

John R. Stewart has owned a house in CSN since 1997. He is in the water and sewer business. His septic is fine. He cannot afford the sewer assessment. He thinks that the 2/3 people who want the system could pay \$7,000 more and the 1/3 who don't want it wouldn't have to pay for it. He also thinks 8% interest is too high.

Harold Parker stated that he lives in Wilmington. He stated that the septic requirements have changed since the 70s. He cited decreasing property values on lots in CSN. If sewer is installed it would benefit 300 lot owners.

Connie Parker is a realtor and owns lot 316. She stated that septic tanks and septic fields take up a lot of room on a lot. It's been frustrating that the values are lowering and they have been paying dues for 26 years. She feels sorry for residents if their septic system fails.

Lucy Kelrae has lived in CSN since 1987. Her septic is fine but she still wants sewer because  
If her septic fails she will have sewer available.

Linda Shemenski lives in CSN. They cannot afford \$14,000 to pay back in 3 years. They own their own business and their daughter is home schooled because Brunswick County

Schools cannot provide the services that her disabled daughter needs. She stated that everyone is talking about revenue. What is that revenue going to do for Brunswick County? Can anyone tell me? I can't even send my daughter to Brunswick County Schools. So who is going to benefit from all this revenue?

Brenda Nolan owns 2 lots in CSN. She is confused about the numbers that everyone is throwing out. She stated that no one really knows yet what the final cost is going to be. She is tired of paying dues and taxes. All of the communities in northern Brunswick County have sewer. It's time the County provides sewer to southern Brunswick County.

Oleh Maksymiak thinks that the County is throwing good money after bad money. He said that they were told that when the water came in lots and homes would sell. He doesn't think that a single lot has been sold since the water came in. He paid \$8,000 for his septic system with all the bells and whistles. He again stated that this is throwing good money after bad money.

Mr. Andrews then closed the public hearing.

IV. CONSIDERATION OF MINUTES OF THE FEBRUARY 9, 2015 MEETING

Mr. Wiltbank made a motion to accept the minutes. Mr. Holden seconded the motion and it carried unanimously.

V. ADMINISTRATIVE REPORT

There were no questions concerning the Administrative Report. Mr. Pierce stated that the County is taking over the Caswell Beach water and sewer system. This will add 676 customers. The County is also in discussions with the City of Southport to take over the operations and maintenance of their system. They are also working on giving Southport 750,000 to 1 million gallons sewer capacity over the next few years.

VI. CITIZENS WISHING TO ADDRESS THE BOARD

There were none.

VII. OLD OR NEW BUSINESS

**Carolina Shores North Sewer SAD**

After a brief discussion of CSN Sewer SAD, Mr. Andrews asked if there was a motion. Mr. Tompkins made a motion to recommend the project to the Brunswick County Commissioners. Mr. Wiltbank seconded the motion and it carried

**FY16 Enterprise Water Main Extension Top 10**

Mr. Pinnix presented a handout with the top 7 areas that had 30% or better response for the water enterprise project FY16. They are Ludlum Road, Taft Road & Sea Wind II Subdivision, Old Town Creek Road, Country Meadows Subdivision, High Meadows Subdivision, Russ Town Road, and Big Neck and Mill Branch Road.

VII. ADJOURNMENT

Mr. Andrews asked for a motion to adjourn. Mr. Donnelly made a motion and Mr. Wiltbank seconded the motion and the meeting was adjourned at 6:55 p.m.





## **Brunswick County Board of Commissioners ACTION AGENDA ITEM 2014**

Utilities - Request for Approval of an Amendment to Sewer Assessment Policy (Jerry Pierce)

**From:**

Jerry W. Pierce, P.E.

**Action Item # VIII. - 5.**

**Date:**

12/19/2013

**Issue/Action Requested:**

Recommend approval of an amendment to the Sewer Assessment Policy that will give the Board of Commissioners the ability to cancel the Sewer Assessment District (SAD) if the county's contribution to the SAD project is deemed to be excessive by the Board of Commissioners.

**Background/Purpose of Request:**

In July, the Board of Commissioners approved an amendment to the Sewer Assessment Policy. Under the policy revisions, the county would establish a per parcel rate for sewer assessments that met certain criteria. The property owner would know the maximum amount that they would be assessed prior to signing the petition. If the overall project cost was less than the total assessment amount, the property owner would be billed their proportionate share of the project cost. If the overall project cost exceeded the amount of revenue generated by the assessment, the county would have to contribute funds to the project prior to establishing the final project cost.

Concerns were expressed that the amount that the county would need to contribute would not be known until the project was completed and that the amount may be excessive. The proposed amendment would give the Board of Commissioners the ability to cancel the SAD and not award construction bids if they deem the project cost to be excessive.

County staff recommends approval of the amendment to the Sewer Assessment Policy.

**Fiscal Impact:**

Reviewed By Director of Fiscal Operations

**Reviewed By County Attorney:**

Not Applicable

**Advisory Board Recommendation:**

The Utility Board in session on January 13, 2014 approved the change with a recommendation to establish a percentage threshold instead of excesses.

**County Manager's Recommendation:**

Recommend that the Board of Commissioners approve an amendment to the Sewer Assessment Policy that will give the Board the ability to cancel the Sewer Assessment District (SAD) if the county's contribution to the SAD project is deemed to be excessive by the Board of Commissioners.

**ATTACHMENTS:**

Description

- ☐ Utilities - Assessment Petition Policy Sewer - Attach 1

## **ASSESSMENT PETITION POLICY APPLICABLE TO SEWER EXTENSIONS TO PROVIDE SERVICE IN EXISTING NEIGHBORHOODS**

**PURPOSE:** The purpose of this policy is to set forth the principles and guidelines for the extension of and the allocation of cost for the sewer mains when such facilities are extended by means of the assessment process.

**BACKGROUND:** An integral part of the operation of the Brunswick County Public Utilities Department is the orderly extension of sewer service from its existing facilities or the construction of new facilities. This extension of service may consist of the construction of new sewer mains, interceptors, gravity mains, pump stations, and other appurtenances necessary to serve a group of properties whose owners have petitioned Brunswick County for service and have agreed to assume the cost of the sewer extension.

**APPLICABILITY:** Due to the amount of fixed costs associated with the design and construction of wastewater collection systems, the Special Assessment District must include a minimum number of parcels for the project to be economically viable. For the purpose of this policy the following minimum number of parcels must be included in the Special Assessment District area for this policy to apply:

Wastewater Collection System – No Pump Station	20 parcels
Wastewater Collection System – With Pump Station	100 parcels

**POLICY:** Brunswick County, at the discretion of the Board of Commissioners, may arrange for the installation of sewer mains to serve existing developed areas and assess the cost of the improvements to the benefited properties in accordance with the North Carolina General Statutes.

Extension to new development will not be financed through the assessment process. If undeveloped land within an assessment area benefits from an assessment project, then such land will be assessed for the improvements. Undeveloped land through or along the construction routes of off-site line extensions may also be assessed.

Assessment projects must have prior approval of the Brunswick County Board of Commissioners and may be initiated by residential property owners through a petition process, County or State public health agencies, municipality, or by Brunswick County at its discretion. Brunswick County's decision to undertake an assessment project shall not require endorsement from a majority of the property owners benefiting from said project. In determining whether or not to proceed with an assessment project, the Board of Commissioners will consider the needs of all property owners who are impacted by such project and may establish a minimum endorsement percentage for consideration of projects.

If multiple assessment project requests are received, the assessment projects shall be rated by the rating system included as Exhibit 1 to this Policy. Based upon the ratings obtained by using this process each project will be prioritized for construction by Brunswick County. Extension of service shall be made in a manner to appropriately serve individual properties and to allow for the future orderly development of the sewer system to serve other properties.

Sewer main extensions and appurtenant facilities installed by Brunswick County through the assessment process shall be financed by the owners of the benefited properties through (1) special assessments made in accordance with the provisions of the North Carolina statutes and laws; (2) prior funding of the improvements; and/or (3) other financial arrangements satisfactory to Brunswick County. The cost of the assessment project, as determined by Brunswick County, shall be specially assessed against each of the lots or parcels determined by Brunswick County as benefiting from the project and set out in a Final Assessment Roll. Such allocation of cost shall be in accordance with the provisions of North Carolina General Statutes.

At the beginning of each fiscal year, the Board of Commissioners will establish maximum assessment rates for Wastewater Collection System Special Assessment Districts. Rates will be established based upon actual construction cost on similar projects constructed in the past year. Unless otherwise requested by the petitioners in advance and approved by the County in advance, the method of assessment will be based upon the number of parcels being served. Upon request of a property owner, County staff will work with the property owner to define a Special Assessment District area. Once the Special Assessment District area is defined, County staff will prepare a spreadsheet showing the maximum assessment amount for each parcel based upon the assessment rate approved by the Board. As the petition process may span fiscal years, the assessment amounts contained in the spreadsheet shall be valid for a period of ninety (90) days. If the petition process exceeds ninety (90) days, the assessment amount may change based upon a new assessment rate approved by the Board of Commissioners.

If the actual cost of constructing the wastewater collection system exceeds the amount of revenue generated based upon number of parcels in the project being served times the assessment rate established by the Board for the year that the work was ordered to be done, the County would pay from its Enterprise Fund the remaining project costs. If the actual cost to construct the wastewater collection system was less than the amount of revenue generated based upon the number of parcels in the project being served times the assessment rate established by the Board for the year that the work was ordered to be done, the County would then assess the property owners the actual cost of the project based upon the number of parcels being served by the project.

**The Board of Commissioners reserves the right to reject any and all bids and cancel the Special Assessment District if the overall cost of the project exceeds the projected revenue generated by the assessment and the Board of Commissioners determines that the County's required contribution to make up the difference**

**between the overall project cost and the revenue generated by the assessment is excessive.**

Upon completion of the project, property owners will be notified and a Final Assessment Roll adopted. Liens against the property will be recorded as security for the amount of the assessment. Assessments may be paid without interest at any time before the expiration of thirty (30) days from the date that notice of confirmation of the Final Assessment Roll is published. If the assessments are not paid within this time, all installments shall bear interest at a rate set by the Board of Commissioners in the assessment proceedings until paid. The payment period for the installment payment of assessments shall be three (3) years. In the event one or more payments of the assessment against a parcel of property are not made in accordance with the terms for such payment, Brunswick County may take action under the lien to collect the money due.

For property owners with existing structures on their property who make application for service and pay their assessment in total within one year of the notice of confirmation of the Final Assessment Roll, the Sewer Capital Recovery Fee will be waived. The property owner will still be required to pay the Sewer Transmission Fee. All property owners with existing structures connecting after the expiration of the one-year period will be required to pay the Capital Recovery Fee and Wastewater Transmission Fee in effect at the time of application for service.

For low pressure sewer systems, the grinder pump station will not be included in the assessment. The cost for installing the grinder pump station shall be rate charged by the County at the time of the application for service.



**Brunswick County Board of Commissioners**  
**ACTION AGENDA ITEM**  
**April 16, 2018**

**Action Item # VIII. - 4.**

**From:**  
John Nichols, P.E.

Utilities - Northeast Brunswick Regional Wastewater Treatment Plant Expansion Contract McKim & Creed (John Nichols, Director of Public Utilities)

**Issue/Action Requested:**

Request that the Board of Commissioners authorize the Chairman and Clerk to the Board to approve the contract with McKim & Creed in the amount of \$1,950,850 for engineering and construction administration services associated with a 1.65 million gallon per day (MGD) expansion of the Northeast Brunswick Regional Wastewater Treatment Plant (WWTP) and Phase II Force Main (18" diameter – 11,000 LF +/-).

**Background/Purpose of Request:**

The wastewater flows into the Northeast WWTP have been steadily increasing due to growth in the northeast area of Brunswick County. The average monthly flows into the treatment plant have at times reached approximately 90% of the design capacity. In April 2017 the Board of Commissioners authorized McKim & Creed to perform a Preliminary Engineering Report (PER) that estimated future flows, evaluated treatment expansion options, verified transmission system improvement recommendations, and provided cost estimates for the expanded facilities.

Design costs comparison for a 1.65 and a 2.5 mgd expansion are enclosed for information. Based on the results presented in the PER, and input from our Regional Partners, it has been decided to move forward with a 1.65 million gallon per day (MGD) expansion of the Northeast Brunswick Regional Wastewater Treatment Plant and Phase II Force Main (18" diameter – 11,000 LF +/-).

Subsequently, a scoping meeting was held with the firm and a fee negotiated.

Staff recommends approval of the proposed contract with McKim & Creed in the amount of \$1,950,850. Costs will be reimbursed by participants needing capacity.

**Fiscal Impact:**

Budget Amendment Required, Capital Project/Grant Ordinance Required, Pre-Audit Certification Required, Reviewed By Director of Fiscal Operations

Budget amendment and the associated capital project ordinance appropriates \$2,000,000 of proceeds from revenue bonds for engineering services associated with Northeast Brunswick Regional Wastewater Treatment Plant and force main expansion project.

**Approved By County Attorney:**

Yes

**Advisory Board Recommendation:**

Not Applicable

**County Manager's Recommendation:**

Recommend that the Board of Commissioners authorize the Chairman and Clerk to the Board to approve the

contract with McKim & Creed in the amount of \$1,950,850 for engineering and construction administration services associated with a 1.65 million gallon per day (MGD) expansion of the Northeast Brunswick Regional Wastewater Treatment Plant (WWTP) and Phase II Force Main (18" diameter – 11,000 LF +/-).

**ATTACHMENTS:**

Description

- ▣ Utilities - Northeast WWTP 1.65 MGD Expansion Contract McKim & Creed - Attach 1
- ▣ 20180416 Budget Amendment NEBRWWTP Expansion
- ▣ 20180416 CPO NEBR WWTP Expansion
- ▣ Design Cost Comparison (Fee Summary)

This Agreement has been prepared for use with the Brunswick County, North Carolina General Conditions of the Contract (for construction contracts). Their provisions are interrelated and a change in one may necessitate a change in the other.

**SHORT FORM OF AGREEMENT  
BETWEEN OWNER AND ENGINEER  
FOR  
PROFESSIONAL SERVICES**

THIS IS AN AGREEMENT effective as of \_\_\_\_\_ (“Effective Date”) between

**Brunswick County ("Owner")**

and

**McKim & Creed, Inc. ("Engineer").**

Owner's Project, of which Engineer's services under this Agreement are a part, is generally identified as follows:

**Northeast Brunswick Regional Wastewater Treatment Plant Expansion** (“Project”).

Engineer’s Services under this Agreement are identified in the attached Exhibit A.

Owner and Engineer further agree as follows:

**1.01 Basic Agreement and Period of Service**

- A. Engineer shall provide, or cause to be provided, the services set forth in this Agreement. If authorized by Owner, or if required because of changes in the Project, Engineer shall furnish services in addition to those set forth above. Owner shall pay Engineer for its services as set forth in Paragraphs 7.01 and 7.02.
- B. Engineer shall complete its services in accordance with the schedule outlined in Exhibit A.
- C. If the Project includes construction-related professional services, then Engineer's time for completion of services is conditioned on the time for Owner and its contractors to complete construction. If the actual time to complete construction exceeds the number of days indicated in Exhibit A through no fault of the Engineer, then Engineer's period of service and its total compensation shall be appropriately adjusted.

## 2.01 *Payment Procedures*

- A. *Invoices:* Engineer shall prepare invoices in accordance with its standard invoicing practices and submit the invoices to Owner on a monthly basis. Invoices are due and payable within 60 days of receipt. If Owner fails to make any payment due Engineer for undisputed services and expenses within 60 days after receipt of Engineer's invoice, then the amounts due Engineer will be increased at the rate of 1.0% per month (or the maximum rate of interest permitted by law, if less) from said thirtieth day. In addition, Engineer may, after giving fourteen days written notice to Owner, suspend services under this Agreement until Engineer has been paid in full all undisputed amounts due for services, expenses, and other related charges. Owner waives any and all claims against Engineer for any such suspension. Payments will be credited first to interest and then to principal.

## 3.01 *Termination*

- A. The obligation to continue performance under this Agreement may be terminated:

1. For cause,

- a. By either party upon 30 days written notice in the event of substantial failure by the other party to perform in accordance with the Agreement's terms through no fault of the terminating party. Failure to pay Engineer for its undisputed services is a substantial failure to perform and a basis for termination.
- b. By Engineer:
- 1) upon fourteen days written notice if Owner demands that Engineer furnish or perform services contrary to Engineer's responsibilities as a licensed professional; or
  - 2) upon fourteen days written notice if the Engineer's services for the Project are delayed for more than 90 days for reasons beyond Engineer's control.

Engineer shall have no liability to Owner on account of a termination by Engineer under Paragraph 3.01.A.1.b.

- c. Notwithstanding the foregoing, this Agreement will not terminate as a result of a substantial failure under Paragraph 3.01.A.1.a if the party receiving such notice begins, within fourteen days of receipt of such notice, to correct its substantial failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of notice; provided, however, that if and to the extent such substantial failure cannot be reasonably cured within such 30 day period, and if such party has diligently attempted to cure the same and thereafter continues diligently to cure the same, then the cure period provided for herein shall extend up to, but in no case more than, 60 days after the date of receipt of the notice.

2. For convenience, by Owner effective upon Engineer's receipt of written notice from Owner.

- B. The terminating party under Paragraph 3.01.A may set the effective date of termination at a time up to 30 days later than otherwise provided to allow Engineer to complete tasks whose value would



otherwise be lost, to prepare notes as to the status of completed and uncompleted tasks, and to assemble Project materials in orderly files.

#### 4.01 *Successors, Assigns, and Beneficiaries*

- A. Owner and Engineer are hereby bound and the successors, executors, administrators, and legal representatives of Owner and Engineer (and to the extent permitted by Paragraph 4.01.B the assigns of Owner and Engineer) are hereby bound to the other party to this Agreement and to the successors, executors, administrators, and legal representatives (and said assigns) of such other party, in respect of all covenants, agreements, and obligations of this Agreement.
- B. Neither Owner nor Engineer may assign, sublet, or transfer any rights under or interest (including, but without limitation, moneys that are due or may become due) in this Agreement without the written consent of the other, except to the extent that any assignment, subletting, or transfer is mandated or restricted by law. Unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under this Agreement.
- C. Unless expressly provided otherwise, nothing in this Agreement shall be construed to create, impose, or give rise to any duty owed by Owner or Engineer to any contractor, subcontractor, supplier, other individual or entity, or to any surety for or employee of any of them. All duties and responsibilities undertaken pursuant to this Agreement will be for the sole and exclusive benefit of Owner and Engineer and not for the benefit of any other party.

#### 5.01 *General Considerations*

- A. The standard of care for all professional engineering and related services performed or furnished by Engineer under this Agreement will be the care and skill ordinarily used by members of the subject profession practicing under similar circumstances at the same time and in the same locality. Subject to the foregoing standard of care, Engineer and its consultants may use or rely upon design elements and information ordinarily or customarily furnished by others, including, but not limited to, specialty contractors, manufacturers, suppliers, and the publishers of technical standards.
- B. Engineer shall not at any time supervise, direct, control, or have authority over any contractor's work, nor shall Engineer have authority over or be responsible for the means, methods, techniques, sequences, or procedures of construction selected or used by any contractor, or the safety precautions and programs incident thereto, for security or safety at the Project site, nor for any failure of a contractor to comply with laws and regulations applicable to such contractor's furnishing and performing of its work.
- C. This Agreement is to be governed by the law of the State of North Carolina.
- D. Engineer neither guarantees the performance of any contractor nor assumes responsibility for any contractor's failure to furnish and perform its work in accordance with the contract between Owner and such contractor. Engineer is not responsible for variations between actual construction bids or costs and Engineer's opinions or estimates regarding construction costs.

- E. Engineer shall not be responsible for the acts or omissions of any contractor, subcontractor, or supplier, or of any of their agents or employees or of any other persons (except Engineer's own employees) at the Project site or otherwise furnishing or performing any construction work; or for any decision made regarding the construction contract requirements, or any application, interpretation, or clarification of the construction contract other than those made by Engineer.
- F. The general conditions for any construction contract documents prepared hereunder are to be the Brunswick County, North Carolina General Conditions of the Contract (for construction contracts) unless the parties agree otherwise.
- G. All documents prepared or furnished by Engineer are instruments of service, and Engineer retains an ownership and property interest in such documents, whether or not the Project is completed. Owner shall have a limited license to use the documents on the Project, extensions of the Project, and for related uses of the Owner, subject to the following limitations: (1) any use or reuse, or any modification of the documents, without written verification, completion, or adaptation by Engineer, as appropriate for the specific purpose intended, will be at Owner's sole risk and without liability or legal exposure to Engineer or to its officers, directors, members, partners, agents, employees, and consultants and (2) such limited license to Owner shall not create any rights in third parties.
- H. To the fullest extent permitted by law, Owner and Engineer (1) waive against each other, and the other's employees, officers, directors, agents, insurers, partners, and consultants, any and all claims for or entitlement to special, incidental, indirect, or consequential damages arising out of, resulting from, or in any way related to the Project, and (2) agree that Engineer's total liability to Owner under this Agreement shall be limited to \$50,000, the total amount of compensation received by Engineer, or the total insurance benefit of Engineer's insurance policy(s), whichever is greater.
- I. The parties acknowledge that Engineer's scope of services does not include any services related to a Hazardous Environmental Condition (the presence of asbestos, PCBs, petroleum, hazardous substances or waste as defined by the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq., or radioactive materials). If Engineer or any other party encounters a Hazardous Environmental Condition, Engineer may, at its option and without liability for consequential or any other damages, suspend performance of services on the portion of the Project affected thereby until Owner retains appropriate specialist consultants or contractors to identify and, as appropriate, abate, remediate, or remove the Hazardous Environmental Condition.
- J. Owner and Engineer agree to negotiate each dispute between them in good faith during the 30 days after notice of dispute. If negotiations are unsuccessful in resolving the dispute, then the dispute shall be mediated. If mediation is unsuccessful, then the parties may exercise their rights at law.

#### 6.01 *Total Agreement*

- A. This Agreement (including any expressly incorporated attachments), constitutes the entire agreement between Owner and Engineer and supersedes all prior written or oral understandings. This Agreement may only be amended, supplemented, modified, or canceled by a duly executed written instrument.

7.01 *Basis of Payment—Lump Sum*

- A. Using the procedures set forth in Paragraph 2.01, Owner shall pay Engineer in accordance with Exhibit B.
- B. The portion of the compensation amount billed monthly for Engineer's services will be based upon Engineer's estimate of the percentage of the total services actually completed during the billing period.

7.02 *Additional Services:* For additional services of Engineer's employees engaged directly on the Project, Owner shall pay Engineer a lump sum amount agreed to by a duly executed written instrument based on the format of Exhibit C to this Agreement.

8.01 *Exhibits Included*

- A. Engineer's Services
- B. Payment to Engineer for Services
- C. Amendment to Owner- Engineer Agreement

IN WITNESS WHEREOF, the parties hereto have executed this Agreement, the Effective Date of which is indicated on page 1.

OWNER: **Brunswick County**

By: \_\_\_\_\_

Title: \_\_\_\_\_

Date Signed: \_\_\_\_\_

ENGINEER: **McKim & Creed, Inc.**

By: Anthony W. Boehm 

Title: Vice-President

Date Signed: 4-3-18

Engineer License or Firm's Certificate  
Number: F-1222

State of: North Carolina

Clerk to the Board

"This instrument has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act."

Finance Director Brunswick County

"Approved as to Form"

County Attorney \_\_\_\_\_ Date \_\_\_\_\_

Address for giving notices:

\_\_\_\_\_  
\_\_\_\_\_

Address for giving notices:

McKim & Creed, Inc.  
243 N. Front Street  
Wilmington, NC 28401

# **EXHIBIT "A"**

## **SCOPE OF WORK**

(McKim & Creed Proposal No. 170622)

### **SCHEDULE I**

## **NORTHEAST BRUNSWICK REGIONAL WASTEWATER TREATMENT PLANT EXPANSION**

### **I. PROJECT UNDERSTANDING AND PURPOSE**

The following presents the scope of work to provide professional engineering services for a 1.65 MGD expansion of the County's Northeast Brunswick Regional Wastewater Treatment Plant (WWTP) from its current permitted capacity of 2.475 MGD to a "phased total capacity" of 4.125 MGD. McKim & Creed, Inc. will provide the following major services for expansion of the facility:

- Preparation of an Engineering Alternatives Analysis (EAA)
- Preparation of an SEPA Environmental Assessment (SEPA)
- Preliminary design
- Final design
- Permitting Assistance
- Prequalification of Bidders Assistance
- Formal Bid & Award Services
- Construction Administration
- Construction Observation
- Post Construction Services

The scope of services described herein is based upon providing treatment for municipal grade, domestic strength wastewater, of which final influent parameters will be determined during the preliminary design phase of the project. The 1.65 MGD expansion will be designed to adhere to the current parameters of the existing NPDES Permit No. NC0086819. The current NPDES permit for the facility does not require nitrogen or phosphorous removal. If nitrogen and/or phosphorous removal is required as part of the permit modification to expand the facility, additional services will be required in order to accommodate design changes necessary to provide treatment for these constituents.

Additionally, **Figure A** included with this document provides a schematic of the proposed expansion and is the general basis for the scope of work described herein. Major treatment components are anticipated to include:

- New Headworks sized for 5.775 MGD average daily flow capacity and appropriate peaking factor
- Additional Equalization Storage Tank sized for the 5.775 average daily flow capacity
- Flow Splitter Box

- Autothermal Thermophilic Aerobic Digestion (ATAD)
- Single 1.65 MGD Oxidation Ditch
- Returned Activated Sludge/Waste Activated Sludge Pump Station
- Secondary Clarifiers
- UV Disinfection System
- Effluent Flow Metering
- Effluent Pump Station Modifications
- New Parallel Effluent Force Main
- Waste Activated Sludge Handling Facilities

Based on these parameters, our detailed scope of work is provided as follows:

## **II. SCOPE OF WORK**

The Project components described below comprises our proposed Scope of Work.

### **Task 1 – Planning Charrette & Basis of Design**

McKim & Creed will conduct an initial planning charrette with Brunswick County staff to develop project goals and milestones. Major Project components will be reviewed and input from County staff will be incorporated as part of the project design. Based on the decisions made during the Planning Charrette, McKim & Creed will prepare a Basis of Design Document for the project. The Basis of Design Document will include the design parameters that will be used to design each unit process in the proposed 1.65 MGD expansion treatment train and a preliminary list of technical specifications that will be written for the project. Design parameters for wastewater influent characteristics will be based upon the most recent 12-months of Daily Monitoring Reports (DMR's) for the facility (to be provided by Brunswick County). The Basis of Design Document will include a series of technical memoranda describing key design aspects and calculations for the unit treatment process elements and the major disciplines (civil, electrical, I&C, mechanical, and structural). McKim & Creed will submit the Basis of Design to the County for review and comment.

### **Task 2 – Engineering Alternatives Analysis (EAA)**

McKim & Creed will utilize the EAA previously prepared by WK Dickson in 2009 for the facility to prepare a current EAA for the proposed expansion. The WK Dickson EAA will be utilized as a basis for alternatives evaluated and updated for justification and demonstration of need for the requested wastewater flow volume. The revised EAA will be prepared in accordance with current NC Division of Water Resources (NCDWR) guidelines and regulations for expansions of wastewater treatment systems. The EAA will be submitted to the County for review and comment and subsequently submitted to NCDWR for review after incorporating staff input. Comments received from NCDWR will be incorporated and a final EAA document will be prepared and submitted.

### **Task 3 – State Environmental Policy Act (SEPA) Review**

The proposed 1.65 MGD expansion exceeds the minimum NCDWR SEPA guidelines, which stipulate that an expansion of an existing discharge facility of 0.5 MGD requires a SEPA review. The purpose of the SEPA review is to determine the projects direct, secondary, and cumulative impacts to the environment and natural resources. The SEPA process requires either an Environmental Impact Statement (EIS) or an Environmental Assessment (EA) to determine such impacts. Based on the scope of this project, it is anticipated that an EA will be required. Therefore, this scope of work includes the preparation of a SEPA level EA document to be prepared in accordance with current NCDWR SEPA guidelines and regulations. The EA will be submitted to the County for review and comment and subsequently submitted to NCDWR for review upon incorporating staff input. Comments received from NCDWR will be incorporated and a final EAA document will be prepared and submitted.

### **Task 4 – Preliminary Design Phase**

#### **Pre-Design Phase**

1. Field Topographic Surveys: Survey work will be performed to the Standards of Practice for Land Surveying in North Carolina. Horizontal survey control will be referenced to NC Grid NAD 83 or otherwise specified. Vertical control will be referenced to NAVD88 or otherwise specified. McKim & Creed will utilize conventional surveys to develop base maps with sufficient accuracy to allow completion of engineered design drawings for the specific infrastructure designs described by this agreement. The scope of survey shall include:
  - The County owned property immediately west of and adjacent to the existing WWTP. This area is estimated at approximately 6 acres.
  - Limited surveys of existing structures at the WWTP to verify critical elevations and/or dimensions necessary to incorporate the new expansion facilities with the existing plant. Existing record drawing data from the WK Dickson December 2013 *Revised After Construction* documents will be utilized for reference.
  - Ten (10) Level A Subsurface Utility Engineering investigations. The SUE Investigations will be utilized to locate critical underground infrastructure at the existing plant site for integration of the new facility design with the existing infrastructure.
  - Set horizontal and vertical control at the WWTP.
2. Geotechnical Investigations: Conduct twenty-four (24) geotechnical soil borings at the proposed plant site to ascertain soil conditions for design purposes. Provide field survey to determine the horizontal location and vertical elevation for each soil boring.
3. Wetlands Delineations: Conduct wetlands delineation of the proposed plant site expansion area. The proposed plant expansion configuration will incorporate the

required setbacks and buffers per NCDEQ regulations for publicly owned wastewater treatment facilities.

### **30% Preliminary Design**

1. Process Design Computations: Develop process design computations for unit treatment processes.
2. Establish Preliminary Equipment Sizing: Work with vendors and suppliers to develop preliminary process equipment selection and sizing.
3. Select and Size Auxiliary Equipment: Develop preliminary SCADA and electrical systems.
4. Basis of Design Update: Update the Basis of Design Document as required based on the 30% preliminary design effort.
5. Process Schematic, Hydraulic Profile, and Flow Diagrams: Prepare a system schematic, hydraulic profile and flow diagram for the proposed wastewater treatment facility.
6. Wastewater Treatment Facility Site Plan: Prepare a preliminary site plan showing location of major treatment units, tanks, structures and process piping on the proposed site.
7. Instrumentation & Controls: Prepare preliminary plans and specifications as required for integration for the expansion to be monitored and controlled through the County's county-wide SCADA.
8. Effluent Pump Station Modifications: Prepare preliminary plans for modifications to the existing effluent pump station and existing reclaimed water pump station. The current facility includes an existing effluent pump station and an existing reclaimed water pump station connected by common-wall construction. The scope of work herein includes design modifications to hydraulically connect the wetwells of the effluent pump station and the reclaimed water pump station to provide a single effluent pump station wetwell. The hydraulic connection will be via a piped or sluice-gate style opening in the common wall. This scope of work assumes that the combined wetwells are sufficiently sized for the proposed 4.125 MGD capacity. Pump upgrades and electrical modifications are included in the scope of work to meet the proposed 4.125 MGD plant capacity. (Reference **Figure B**).
9. New Parallel Effluent Force Main: Prepare preliminary plans for a new parallel effluent force main. The existing 16-inch effluent force main will remain operational to convey effluent from the current 2.475 MGD facility. A new parallel effluent force main will be



designed for installation in the County's existing 30' permanent utility easement to the Cape Fear River. This scope of work assumes that sufficient space is available to construct the new parallel main in the existing easement. The new parallel effluent force main will combine with the existing effluent force main and discharge to the Cape Fear River through the existing 30-inch HDPE outfall diffuser. This scope of work assumes that the existing outfall/diffuser is sufficiently sized for the additional 1.65 MGD capacity. Therefore, a new river diffuser/outfall is not included in this scope of work. (Reference **Figure B**).

10. Preliminary Engineer's Opinion of Probable Construction Cost: Prepare an updated preliminary construction cost opinion using the various preliminary design documents to improve the accuracy of the initial, conceptual construction cost opinion.
11. Submit Preliminary Design Documents for Review: Compile and submit the updated basis of design document, process schematics, hydraulic profile, preliminary site plan, and cost opinion to the County for review and approval as part of the 30% stage of design completion.
12. Review 30% Submittal with County: Meet with the County Staff to review, discuss and receive owner input on the 30% design submittal.
13. Revise & Address County Comments on 30% Submittal: Revise the appropriate preliminary design documents (as necessary within the original scope of the project) to address the County's 30% design review comments. The updated Basis for Design document will be finalized and included as part of the Authorization to Construct (ATC) application package to be submitted at final design.

## **Task 5 – Final Design & Specifications Phase**

### ***60%, 90% and Final Design***

1. Prepare 60%, 90% and final design drawings and construction documents based on a **single** prime construction contract.
2. Complete final design and prepare bid and construction documents for a single prime construction contract. The final design documents will generally include the following:
  - Civil/Site for Plant
  - Mechanical
  - Electrical
  - Plant I&C
  - Structural
  - HVAC
  - Plan/Profile for Effluent Force Main

3. 60% and 90% Submittals: Prepare and submit drawings at completion stages for review by the County 60% and 90% stages.
4. Review Meetings: McKim & Creed will attend regular meetings with the County staff as needed during the final design effort to provide project status updates, review project documents and receive comments. In addition, we will schedule and participate in two formal Final Design review meetings with the County's project review team at the, 60%, and 90% stage of Final Design preparation.
5. Prepare Opinions of Probable Cost: Updated opinions of probable cost will be prepared for the project to be submitted at the 90% stage of design completion.
6. Prepare technical specifications: Technical specifications will be prepared for the construction contract. The document shall include a comprehensive table of contents followed by the 16-division technical specifications to be included in the Construction Documents.
7. Bidding & Contract Documents: Prepare appropriate bid and contract documents for the construction contract based on current Brunswick County standards and requirements.
8. Prepare "Released for Regulatory Review" drawings based upon County review comments from the 90% submission.
9. Engineer's Opinion of Probable Construction Cost: McKim & Creed will update the 90% Cost Opinion, if needed, to reflect the edits and/or comments from the County associated with the "Released for Regulatory Review" document set.
10. Engineer's Design Computations Manual: Design assumptions, computations, equipment selections, hydraulic capacity, process sizes, equipment requirements, and associated information will be prepared as part of the design and compiled into a three-ring binder titled "Design Manual" for submission to appropriate regulatory agencies during the permitting process.

### ***Project Meetings***

Periodic project meetings will be held at critical points during project design, but no less than at the 30, 60, and 90 percent completion levels. McKim & Creed will conduct 1-day workshops with County staff at the noted completion levels to provide detailed project review and obtain staff input on current design. Basic information to be provided at each completion level is outlined as follows:

#### ***30% Design Submittal***

- Preliminary design of component sizing
- Preliminary outline drawings
- Opinion of Probable Cost

#### *60% Design Submittal*

- Final component sizing
- Design drawings of major structures
- Preliminary technical specifications
- Preliminary drawing details

#### *90% Design Submittal*

- Design drawings for all project components
- Drawing details
- Technical Specifications
- Contract Documents
- Opinion of Probable Cost

### ***Quality Assurance and Quality Control***

The Consultant will include an in-house quality assurance/quality control (QA/QC-Value Engineering Review) review with staff members not involved in the project. The QA/QC review will be entirely separate from the normal in-house reviews conducted by the project team and the County's staff. The QA/QC review will be conducted after the 30, 60 and 90 percent design submittals and its findings presented to the design team along with comments from the County's 30, 60 and 90 percent design review.

### ***Design Phase Major Deliverables***

McKim & Creed will provide the following for the Design Phase scope of work:

1. On the basis of approved preliminary drawings and basis of design, prepare 100 percent final drawings indicating the scope, extent, and character of the work to be performed and furnished by contractor. Specifications will be prepared in general conformance with the 16-division format of the construction Specification Institute.
2. Prepare and furnish bidding documents for review and approval by OWNER, its legal counsel, and other advisors, as appropriate and assist OWNER in the preparation of other related documents. Note that preparation of the bidding documents are based on funding provided via Brunswick County and does not include provisions for outside funding agencies or sources. If other funding mechanisms are utilized, additional services will be required to incorporate the funding agencies requirements into the bid documents and obtaining funding approvals.
3. Submit three (3) final copies, one reproducible set, and electronic files of the bidding documents and a revised opinion of probable construction cost to OWNER.

## **Task 6 – Permitting Phase Services**

The Consultant will assist the County with obtaining all permits required for the project. The permits required for this project are anticipated to include the following.

- NPDES Permitting
- NCDOT Encroachment Agreement
- NCDOT Driveway Permit
- Brunswick County Planning and Zoning Review
- Brunswick County Fire Marshall Review
- Cursory Submittal to Brunswick County Inspections (prior to Bid)
- NCDEQ Soil & Erosion Control
- NCDEQ Stormwater
- US Army Corps of Engineers Nationwide 12/14
- CAMA
- Authorization to Construct

The Consultant will prepare the applications and following execution by Brunswick County, will submit the applications to the appropriate agency for approval. The Consultant will address comments from the agencies and assist the County with negotiations concerning permitting issues that may arise. Permit fees to be paid by McKim & Creed are detailed in Exhibit B.

Note that this scope of work assumes that the property is properly zoned for the intended use of a wastewater treatment plant and that review by Brunswick County Planning and Zoning is limited to the County's standard review process. Rezoning and/or subsequent additional planning and zoning review is not included in this scope of work.

## **Task 7 – Bidder Pre-Qualification Assistance**

McKim & Creed will assist the County in conducting a pre-qualification process for potential bidders in order to develop a list of qualified construction contractors for the project. The pre-qualification process will adhere to *"Brunswick County Utilities Policy on the Prequalification of Bidders for Construction and Repair Work"*. Specific tasks include the following:

1. Assist in the preparation of an Invitation to Prequalify and Bid advertisement for the project.
2. Review the list of pre-qualification standard requirements with County staff and incorporate suggested revisions to the list that may be beneficial to the proposed project
3. Schedule and conduct a pre-submittal meeting, receive questions from prospective attendees, prepare and distribute minutes.

4. Respond to bidder inquiries and prepare Addenda as required. Addenda shall be submitted in reproducible format to the agreed upon media outlets and all bidders to whom the pre-qualification package have been issued.
5. Review all bidder documentation and request clarifications to determine if bidder has met the requirements of the pre-qualification solicitation.
6. Review the list of proposed pre-qualified bidders with County staff and make any final edits and revisions to the pre-qualified list of bidders. McKim & Creed will work jointly with County staff to assist in developing the pre-qualified bidders list; however, the County shall be responsible for the final determination of which bidders will be deemed as pre-qualified. Note that assistance or responses to protests from prospective contractors is not included in this scope of work and is considered an additional service.

## **Task 8 – Bidding & Award Phase**

### ***Bid Document Administration***

The final contract documents (bid documents) will consist of the plans (drawings) and specifications for the expansion of the NE Brunswick Regional WWTP. The contract documents will be used by the contractor to prepare bids for the work detailed on the plans and described in the specifications. The final contract documents will include, if needed, such items as pre-purchased and/or pre-qualified equipment. Other tasks to be performed by the Consultant will include preparation of a final opinion of construction cost. The contract documents will include the following disciplines.

- Civil Site
- Structural
- Mechanical
- Environmental / Sanitary
- Electrical Power
- Electrical Controls / Instrumentation / SCADA

Our scope of work for Bid Phase services is premised on our understanding that McKim & Creed will be responsible for managing the bid and contracting process for one (1) construction contract. Our role in the bid phase will include working with the County Staff to assist with the pre-bid conference, preparation of pre-bid meeting minutes for distribution to bidders, responding to written questions from bidders, preparing written responses to bidder questions, assisting with bid evaluations, and working with County Staff to coordinate and conduct the bid opening. The documents for bidding will be provided to the County by McKim & Creed including necessary addenda.

Specifically Bid Phase tasks will include:

1. Provide necessary information to Brunswick County for the preparation of project bid advertisement.
2. Provide necessary information for the preparation of the bid package that will be utilized for bid solicitation.
3. Conduct the Pre-Bid meeting and issue minutes.
4. Assist in answering bidder's questions concerning elements designed by McKim & Creed and prepare technical information as necessary for inclusion in addenda if required.
5. Provide Brunswick County with written responses for publishing of addenda. All addenda will be published by the County.
6. Provide Brunswick County with one set of official, signed and sealed construction document sets for their file.
7. Attend and/or conduct the bid opening.
8. Review bid packages and prepare the certified bid tabulations.
9. Provide written letter of recommendation of award.
10. Compile contract documents for execution.
11. Provide for three (3) sets of documents for execution for the Owner, Engineer, and Contractor.

The Bid Phase will conclude upon Brunswick County's issuance of a notice of award to the selected construction contractor.

### **Task 9 – Construction Administration**

Our scope of work for Construction Administration services is premised on administering (1) construction contract over a 20-month consecutive construction period. The construction period is based on 18 months to reach substantial completion and an additional 2 months to reach final completion. If the contract duration extends beyond this construction period or is delayed, Engineer shall be entitled to adjustment of the scope and fee associated with this task.

Our construction administration services will include:

1. Conduct pre-construction meeting and issue minutes.
2. Schedule and hold regular monthly construction meetings with the owner and contractor. Prepare and distribute construction meeting minutes to document discussions and responsibilities.
3. Receive, log, track and perform shop drawing reviews. Compare shop drawings to the plans and technical specifications, note deficiencies or compliance issues, and issue comments to the contractor within 10 business days of receipt.

4. Receive, log, track, & respond to contractor's written requests for information or clarification of the contract documents.
5. Provide clarification of requirements as indicated on the construction plans and specifications if/when questions arise during construction.
6. Receive, log, track, & respond to notifications from contractor of changes to work conditions and requests for change orders.
7. Review materials testing for conformance to the specifications.
8. Receive, log, track, & review contractor's monthly invoices and make recommendations for payment.
9. Conduct site visits with County staff as often as necessary to review project status, and to confirm/certify that work is progressing in accordance with the approved construction documents.
10. Schedule and conduct the substantial completion evaluation. Prepare the substantial completion punchlist and submit for Owner concurrence, and work with the contractor to insure outstanding work is completed.
11. Upon satisfactory completion of the Substantial Completion punchlist and after reviewing test results from the Contractor, prepare the Engineer's Substantial Completion Certification.
12. Schedule and conduct the final completion evaluation. Prepare the final completion punchlist and work with the contractor to insure work is fully complete.
13. After the contractor has satisfactorily completed the final punchlist, submitted all test results, as-built redlined drawings, and release of waivers and claims, McKim & Creed will prepare the Engineer's Final Completion Certification.

*Construction Administration Services will also include the following:*

1. System Startup and Commissioning  
McKim & Creed will assist the Owner, in the startup, testing, and commissioning the new wastewater treatment facility. The Owner will be responsible for coordinating with the contractor and identifying deficiencies or corrective measures necessary to startup and operate the facility in accordance with the approved NPDES permit and contract Document. McKim & Creed will provide technical guidance and assistance to the County in support of the startup and commissioning process.
2. Record Drawings  
Our effort for Record Drawing preparation services is premised on the understanding that the contractor will be responsible for continuously maintaining red-lined "as-built" markups on the approved construction drawings. Final after construction surveys will be made for final horizontal and vertical elevation verifications of the completed project for the following items:

- Horizontal location of major plant structures
- Vertical location/elevation of top of wall at structures
- Vertical location of critical hydraulic components (weirs, overflows, etc.)

McKim & Creed will utilize the red-line markups provided by the contractor in conjunction with the after construction survey data noted above to prepare the final Record Drawings.

### 3. Limited Operations and Maintenance Manual Update

McKim & Creed will prepare a limited update to the current facility O&M manual to include compiling the vendor provided individual equipment O&M manuals and written description of new processes that differ from the current facility. This scope of work assumes that the proposed facility will be an expansion of the current oxidation ditch process, therefore, only basic edits to the existing O&M manual will be provided by McKim & Creed:

1. Update manual to include a brief description of new unit treatment processes
2. Update the manual for startup, shut down, or normal operational procedures specific to the new facility configuration.
3. Add a list of new vendor supplied O&M Manuals

## **Task 10 - PERIODIC CONSTRUCTION OBSERVATION**

McKim & Creed will provide periodic field observation during construction. Note that Brunswick County personnel will be responsible for all day-to-day construction observation, reports, inspections, punch-lists, and identification of corrective actions for compliance with contract documents for all project components. This project scope assumes that Brunswick County will provide a full-time construction observer qualified and experienced in municipal treatment plant construction.

McKim & Creed's efforts will be minimal and only as required for certification to regulatory agencies and will be based upon field observation of constructed components by County personnel. This scope of work is based on an average of 16 hours per week and a construction timeline of 20 consecutive months. If the contract duration extends beyond this construction period or is delayed, Engineer shall be entitled to adjustment of the scope and fee associated with this task.

## **Task 10A - CONSTRUCTION PHASE SERVICES CONTINGENCY**

Task 10A is included as a contingency for construction observation services. As outlined in Task 10 of this proposal, McKim & Creed's construction observation services will be limited as the County will provide primary construction observation for the duration of the project. Should additional services be required of McKim & Creed during the construction phase, Task



10A may be authorized by the County to engage McKim & Creed's construction observer in addition to those services included in Task 10. McKim & Creed will not utilize or expend effort on Task 10A without prior written authorization of Brunswick County.

### **Task 11 – Post Construction Phase Services**

#### One Year Assistance

M&C will assist the County with operational and warranty assistance on fixed fee basis as may be needed. Generally the services will be as follow:

1. Provide for a mid-year warranty inspection with the Operators and the Contractor to develop a warranty punchlist and then review the completed work of the Contractor to verify items have been corrected.
2. Provide for final warranty inspection with the Operators and the Contractor at 11 months after substantial certification to develop a warranty punchlist and then review the completed work of the Contractor to verify items have been corrected.
3. Provide process support assistance and associated administrative support to assist with operational questions and optimization of the plant process.

### **Task 12 – Special Services**

#### Special Inspections

McKim & Creed will provide for Special Inspections as will be required by the County's Inspection Department. As such, monthly summary reports will be reviewed and prepared summarizing the construction activities pertaining to special inspection requirements for the identified structures and buildings that address the following:

- a. Soils and foundations
- b. Cast-in-place concrete
- c. Precast concrete
- d. Structural steel

The monthly summary reports will be filed to the attention of the Inspections Department with a copy filed to Brunswick County. If any special inspections are required for field welding and field bolted connections that require specialized testing such as ultrasonic testing, bolt torque, etc. these will be provided as additional services with the assistance of our geotechnical sub-consultant. It is recommended that if these services are determined as required during design that the unallocated budget noted in Task 14 be utilized to address the additional costs.

### **Task 13 – Unit Price Services**

Task 13 includes Unit Price based services for the following tasks (which are in addition to the quantities included in the Task 4 written description and fixed fee):

<b>Unit Price Service</b>	<b>Estimated Quantity</b>
SUE Level “A” Investigations	Ten (10)

Refer to Exhibit “B” for a unit price breakdown for each of these services.

### **III. ADDITIONAL SERVICES**

Additional professional services can be provided (within the qualifications of the Engineer and associate firms) upon request by the County, or upon authorization by the County following recommendation of the Engineer. These services shall include but not limited to the follow:

1. Expert witness or technical support concerning property surveying or engineering matters for which the Engineer has no direct liability.
2. Preparation of plats or designs for rezoning purposes.
3. It is noted that the County received a speculative limits response from NCDWR in 2009 for the proposed 4.975 MGD capacity of the facility. Consultations with DWR yielded that this response was sufficient for this expansion and that a new speculative limits request was not necessary. Therefore, preparation of a speculative limits letter request is not included in this scope of work.
4. Modeling of the Cape Fear River for evaluation or justification of the increased NPDES discharge capacity.
5. Design of an additional river outfall or diffuser.
6. Testing for soil or groundwater contamination.
7. Assistance or evaluations associated with sole-source procurement of equipment
8. Assistance with protests by prospective bidders associated with the County’s pre-qualification process.
9. Easement mapping or easement surveys.
10. Providing for additional soil borings or geotechnical analyses beyond the identified scope of work.
11. Providing for an environmental impact statement (EIS).

12. Providing for detailed investigations and/or surveys for archaeological sites, protected/threatened/endangered species of shellfish, fish, wildlife and natural vegetation.
13. Providing for Phase 1 or Phase 2 Environmental Site Assessment for the project area.
14. Providing for determining, evaluating and assistance with contaminated soils for the project area.
15. Providing assistance for wetland mitigation.
16. Providing for assistance with easement acquisitions.
17. Preparing for, coordinating with, participating in and responding to structured independent review processes for construction management, cost estimating, value engineering and constructability reviews requested by the County and performing of furnishing services required to revise studies, reports, drawings, specifications, or other bidding documents as a result of such review processes.
18. Providing for SCADA integration for the new wastewater treatment facility to County's overall county-wide SCADA.
19. Providing for the design of an administration building or maintenance building for the wastewater treatment facilities.
20. Providing for design of any pretreatment or collection system
21. Providing for any re-designs requested by the County after final design drawings have been approved.
22. Surveys to locate and delineate the 100 year flood plain.
23. Boundary or easement surveys for the wastewater plant site
24. Construction survey and staking.
25. Preparing for multi-prime contracts and bidding.
26. Providing for funding assistance for grant or loan applications that the County may decide to seek funding.
27. Development of design or bid documents to comply with alternate funding agencies or other funding mechanisms.
28. Providing for a detailed Operation & Maintenance Manual above and beyond what is detailed and outlined in this proposal
29. Providing for assistance for specialized special inspections services like ultrasonic weld testing.
30. Providing for a hydrogeological site evaluation
31. Operator training on equipment, processes, or other miscellaneous training related to the existing or proposed facilities.

#### **IV. COUNTY RESPONSIBILITIES**

The following items shall be the responsibility of the County:

1. Provide Engineer with all criteria and full information as to County's requirements for the Project, including design objectives and constraints, space, capacity and performance requirements, flexibility and expandability, and any budgetary

limitations; and furnish copies of all design and construction standards which County will require to be included in the Drawings and Specifications; and furnish copies of County's standard forms, conditions and related documents for Engineer to include in the Bidding Documents, when applicable.

2. The County shall obtain and make available to the Engineer a complete wastewater characterization for wastewater influent to the existing WWTP.
3. The timely provision of all available information, data, reports, records, and maps to which the County has access and which are needed by the Engineer for the performance of the services provided herein.
4. Providing assistance and cooperation for the Engineer in obtaining any other needed material which the County does not have in its possession.
5. Making available the services of the County as may be necessary to obtain information as needed to perform the work program set forth in the Scope of Services.
6. The designation of a single representative who will be authorized to make necessary decisions required on behalf of the County and will serve to provide the necessary direction and coordination for the project.
  - County's Representative – John Nichols, PE, Director
  - Engineer's Representative – Tony Boahn, PE, Vice-President
7. Advise Engineer of the identity and scope of services of any independent consultants employed by County to perform or furnish services in regard to the Project, including, but not limited to, cost estimating, project peer review, value engineering and constructability review.
8. Attend the pre-bid conference, bid opening, pre-construction conferences, construction progress and other job related meetings and Substantial Completion, Final Completion, and warranty inspections.
9. The County shall provide for mailing any required certified notification letters to the property owners, including the mailing costs, for notification for access to perform the scope of services.
10. The County shall pay for all costs of publishing the Advertisement for Bid.
11. The County shall provide for acquisition of all fee simple properties and easements for the project.

12. The County shall pay for all recording fees for fee simple properties and easements.

## **V. MISCELLANEOUS PROVISIONS**

1. Opinion of Probable Construction Costs: Engineer's opinion of probable construction costs is based on assumed labor costs and approximate quantities of material and equipment, and therefore is of a conditional character. Engineer cannot and does not guarantee the cost of work to be performed by others since market or bidding conditions can change at any time and changes in the scope or quality of the project may affect estimates. County waives and releases Engineer from any loss, liability, or claim arising out of or in any way related to Engineer's opinion of probable construction costs.
2. Applicable hourly rates are subject to change or adjustment on January 1<sup>st</sup> of each calendar year.
3. Fixed fee tasks are predicated on the project proceeding in accordance with the indicated schedule. Should delays or suspension of activity in excess of 90 days occur, the remaining fee balances will be subject to an equitable adjustment equivalent to the increase in the ENR Construction Cost Index over the period corresponding to the suspension of activity.

## **VI. ANTICIPATED PROJECT SCHEDULE**

The following schedule is proposed for the Scope of Services described above, with the assumption of an Authorization to Proceed date of APRIL 17, 2018 and provides for an 18-month construction schedule and additional 2-months to achieve final completion.

Task	Anticipated Start Date	Anticipated Completion Date	Approximate Duration	Remarks
Notice to Proceed	4/17/2018	N/A	N/A	
SEPA/EA Preparation for Clearinghouse Review	4/2018	6/2018	2.5 Months	
Engineering Alternatives Analysis	4/2018	6/2018	2.5 Months	Concurrent with SEPA Preparation
Submit EA Review & Obtain FONSI	7/2018	12/2018	6 Months	FONSI Approval 5-9 Months per NCDEQ Guidelines
Preliminary Design	4/2018	10/2018	6 Months	Concurrent with SEPA EA and EAA Preparation
90% Design	10/2018	2/2019	4 Months	Concurrent with SEPA EA and EAA Review by DEQ
Submit NPDES Permit (after FONSI is approved)	12/2018	6/2019	6 Months	NPDES Permit Approval 6 Months per NCDEQ Guidelines
Submit Plans for ATC Permit	6/2019	9/2019	3 Months	ATC Approval 3 Months per NCDEQ Guidelines
Bid Phase	10/2019	12/2019	2.5 Months	Advertise, Open Bids, Notice of Award
Construction Phase	1/2020	8/2021	20 Months	18 Months Substantial/2 Months Final

- 1) *The proposed schedule assumes concurrent design with preparation of the SEPA and EAA documents as well as submittal of the NDPES permit application. The scope of work is based upon a design that meets the current facility NDPES permit parameters. Revisions to the current permit parameters could necessitate additional services for design modifications to comply with the revised parameters.*
- 2) *Note the schedule provided is approximate and may vary depending upon Owner review and regulatory approval. It is noted that NPDES permitting guidelines indicated 3 months for approval of the NPDES permit, however, review times are not guaranteed and may extend beyond the published guideline timelines.*

## **SCHEDULE II**

### **NORTHEAST BRUNSWICK REGIONAL FORCE MAIN OFF-SITE TRANSMISSION IMPROVEMENTS**

#### **I. PROJECT DESCRIPTION**

The following presents the scope of work to provide professional engineering services for transmission force main improvements to the County's Northeast Brunswick Regional Wastewater System. The proposed improvements will expand the capacity of the current regional wastewater transmission system to a total capacity of 4.125 MGD. Generally, the scope of work will include the following:

- Phase II – 11,000 linear feet of parallel 18-inch sewer force main

McKim & Creed, Inc. will provide the following major services for expansion of the off-site transmission system:

- Preliminary Route Evaluation
- Design Services
- Survey Services (design & easement surveying)
- Geotechnical Investigations
- Wetlands Delineation
- Permitting Services
- Bid & Award Services
- Limited Construction Administration and Construction Observation Services

**Figure C** is included with this document and provides a schematic of the proposed transmission force main routes and is the general basis for the scope of work described herein. Based on these parameters, our detailed scope of work is provided as follows:

#### **II. SCOPE OF SERVICES**

##### **TASK 1 – INITIAL ACTIVITIES**

The preliminary design phase will include review of existing conditions, data, and alternatives for force main routing. Specific tasks include:

- Conduct project Kick-off meeting with Brunswick County Staff.
- Obtain record (as-built) drawings of the existing force mains and water mains that may impact the proposed transmission main routes.
- Request NCDOT right of way mapping from NCDOT (if available) for NCDOT rights of way within the project route area.
- Obtain copies of current permits for existing force mains and water mains that may be impacted by the proposed project.
- Obtain copies of rail road licensing agreements for existing force mains in the project area.

## **TASK 2 – PRELIMINARY ROUTING EVALUATION & NCDOT PERMIT APPROACH**

### Preliminary Routing Evaluation Tasks

- Compile and research data on existing utilities, and record drawings. Upon determination of existing utility locations, identify areas of potential or significant conflicts.
- Perform field reconnaissance of the proposed routes. Review existing utilities in the right of way to include underground and overhead cables as well as existing storm drain, fences and other miscellaneous site features.
- Evaluate rights-of-way of to determine a cost effective and advantageous route for the proposed force mains.
- Review the existing CSX railroad right of way licensing agreement and evaluate a potential parallelism for the Phase IA parallel force main in this right of way. Identify potential permitting and approval requirements based for installation in the CSX right of way.
- Identify areas that may require alternative means of construction including bore & jack and directional drilling.
- Identify potential construction challenges such as permitting requirements, roadway impacts, traffic impacts, disruption of service, or other impacts that may result from construction of the proposed force main mains.
- Identify areas where potential easements may be required for the proposed force main routes.



- Provide final recommended routes for the proposed force mains and meet with Brunswick County staff for review, comments and concurrence on recommended routes.
- The final route recommendations will be depicted in graphical format with a brief summary of advantages and disadvantages.

#### Preliminary NCDOT Controlled Access & Secondary Road Encroachment Permit Approach

In order to expedite approval for installation of the force main within NCDOT rights-of-way, McKim & Creed will prepare exhibit maps of proposed routes and meet with NCDOT to determine permitting requirements. Upon concurrence of NCDOT, a final alignment will be developed in this area and incorporated as part of the overall project design.

### **TASK 3 – PRELIMINARY DESIGN**

#### Preliminary Survey Tasks

Survey work will be performed to the Standards of Practice for Land Surveying in North Carolina. Horizontal survey control will be referenced to NC Grid NAD 83 or otherwise specified. Vertical control will be referenced to NAVD88 or otherwise specified. General topography for the force main routes will be collected utilizing conventional survey methods and will provide 1-foot contour interval accuracy. Survey data will be collected on the designated side of the road right of way or easement as determined by the routing evaluations noted in Task 2 of this proposal. A full comprehensive survey of the road right of way is not included in this scope of work. In addition to the route topography the following specific areas will be surveyed for design purposes:

- NCDOT roadway crossings
- Water bodies and wetlands crossings
- A single, perpendicular Rail Road crossing
- Establishing temporary bench marks for horizontal and vertical control
- Miscellaneous surveys for detailed design purposes.

#### Preliminary Design Tasks and Deliverables

- Preliminary design deliverables will include 30% design drawings for submittal to Brunswick County.
- The 30% design drawings will include horizontal survey information and horizontal route for the proposed force mains based on the aerial Lidar. Profiles will not be included as part of the 30% design drawings.

- Potential easements will be identified for the force main routes.
- Technical specifications will not be included as part of the 30% design drawings.
- 30% design drawings will be submitted to Brunswick County for review and comment.
- Meet with Brunswick County staff to review recommendations and obtain comments. Incorporate County staff comments as required.

#### **TASK 4 – FINAL DESIGN**

Upon completion of *Task 3 - Preliminary Design*, the final design phase will be accomplished. It is anticipated that final design will include a 90% and a final submittal to Brunswick County staff. Specific tasks for final design include:

##### Force Main Design

- Perform wetlands delineation for pipeline route. Survey wetlands and prepare mapping for submittal to the US Army Corps of Engineers.
- Perform Quality Level B SUE along NCDOT rights of way. Quality Level B services include the horizontal detection, marking and mapping of non-gravity facilities. Utilities are identified and marked in the field in order to be surveyed and mapped. The scope of work is based on providing Quality Level B services on one-half of the existing NCDOT rights of way identified in the preliminary design phase for proposed force main route.
- Identify strategic areas where an exploratory vacuum extraction investigation utilizing Subsurface Utility Engineering (SUE) would be beneficial. Upon County concurrence, SUE would be conducted at the selected locations. For the purposes of this scope of work, twenty (20) vacuum extraction locations are included as part of the final design phase scope and fee. Note that Brunswick County will field mark and locate Brunswick County existing utilities for the force main route.
- Identify areas where installation of the force main via directional drilling will be required. Directional drills will be designed with a valve at each end of the drills for testing and isolation purposes. Conduct two (2) geotechnical bores at each directional drill location. For the purposes of this scope of work, two (2) creek crossings are included and one (1) perpendicular crossing of the CSX Railroad. Therefore, a total of six (6) geotechnical bores are included as part of the final design phase scope and fee. McKim & Creed will consult with manufacturers of HDPE and Fusible PVC for design of all directional drills to determine if drill geometry is compatible with materials proposed. The project will be designed with Fusible PVC as the base bid for directional drills and an alternate bid for HDPE in lieu of Fusible PVC.
- Identify utility easements required for the proposed force mains. Prepare easement mapping for Brunswick County acquisition of easements. For the purposes of this scope

of work the preparation of ten (10) easements are included as part of the final design phase scope and fee. Prepare 90% and final design documents and specifications for compliance with current Brunswick County standards. Corresponding profiles will be developed for the pipeline route. Construction plans will be prepared at 1" = 50' scale (horizontal) and 1" = 5' (vertical) on 22" x 34" media. LIDAR data will be used for plan and profile documents.

- Prepare 90% and final technical specifications based on current level of project design.
- Incorporate Brunswick County "front-end" documents as part of 90%, and final technical specifications. Review County supplied front-end documents and edit McKim & Creed technical specifications for consistency and conformance. Note that Brunswick County technical specifications and standard details will be utilized and incorporated where applicable.
- Compile quantity take-off and prepare construction cost estimate of the approved final design submittal.

#### Final Design Deliverables and Tasks

- Final design deliverables will include 90% and final design documents for submittal to Brunswick County.
- Final easement mapping for easements or land acquisition.
- Meet with Brunswick County staff to review recommendations and obtain comments. Incorporate comments as required within the scope of the project.

It is noted that scope of work outlined in Task 4 is contingent upon NCDOT approval of installation within the right of way. If alternate routes are required, an amendment may be required to address the revised route(s).

#### **TASK 5 – PERMITTING**

McKim & Creed will prepare and submit the following permits (as applicable) for the project:

- NCDOT Standard Right of Way Encroachment Permit
- NCDEQ – Fast Track Sewer Permit
- NCDEQ Land Quality Section – Erosion and Sedimentation Control Permit.
- NCDEQ Storm Water Management – Storm Water Management permit (exemption anticipated)
- CSX Railroad License Encroachment Agreement
- US Army Corps of Engineers – Wetlands Permit
- CAMA Permit (minor permit anticipated)
- NCDEQ Division of Water Quality – Wetlands Permit
- Duke Energy – Power Line Transmission Crossing
- Brunswick County Planning and Zoning Review

- Brunswick County Fire Marshall Review

The following assumptions and provisions are provided with respect to permit submittals:

- 1) The cost of permits for the permits listed above will be included as an allowance in the scope and fee provided in Exhibit B of this proposal. Based on preliminary review of the site, a CAMA Major permit is not anticipated and not included in this scope of work.
- 2) A Nationwide 12 permit for "Open-Cut" of wetlands will be submitted where applicable in lieu of utilizing directional drill to avoid wetland impacts.
- 3) The NCDOT encroachment permit and other permits (as applicable) may be submitted prior to final design with Brunswick County concurrence to expedite the project schedule.
- 4) The CSX Railroad permit is based upon a single, perpendicular crossing and does not include design or permitting for a parallelism of the CSX right of way. Permit fees shown in Exhibit B are based upon the current CSX fee structure for a perpendicular crossing. Note that the cost of the permits does not include licensing or lease fees associated with railroad encroachments.

#### **TASK 6 – BID AND AWARD**

- The Contract Documents will be configured as a Lump Sum, single prime bid with unit price items.
- Prepare and furnish Bidding Documents for review and approval by Owner and its legal counsel, as appropriate.
- Bid Notice shall be included in one (1) advertisement.
- Provide three sets of reproducible plans and specifications to the Owner for on-site Contractor review purposes.
- Issue Bidding Documents to prospective Bidders. Maintain a record of prospective bidders to whom Bidding Documents have been issued.
- Respond to bidder inquiries and prepare Addenda as required. Addenda shall be submitted in reproducible format to the local Dodge and AGC plan rooms as indicated in the standard advertisement.
- Provide PDF copies via email of Addenda to plan holders.
- Schedule and conduct pre-bid meeting.
- Schedule and conduct bid opening.

- Review and tabulate bids, summarizing all Contractors' bids on each bid item using Excel spreadsheet. Deliver to the Owner in Microsoft Excel format.
- Provide Recommendation of Award letter to Brunswick County.

#### **TASK 7 – CONSTRUCTION ADMINISTRATION**

- Schedule and conduct pre-construction conference. Prepare and distribute minutes.
- Schedule and conduct progress meetings on a monthly basis. Prepare and distribute minutes.
- Review and approve shop drawings from contractor.
- Endeavor to resolve problems in a timely manner as work proceeds and involve appropriate parties in resolving disputes and problems associated with the project.
- Pay request review and recommendation for payment to Owner with respect to format, required support documentation, and mathematical computations of pay requests. Verification of field installed quantities is not included and shall be the responsibility of Brunswick County.
- Change Order review and recommendation to Owner.

#### **TASK 8 – PERIODIC CONSTRUCTION OBSERVATION**

McKim & Creed will provide periodic field observation during construction. Note that Brunswick County personnel will be responsible for all day-to-day construction observation, reports, inspections, punch-lists, and identification of corrective actions for compliance with contract documents for all project components. This project scope assumes that Brunswick County will provide a construction observer qualified and experienced in municipal utility pipeline construction.

McKim & Creed's efforts will be minimal and only as required for certification to regulatory agencies and will be based upon field observation of constructed components by County personnel. This scope of work is based upon a construction timeline of 20 consecutive calendar weeks. If the contract duration extends beyond this construction period or is delayed, Engineer shall be entitled to adjustment of the scope and fee associated with this task.

#### **TASK 9 – PROJECT CLOSEOUT**

- Perform field observations of project at Substantial and Final Completion. Prepare punch-list and coordinate completion of punch-list items with contractor.
- Prepare construction record drawings in AutoCAD Format and provide mylars with electronic files on CD (AutoCAD format) to Brunswick County.

- Provide engineer dependent close-out documents to Brunswick County
- Certify completion of project to NCDEQ for Sewer Fast Track Permitting

### **TASK 10 – UNIT PRICE SERVICES**

Task 10 includes Unit Price based services for the following tasks (which are in addition to the quantities included in the Task 4 written description and fixed fee):

- SUE Vacuum Hole Verification – includes five (5) vacuum verification locations.
- Geotechnical Soils Investigation – includes two (2) soil borings. Geotechnical Report will include recommendations for sheeting/shoring required for potential bore & jack encasement pipe locations and/or horizontal directional drill locations.
- Easement Survey & Mapping – includes five (5) utility easements

Refer to Exhibit “B” for a unit price breakdown for each of these services.

### **III. Anticipated Schedule**

Upon executed Authorization to Proceed, we will complete the proposed Scope of Work as follows, assuming a Notice to Proceed date of April 17, 2018. Note that the schedule provided below is based on a standard design, bid, and build process.

<b>Task</b>	<b>Anticipate Start Date</b>	<b>Anticipated Completion Date</b>	<b>Anticipated Duration (Calendar Days)</b>
Notice to Proceed	4/17/2018	N/A	0
Prepare & Submit Preliminary Route to NCDOT	4/17/2018	6/1/2018	45
30% Design Submittal	5/17/2018	7/17/2017	60
Brunswick County Review	7/1/2018	7/16/2018	15
60% Design Submittal	7/15/2018	9/15/2018	60
Brunswick County Review	9/15/2018	9/30/2018	15
Final Design Submit for Permits	9/30/2018	11/15/2018	45
Anticipated Permit Approval	11/15/2018	3/15/2019	120
Advertise for Bids	4/1/2019	5/1/2019	0
Open Bids	5/1/2019	5/1/2019	30
Contract/Bonds Preparation/NTP	5/1/2019	6/15/2019	45
Construction	7/1/2019	12/5/2019	140

- 1) *Note the schedule provided is approximate and may vary depending upon Owner review and regulatory approval.*

### **V. Project Assumptions and Owner Responsibilities**

The following represents assumptions for the project and Owner responsibilities which shall be incorporated as part of this proposed scope of work:

1. All communication and correspondence for this project will be through Brunswick County, who may be referred to in this proposal as "Owner."
2. Owner shall provide for all additional construction observation services and construction administration services not specifically detailed in the scope of work.
3. Owner shall provide full, unconditional and unlimited access to property without additional permit or access agreements, for the purposes of site investigations.
4. The Owner will provide copies of all documents, tests, reports, modeling, or other miscellaneous information as required to facilitate completion of the project scope.
5. McKim & Creed will utilize Brunswick County "front- end" specifications and will supply additional technical specifications as required to fit the project scope. Review for conformity and conflicts between County documents and McKim & Creed documents are included as part of this proposed scope of work.
6. McKim & Creed will utilize Brunswick County standard details (as available) and will supplement those details with McKim & Creed generated details as required for the project scope as outline in this proposal.
7. The existing force mains that will be connected to or impacted by the proposed project are assumed to be correctly installed, free of defects, and able to operate at the manufacturers recommended specifications.

## **VI. Additional Services (Not Included)**

The Professional Services stated herein above do not include the costs of (but can be provided if requested at a negotiated scope and fee):

- CAMA Major Permitting.
- Licensing or lease fees associated with railroad encroachments
- Condition assessment of existing mains and appurtenances.
- NCDOT Right of Way Mapping or detailed research to verify existing rights of way along NCDOT routes.
- Testing for soil or groundwater contamination.
- Court appearances for expert witness.
- Design of demolition or abandonment of existing pump stations.
- Off-site drainage improvements.
- Environmental Assessments, Environmental Impact Statements or biological surveys for endangered species.
- Redesigns of facilities after approval of final plans; or
- Court appearances for litigation, or preparation for the same

- CSX or other railroad lease or licensing fees.

**END OF EXHIBIT "A"**



# EXHIBIT "B" - FEE COMPENSATION

## Northeast Brunswick Regional Wastewater System

(McKim & Creed Proposal No. 170622)

McKim & Creed, Inc. will perform the services outlined in Exhibit "A" as indicated below:

### **SCHEDULE I - NORTHEAST BRUNSWICK REGIONAL WASTEWATER TREATMENT PLANT EXPANSION**

<b>Item</b>	<b>Fee</b>	<b>Fee Type</b>
Task 1: Planning Charrette & Basis of Design	\$15,000	Fixed Fee
Task 2: Engineering Alternatives Analysis (EAA)	\$40,000	Fixed Fee
Task 3: SEPA Document (EA)	\$35,000	Fixed Fee
Task 4: Preliminary Design Phase	\$260,000	Fixed Fee
Task 5: Final Design & Specifications Phase	\$560,000	Fixed Fee
Task 6: Permitting Phase ( <i>Permit fees included as noted below</i> )	\$40,000	Fixed Fee
Task 7: Bidder Pre-Qualification Phase	\$9,500	Fixed Fee
Task 8: Bidding & Award Phase	\$65,000	Fixed Fee
Task 9: Construction Administration	\$475,000	Fixed Fee
Task 10: Periodic Construction Observation	\$140,000	Fixed Fee
Task 10A: Construction Phase Services Contingency	\$40,000	Contingency
Task 11: Post Construction Phase Services	\$20,000	Fixed Fee
Task 12: Special Services	\$35,000	Fixed Fee
Task 13: Unit Price Services ( <i>See breakdown below</i> )	\$10,000	Unit Price
<b>Total Estimated Fee (Tasks 1-13)</b>	<b>\$1,744,500</b>	

#### **Task 6 – Permit Application Fee Breakdown**

Task 6 includes an allowance for estimated permit and regulatory agency fees as follows:

• NPDES Major Permit Modification	\$1,030
• NCDEQ Public Water Supply (on-site potable)	\$200
• NCDEQ Storm Water Permit	\$505
• NCDEQ Erosion Control Permit (10 acres estimated)	\$595
• <u>NCDEQ 404 Water Quality Certification</u>	<u>\$570</u>
<b>Total Estimated Permit Fee Allowance</b>	<b>\$3,000</b>

#### **Task 13 – Unit Price Services Breakdown**

<b>Unit Price Service</b>	<b>Unit Price Fee</b>	<b>Estimated Quantity</b>	<b>Total Fee Estimate</b>
SUE Level "A" Investigations	\$1,000 Each	Ten (10)	\$10,000
<b>Total Estimated Unit Price Services Fee</b>			<b>\$10,000</b>

*Note: Task 13 services are in addition to the SUE Level "A" Services identified in Exhibit A, Schedule I, Task 4. Task 13 services will only be utilized at the authorization and approval of Brunswick County*

## **SCHEDULE II**

### **NORTHEAST BRUNSWICK REGIONAL FORCE MAIN OFF-SITE TRANSMISSION IMPROVEMENTS**

<b>Item</b>	<b>Fee</b>	<b>Fee Type</b>
Task 1: Initial Activities	\$2,400	Fixed Fee
Task 2: Preliminary Routing Evaluation & NCDOT Approach	\$7,300	Fixed Fee
Task 3: Preliminary Design	\$69,000	Fixed Fee
Task 4: Final Design	\$41,100	Fixed Fee
Task 5: Permitting Phase ( <i>Permit fees included as noted below</i> )	\$22,100	Fixed Fee
Task 6: Bid & Award Phase	\$9,400	Fixed Fee
Task 7: Construction Administration	\$20,400	Fixed Fee
Task 8: Periodic Construction Observation	\$14,300	Fixed Fee
Task 9: Project Closeout	\$7,600	Fixed Fee
Task 10: Unit Price Services	\$12,750	Hourly NTE
<b>Total Estimated Fee (Tasks 1-10)</b>	<b>\$206,350</b>	

#### **Task 5 – Permit Application Fee Breakdown**

Task 5 includes an allowance for estimated permit and regulatory agency fees as follows:

• NCDEQ Fast Track Sewer Permit	\$480
• CSX Railroad Permit Review Fees	\$5,000
• NCDEQ Storm Water Permit	\$505
• NCDEQ Erosion Control Permit (27 acres estimated)	\$1,755
• NCDEQ 404 Water Quality Certification	\$570
<b>Total Estimated Permit Fees</b>	<b>\$8,310</b>

#### **Task 10 – Unit Price Services Breakdown**

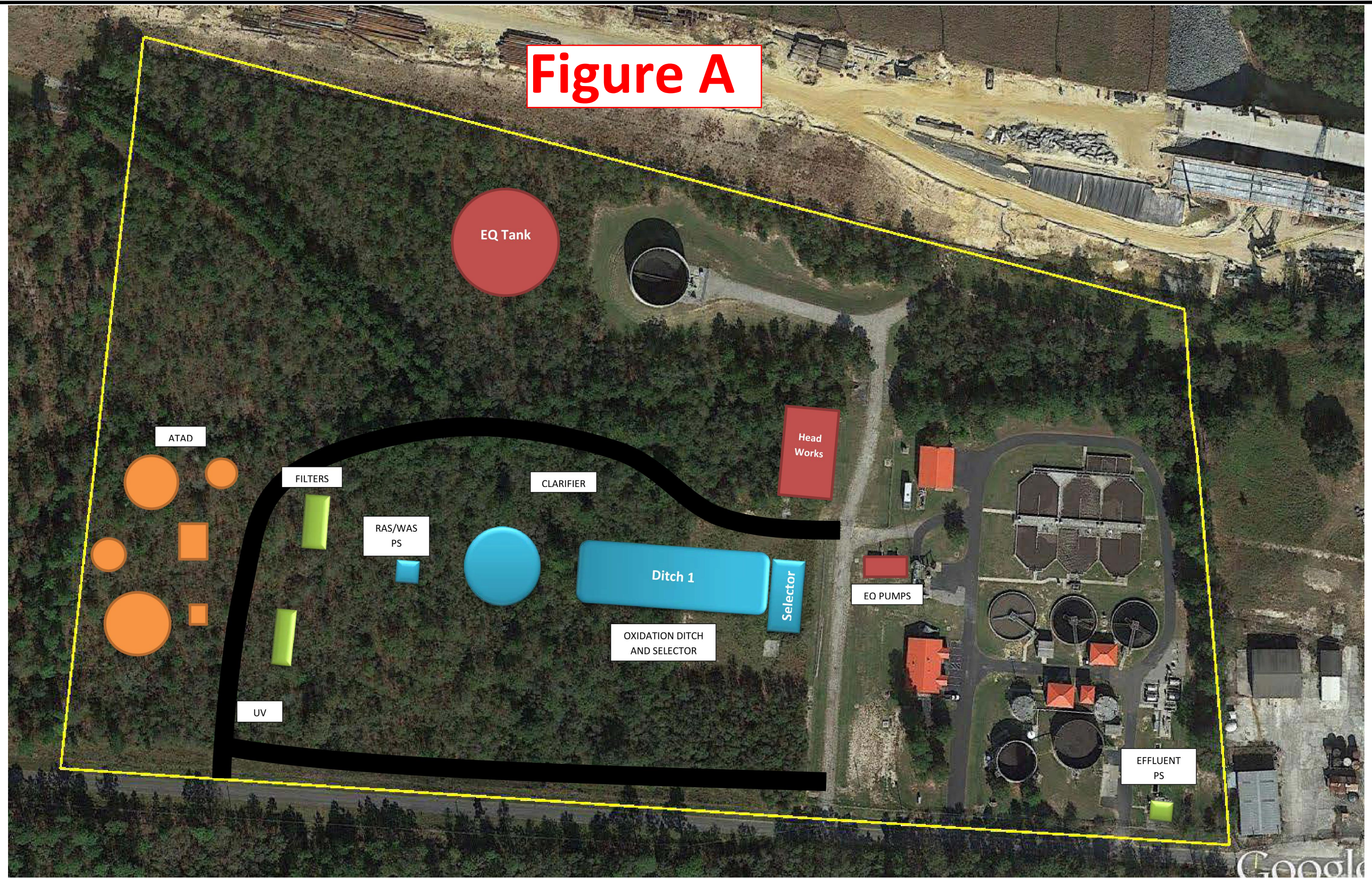
<b>Unit Price Service</b>	<b>Unit Price Fee</b>	<b>Estimated Quantity</b>	<b>Total Fee Estimate</b>
Geotechnical Soil Investigations	\$2,000/Each	Two (2)	\$4,000
Easement Survey & Mapping	\$750/Each	Five (5)	\$3,750
SUE Level “A” Investigations	\$1,000 Each	Five (5)	\$5,000
<b>Total Estimated Unit Price Services Fee</b>			<b>\$12,750</b>

*Note: Task 10 services are in addition to the Geotechnical, Easement Survey & Mapping, and SUE Level “A” services identified in Exhibit A, Schedule II, Task 4. Task 10 services will only be utilized at the authorization and approval of Brunswick County*

**END OF EXHIBIT “B”**



Figure A





3'-10"

12x12 PRESTRESSED CONC. PILE  
MIN. EMBED=20'-0"

30"Ø HDPE PIPE

PROVIDE (2) 1/2"x6" WIDE PIPE STRAPES

3/4"Ø BOLT W/ DBL. NUTS EACH LEG

1/4 2" MIN.

3/8" GUSSET

L6X4X $\frac{3}{8}$ X18" LLV

(2) 3/4"Ø BOLTS W/ DBL. NUTS

(2) L6X4X $\frac{3}{8}$ X18" LLV

1/4

1

(2) L6X4X $\frac{3}{8}$ X18" LLV

L6X4X $\frac{3}{8}$ X18" LLV

(2) 3/4"Ø BOLTS W/ DBL. NUTS

NOTES:

1. ALL ANGLES, STRAPS, NUTS, BOLTS PLATES SHALL BE 316 STAINLESS PER ASTM. A276
2. ALL WELDS SHALL BE IN ACCORDANCE W/ AWS D1.6 STRUCTURAL WELDING CODE : STAINLESS

W.K. DICKSON & CO. INC.  
WILMINGTON N.C.

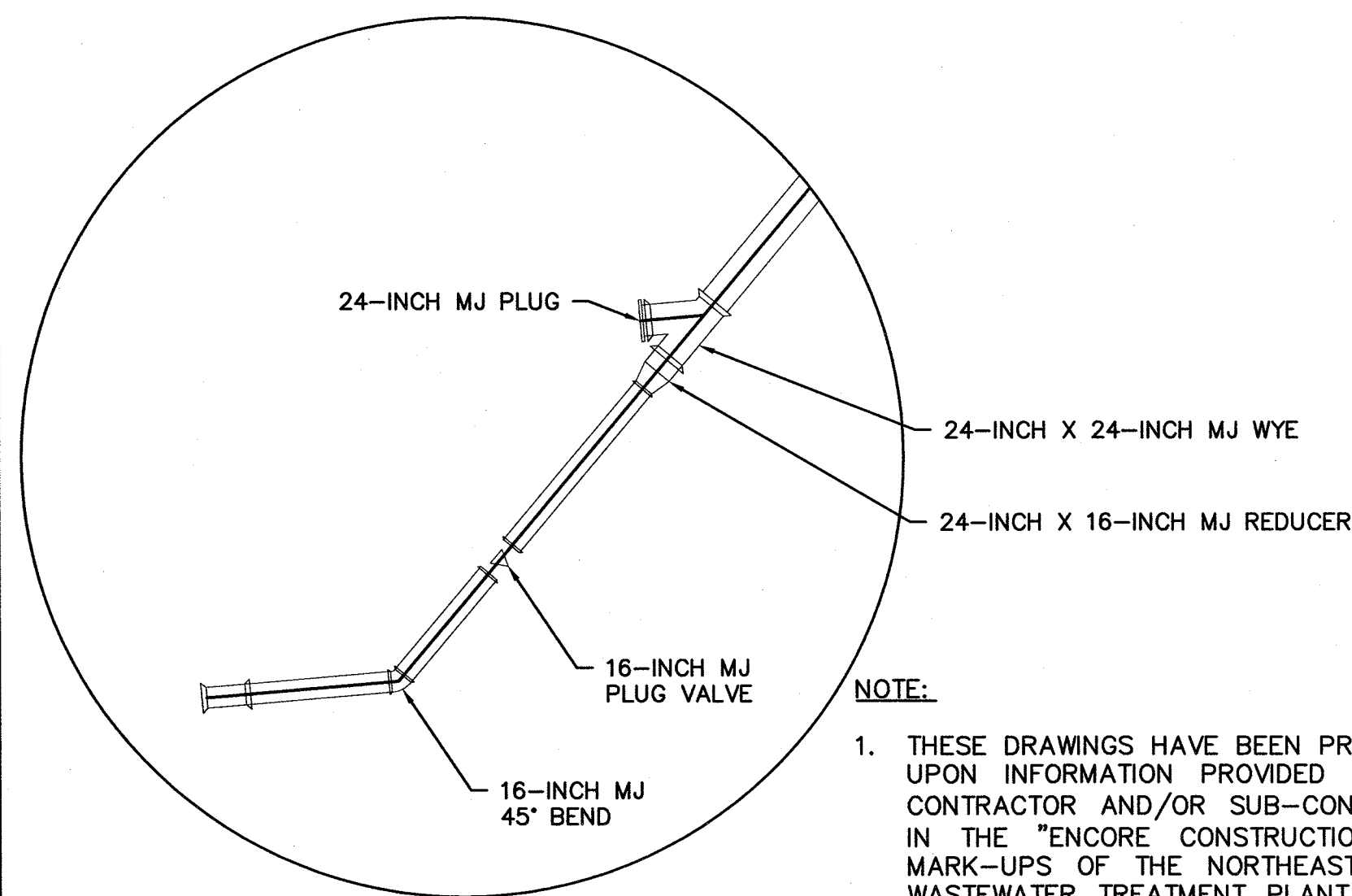
NEB WWTP OUTFALL  
OUTFALL PIPE SUPPORT DETAIL

CRISER TROUTMAN TANNER  
CONSULTING ENGINEERS  
3809 Peachtree Ave., Suite 102  
Wilmington, NC 28403  
910.397.2929 Ph.  
910.397.2974 Fax  
Email: ct@ctengneering.com

DESIGNER: MFW DATE: 1.11.12  
DRAWN: EAW JOB NO: 67605.00  
CHECKED: SK1

1. SUPPORT WAS ROTATED 180° AND PIPE HANGS FROM SUPPORTS.

NOT TO SCALE



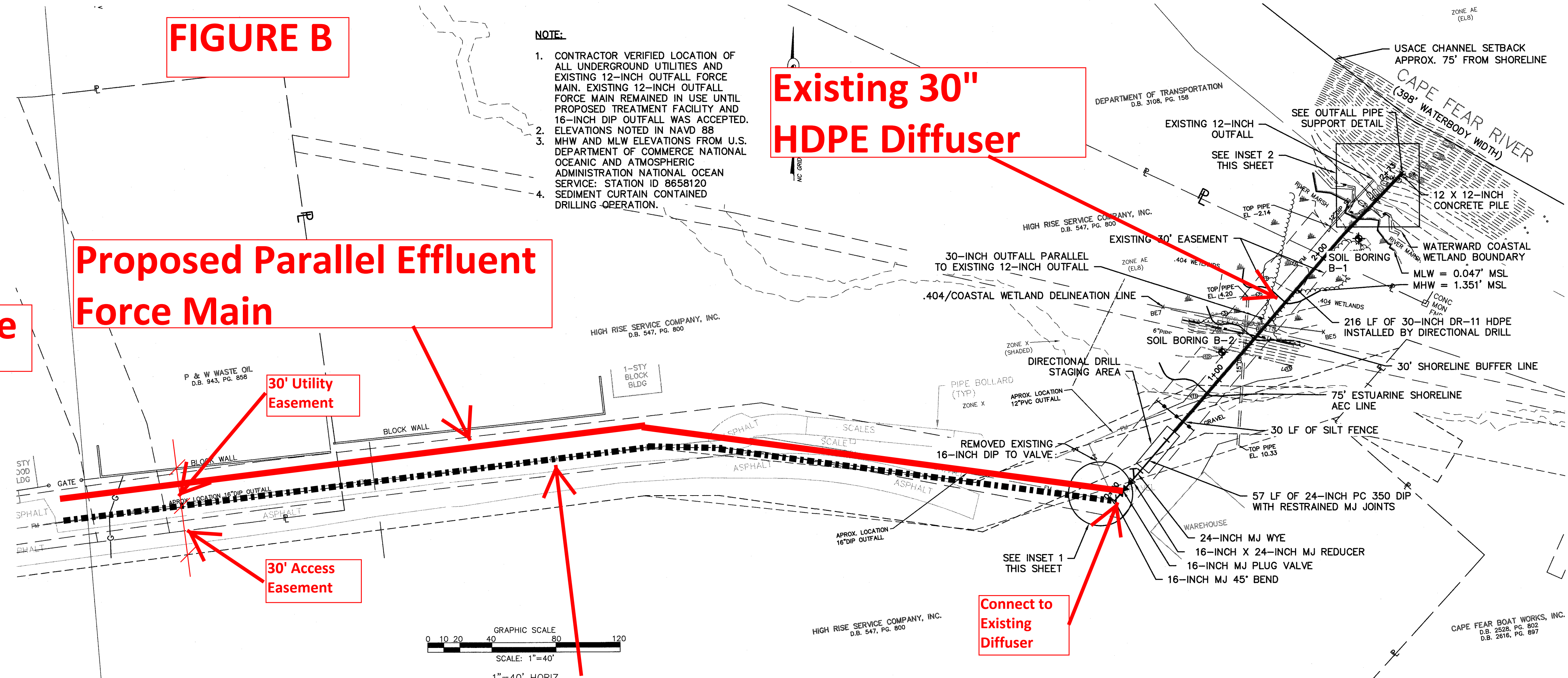
INSET 1

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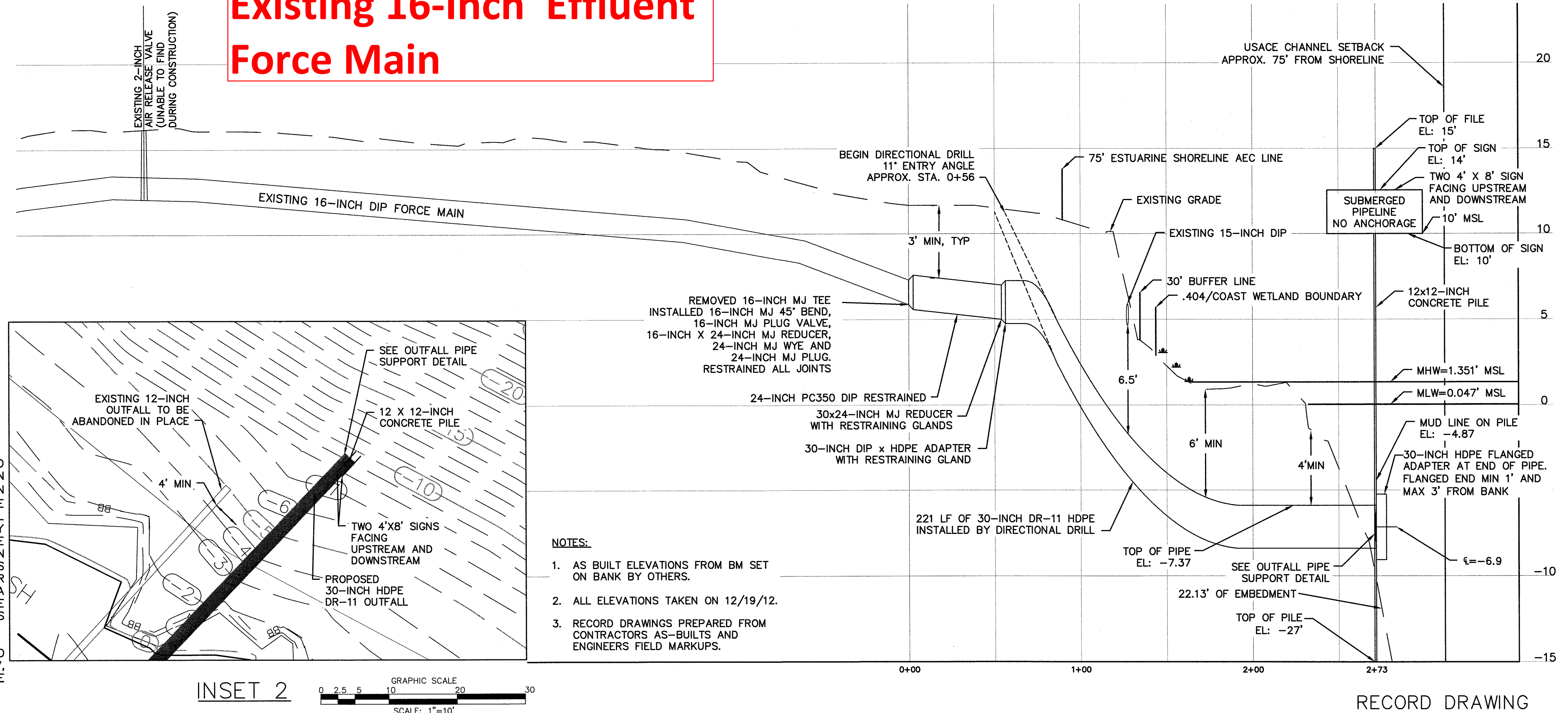
SCALE 1" = 10'

NOTE:

1. THESE DRAWINGS HAVE BEEN PREPARED IN PART BASED UPON INFORMATION PROVIDED BY THE CONSTRUCTION CONTRACTOR AND/OR SUB-CONTRACTOR(S) AS SHOWN IN THE "ENCORE CONSTRUCTION COMPANY RED-LINE MARK-UPS OF THE NORTHEAST BRUNSWICK REGIONAL WASTEWATER TREATMENT PLANT 825,000 GPD FACILITY EXPANSION" SCANNED ON JULY 5, 2013. WHILE THE INFORMATION IS BELIEVED TO BE RELIABLE, THE DESIGN PROFESSIONAL CANNOT ASSURE THE ACCURACY AND IS THUS NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY HAVE BEEN INCORPORATED AS A RESULT. THOSE RELYING ON THESE DRAWINGS ARE ADVISED TO OBTAIN INDEPENDENT VERIFICATION OF ITS ACCURACY BEFORE APPLYING IT FOR ANY PURPOSE.
2. THE DESIGN DOCUMENT ORIGINALLY ISSUED AND SEALED BY BRIAN L. TRIPP, LICENSE # 027403 ON JULY 17, 2012. THIS DOCUMENT IS ONLY CERTIFIED TO THE REVISIONS



## Existing 16-Inch Effluent Force Main



NOTES:

1. AS BUILT ELEVATIONS FROM BM SET ON BANK BY OTHERS.
2. ALL ELEVATIONS TAKEN ON 12/19/12.
3. RECORD DRAWINGS PREPARED FROM CONTRACTORS AS-BUILTS AND ENGINEERS FIELD MARKUPS.

[illegible]

PROJECT MANAGER	DRAWING SCALE
TCH	N/A
DRAWN BY	PROJECT DATE
AMH	04/2009
APPROVED BY	PROJECT NUMBER
RAC	80465.00.R
FILE NAME	PLOT DATE
	DATE PLOTTED: 04/2009



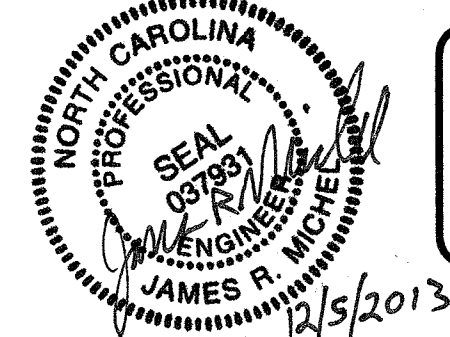
**WK DICKSON**  
community infrastructure consultants

720 CORPORATE CENTER DRIVE  
RALEIGH, NC 27607  
(919) 782-0495

Office Locations:

North Carolina	Georgia
South Carolina	Florida

RELEASED FOR	DATE
APPROVALS	
BIDDING	
CONSTRUCTION	
RECORD DWG.	7/2013



N.E. BRUNSWICK REGIONAL WWTF  
BRUNSWICK COUNTY

OUTFALL PLAN AND PROFILE

$$\frac{22}{62}$$



**FIGURE C**



(for use with E-520)

This is **EXHIBIT C**, consisting of 2 pages, referred to in and part of the **Agreement between Owner and Engineer for Professional Services** dated \_\_\_\_\_.

**AMENDMENT TO OWNER-ENGINEER AGREEMENT**  
**Amendment No. 1 (One)**

1. *Background Data:*

- a. Effective Date of Owner-Engineer Agreement: \_\_\_\_\_
- b. Owner: Brunswick County
- c. Engineer: McKim & Creed, Inc.
- d. Project: Northeast Brunswick Regional Wastewater Treatment Plant Expansion

2. *Description of Modifications:*

- a. Engineer shall perform or furnish the following Additional Services:
- b. The Scope of Services currently authorized to be performed by Engineer in accordance with the Agreement and previous amendments, if any, is modified as follows:
- c. The responsibilities of Owner are modified as follows:
- d. For the Additional Services or the modifications to services set forth above, Owner shall pay Engineer the following additional or modified compensation:
- e. The schedule for rendering services is modified as follows:
- f. Other portions of the Agreement (including previous amendments, if any) are modified as follows:

The foregoing Agreement Summary is for reference only and does not alter the terms of the Agreement, including those set forth in Exhibit B.

Owner and Engineer hereby agree to modify the above-referenced Agreement as set forth in this Amendment. All provisions of the Agreement not modified by this or previous Amendments remain in effect. The Effective Date of this Amendment is \_\_\_\_\_.

OWNER:

**Brunswick County**

---

By: \_\_\_\_\_

Title: \_\_\_\_\_  
Board of Commissioners

Date

Signed: \_\_\_\_\_

ENGINEER:

**McKim & Creed, Inc.**

---

By: \_\_\_\_\_

Title: \_\_\_\_\_

Date Signed: \_\_\_\_\_

Clerk to the Board

\_\_\_\_\_

“This instrument has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act.”

\_\_\_\_\_  
Finance Director – Brunswick County

Request Info	
Type	Budget Amendment
Description	NEBR WWTP Expansion
Justification	Board Meeting 04/16/2018-Appropriate \$2,000,000 of Proceeds from Revenue Bonds for contract with McKim and Creed for engineering and construction administration services associated with a 1.65 million gallon per day expansion to Northeast Brunswick Regional Wastewater Treatment Plant and Phase II Force Main.
Originator	Tiffany Rogers

Department	Object	Dept Desc	Object Desc	Amount	Incr/Decr	Dr/Cr	
448269	395007	NEBRWWTP Expansion	Proceeds from Revenue Bonds	2000000	Increase	Credit	
448269	464001	NEBRWWTP Expansion	Arch/Engnrg/Legal	2000000	Increase	Debit	

Total	
Grand Total:	4000000



**COUNTY OF BRUNSWICK, NORTH CAROLINA  
CAPITAL PROJECT ORDINANCE**

**NEBR WWTP Expansion  
(448264)**

Be it ordained by the Board of County Commissioners of Brunswick County that pursuant to Section 13.2 of the General Statutes of North Carolina, the following ordinance is hereby adopted:

Section 1. The following amounts are hereby appropriated in the Brunswick County Wastewater Capital Projects Fund:

**Wastewater Capital Projects Fund:**

Revenues:

Proceeds from Revenue Bonds	2,000,000
<b>Total Wastewater Capital Project Revenues</b>	<b>\$ 2,000,000</b>

Expenditures:

Arch/Eng/Legal	2,000,000
Construction	-
<b>Total Wastewater Capital Project Expenditures</b>	<b>\$ 2,000,000</b>

Section 2. It is estimated that the following revenues will be available in the Brunswick County Wastewater Fund:

Current Funds Appropriated	\$ 2,000,000
----------------------------	--------------

Section 3. The following amounts are hereby appropriated in the Brunswick County Wastewater Fund:

Contribution to Capital Project Fund	\$ 2,000,000
--------------------------------------	--------------

Section 4. This Capital Project Ordinance shall be entered into the minutes of the April 16, 2018 meeting of the Brunswick County Board of Commissioners.

**NE Brunswick Regional Wastewater Treatment Plant Expansion**  
**Fee Summary**  
**4/16/2018**

**Schedule I - WWTP Expansion Options**

Item	1.65 MGD Fee	2.5 MGD Fee	Fee Type
Task 1: Planning Charrette & Basis of Design	\$15,000	\$15,000	Fixed Fee
Task 2: Engineering Alternatives Analysis (EAA)	\$40,000	\$40,000	Fixed Fee
Task 3: SEPA Document (EA)	\$35,000	\$35,000	Fixed Fee
Task 4: Preliminary Design Phase	\$260,000	\$310,000	Fixed Fee
Task 5: Final Design & Specifications Phase	\$560,000	\$695,000	Fixed Fee
Task 6: Permitting Phase	\$40,000	\$40,000	Fixed Fee
Task 7: Bidder Pre-Qualification Phase	\$9,500	\$9,500	Fixed Fee
Task 8: Bidding & Award Phase	\$65,000	\$75,000	Fixed Fee
Task 9: Construction Administration	\$475,000	\$475,000	Fixed Fee
Task 10: Periodic Construction Observation	\$140,000	\$140,000	Fixed Fee
Task 10A: Construction Phase Services Contingency	\$40,000	\$40,000	Contingency
Task 11: Post Construction Phase Services	\$20,000	\$20,000	Fixed Fee
Task 12: Special Services	\$35,000	\$50,000	Fixed Fee
Task 13: Unit Price Services ( <i>See breakdown below</i> )	\$10,000	\$10,000	Unit Price
<b>Total Estimated Fee (Tasks 1-13)</b>	<b>\$1,744,500</b>	<b>\$1,954,500</b>	

**Schedule II - Force Main Improvements Options**

Item	Fee Phase II (11,000 Feet)	Fee Phase II and IA (29,000 Feet)	Fee Type
Task 1: Initial Activities	\$2,400	\$2,400	Fixed Fee
Task 2: Preliminary Routing Evaluation & NCDOT Approach	\$7,300	\$9,500	Fixed Fee
Task 3: Preliminary Design	\$69,000	\$76,900	Fixed Fee
Task 4: Final Design	\$41,100	\$186,300	Fixed Fee
Task 5: Permitting Phase ( <i>Permit fees included as noted below</i> )	\$22,100	\$36,600	Fixed Fee
Task 6: Bid & Award Phase	\$9,400	\$18,500	Fixed Fee
Task 7: Construction Administration	\$20,400	\$48,000	Fixed Fee
Task 8: Periodic Construction Observation	\$14,300	\$22,000	Fixed Fee
Task 9: Project Closeout	\$7,600	\$10,000	Fixed Fee
Task 10: Unit Price Services	\$12,750	\$27,300	Unit Price
<b>Total Estimated Fee (Tasks 1-10)</b>	<b>\$206,350</b>	<b>\$437,500</b>	



## **Brunswick County Board of Commissioners**

### **ACTION AGENDA ITEM**

**April 16, 2018**

#### **Action Item # VIII. - 5.**

**From:**  
John Nichols, P.E.

Utilities - Receive Northwest Water Treatment Plant Final Recommendations and Amendment No. 2 CDM Smith (John Nichols, Director of Public Utilities)

#### **Issue/Action Requested:**

Request that the Board of Commissioners receive the final recommendations for water treatment options for the Northwest Water Treatment Plant (NWWTP), budgetary cost information for the NWWTP upgrades, updated reverse osmosis pilot testing data, information regarding treatment goals, and approve the budget amendment and authorize the Chairman and Clerk to the Board to approve the contract amendment with CDM Smith in the amount of \$778,900 for preliminary engineering services associated with the design of the advanced treatment options and expansion of the Northwest Water Treatment Project.

#### **Background/Purpose of Request:**

The draft report for water treatment options to remove GENX and other PFAs at the NWWTP was presented on April 16, 2018, and the final version is now available for review. Notable additions to data and updated costs will be presented along with a discussion of treatment goals.

This information is tailored to the needs of Brunswick County's Northwest Water Treatment Plant; cost data cannot be directly translated for use at other facilities due to each facility's unique existing treatment methods, expansion potential, and operational requirements.

The Reverse Osmosis Pilot Plant will continue to operate for several months to collect additional data that may be used for design purposes.

The next step in the design process is to perform a Preliminary Engineering Report (PER) for the recommended advanced water treatment method and for expansion of the Northwest Water Treatment Plant from 24 mgd to 36 mgd. The PER (also called a "Basis of Design Report") is required by the North Carolina Department of Environmental Quality (NCDEQ) and will refine process improvements, permitting requirements, and cost estimates. It generally represents a stage of 20% completion of final design. The cost of the Basis of Design Report is \$778,900. Additionally, in order to apply for State Revolving Fund low interest loans a specialized Engineering Report/Environmental Information Document (ER/EID) is required by DEQ. The cost of the ER/EID is \$85,800. In accordance with the March 2008 resolution allowing the manager to approve contract amendments in an amount under \$25,000 with notification at the next regularly scheduled meeting, the Manager approved Contract Amendment #1 in the amount of \$12,600 to start the State Revolving Fund (SRF) application process. This was to meet the late April deadline for low-interest loan approval from DEQ's SRF fund. (The April 2nd meeting was canceled.) Additional costs for low interest loan funding from state and federal programs is included in the PER costs. Staff recommends an amendment to the CDM Smith contract in the amount of \$778,900 to perform engineering work associated with the PER – Basis of Design Report and ER/EID for State Revolving Fund low interest loans.

#### **Fiscal Impact:**

Budget Amendment Required, Capital Project/Grant Ordinance Required, Pre-Audit Certification

Required, Reviewed By Director of Fiscal Operations

Budget amendment and the associated CPO appropriates \$900,000 for the CDM contract amendments 1 and 2 and the preliminary engineering report in the Northwest Water Treatment and Expansion Project.

**Approved By County Attorney:**

Yes

**Advisory Board Recommendation:**

Not Applicable

**County Manager's Recommendation:**

Recommend that the Board of Commissioners receive the final recommendations for water treatment options for the Northwest Water Treatment Plant (NWWTP), budgetary cost information for the NWWTP upgrades, updated reverse osmosis pilot testing data, information regarding treatment goals, and approve the budget amendment and authorize the Chairman and Clerk to the Board to approve the contract amendment with CDM Smith in the amount of \$778,900 for preliminary engineering services associated with the design of the advanced treatment options and expansion of the Northwest Water Treatment Project.

**ATTACHMENTS:**

Description

- ▣ Utilities - Northwest Water Treatment Evaluation Amendment No. 2 CDM Smith - Attach 1
- ▣ 20180416 Budget Amendment CDM Smith Amendments
- ▣ 20180416 CPO NW Plant Treatment Expan 12 MGD
- ▣ Northwest Water Treatment Evaluation Amendment 1 CDM Smith
- ▣ Final Report - (Presented at the Meeting)

**AMENDMENT TO OWNER-ENGINEER AGREEMENT**  
**Amendment No. 2**

1. *Background Data:*

- a. Effective Date of Owner-Engineer Agreement: January 16, 2018
- b. Owner: Brunswick County, North Carolina
- c. Engineer: CDM Smith Inc.
- d. Project: NORTHWEST WATER TREATMENT EVALUATION

2. *Description of Modifications:*

A. Engineer shall perform or furnish the following Additional Services:

The Engineer shall prepare both a Basis of Design Report (BODR) and an Engineering Report/ Environmental Information Document (ER/EID) for the advanced treatment upgrades and Phase III expansion of the Brunswick County Northwest WTP. The basis of the BODR and ER/EID are for the recommended alternative from the “Advanced Treatment Options for the Northwest Water Treatment Plant” draft report dated March 2018 and final report dated April 2018 prepared by the Engineer.

The ER/EID will be prepared as part of the State Revolving Funding application process.

Improvements for the Northwest WTP to be developed in the BODR and ER/EID include expansion of the existing conventional process treatment capacity. The PER will include processes to provide treatment capacity for a raw water flow of 45 mgd through rapid mixing, clarification, and filtration. The addition of low pressure reverse osmosis as an advanced treatment process will also be included in the PER. The Engineer will review the treatment capacity of the expanded processes to confirm a conventional capacity of 40 – 45 mgd and a reverse osmosis permeate flow of 36 - 40 mgd. Process considerations and anticipated space requirements for future expansions and upgrades will be presented in the PER.

The Engineer understands the Owner intends to permit the plant as a conventional water treatment plant without advanced treatment at a higher capacity. Advanced treatment will impact the finished water capacity of the facility, driving the pursuit of multiple plant ratings that are dependent on which processes are in service.

The BODR will include the following process areas:

- New raw water pipeline
- New rapid mixing basin
- Upgrading existing Pulsator® clarifiers to SuperPulsator® clarifiers
- New Suez/Degremont Technologies Greenleaf® filter module and upgrading existing modules
- Expansion and upgrades to chlorine gas disinfection system

- New reverse osmosis treatment membrane system with building
- New reverse osmosis feed pumps and cartridge filters
- New re-stabilization facilities (either chemicals or groundwater wells)
- Chemical system upgrades such as pumps to support increased treatment capacity
- New concentrate discharge pipeline to the confluence of Hood Creek and Cape Fear River and associated diffuser
- New solids gravity thickener
- Upgrades to existing equalization basin
- Electrical improvements to support expansion and upgrades
- Instrumentation & Controls improvements to support expansion and upgrades
- Architectural improvements to support expansion and upgrades
- Structural improvements to support expansion and upgrades
- HVAC and Plumbing improvements to support expansion and upgrades

This amendment includes the following major tasks:

- Task A2.100 Project and Quality Management
- Task A2.200 Basis of Design Report (BODR)
- Task A2.300 Engineering Report/Environmental Information Document (ER/EID) Reports for SRF Program
- Task A2.400 Unspecified Services Allowance
- Task A2.500 Development of Test Wells for Groundwater Blending

### ***A2.100 Project and Quality Management***

This task covers managing the project and coordinating the work, tracking work progress, invoicing and accounting, providing regular updates to the Owner, managing scope compliance, oversight of technical products, and quality assurance checks on work and deliverables. Accounting and administrative support to achieve the project tasks listed herein are also included in this task.

### ***A2.200 Basis of Design Report (BODR)***

#### **1.200.1 Project Meetings**

A kickoff workshop to be followed by one progress meeting where alternatives analyses will be presented for selection by the Owner and one draft report review meeting is included in this task. The meetings will be held at a location convenient to the Owner's offices, such as the Northwest WTP.

Engineer will conduct a project kickoff workshop for the preparation of the BODR summarizing the upgrades and expansion. Engineer will facilitate a discussion with water treatment plant operations staff, maintenance personnel, and utility managers regarding the improvements to the existing facilities to be addressed with the project BODR. Administrative elements of the project including scope and schedule review will also be included in the kick-off meeting agenda. Multiple disciplines from the Engineer's project team will be represented at the meeting to facilitate thorough collaboration. Meeting notes will be prepared by the Engineer.

### **1.200.2 Preliminary Site Investigations**

Engineer's process, structural, electrical, instrumentation, and HVAC design engineers will conduct a site inspection of the Northwest Water Treatment Plant. The site investigation will be completed on the same day as the project kick-off workshop. The purpose of the site visit is to identify the condition of existing facilities, review code compliance, and identify optional locations and orientation for the proposed facilities to be included in the BODR.

### **1.200.3 Basis of Design**

Engineer will develop the basis of design for the Northwest Water Treatment Plant expansion and upgrades. Historical operating data for calendar years 2014 – 2017 provided by the Owner will be used to develop flow and mass balances for water and chemicals. The Engineer will consider water losses associated with solids removal, filter backwashing, and the reverse osmosis reject stream when establishing the basis of design for expanding the Northwest WTP to a filtered water capacity of 42 to 45 mgd (exact number to be determined) and finished water (reverse osmosis permeate) capacity of 36 mgd.

Design criteria tables for major process will be developed. These process areas include:

- Rapid mixing, Pulsator® conversion to SuperPulsators®
- Filtration and backwash pumping
- Reverse osmosis feed pumping and membrane skids
- Solids thickening
- Backwash equalization and treatment
- Chemicals including coagulant (PACL), oxidant (chlorine dioxide), pH/alkalinity adjustment (caustic), disinfection (chlorine and ammonia), fluoride, corrosion inhibitor, anti-scalant for membranes, and membrane cleaning chemicals (caustic and acid). Other chemicals required to re-stabilize/re-mineralize reverse osmosis permeate will also be identified and a basis of design established.
- Concentrate disposal pipeline and diffuser – hydraulic analysis

The Engineer will also complete a preliminary hydraulic analysis for the water treatment plant from the Rapid Mix basins through the clearwells. A hydraulic profile will be prepared and included in the BODR.

### **1.200.4 Re-stabilization Alternatives Evaluation**

Engineer will complete an evaluation of re-stabilization alternatives for the reverse osmosis permeate. The alternatives will include blending with groundwater and restabilization by chemical addition. Field investigation and test wells are included under a separate task. The evaluation will consider operational, technical, and economic criteria. The results of the evaluation will be presented at a progress meeting and will be included in the BODR.

### **1.200.5 Concentrate Pipeline Routing Analysis**

Engineer will complete an analysis of the alternative pipeline routes for conveying reverse osmosis concentrate to the diffuser. Up to two alternative pipeline routes will be developed. The desktop evaluation will review wetlands impacts, potential utility conflicts, DOT road crossings, and property easement requirements. The alternatives will be presented at the progress meeting where the Owner will select a preferred route. A summary of the alternatives evaluation and the selected route will be included in the BODR.

#### **1.200.6 Electrical System Evaluation**

The existing plant electrical system will be evaluated to determine if it can accommodate the improvements. It is expected additional service capacity will be required. Engineer will evaluate options for additional capacity that include adding a second service and expanding or upsizing the existing service. Additionally, options for providing standby power, including an emergency generator, will be considered in the electrical system evaluation.

Engineer will present the results of the evaluation and recommendations at a progress meeting. The results of the evaluation will be included in the BODR. A one-line diagram will be developed for the recommended option to show the integration of the upgraded service into the existing distribution system at the plant.

#### **1.200.7 Conceptual Drawings**

Conceptual level drawings will be prepared and included in the BODR. Drawings will be based on manufacturer's equipment drawings and access requirements for operations and maintenance. Drawings to be included are:

- Proposed site plan and yard piping over 20-inch in diameter (site plan will be developed based on existing CAD files provided by the Owner)
- Preliminary hydraulic profile
- Plan and section of the clarifier improvements
- Plan and section of the new filter modules
- Plan and section of reverse osmosis feed pumps
- Plan and section of the reverse osmosis facility
- Plan of chlorine area
- Plan of sludge thickener
- Plan and section of equalization basin
- GIS map(s) of the conceptual concentrate discharge pipe from the treatment plant to the Cape Fear River

Owner will provide existing facility drawings CAD format for use in developing figures for existing facilities. These include Puilsator® clarifier drawings as well as filter module and pipe gallery drawings.

#### **1.200.8 Instrumentation and Control**

The basis for instrumentation and control for the new and modified systems will be developed for the BODR. The Engineer will prepare a narrative of system controls and operation for the major processes, discuss incorporation of the improvements into the existing plant control network, and develop preliminary process flow diagrams.

The process flow diagrams will serve as the basis for development of Process and Instrumentation Diagrams (P&IDs) in the next phase of design.

#### **1.200.9 Engineer's Preliminary Opinion of Probable Construction Cost**

Engineer will prepare a preliminary opinion of probable construction cost. A breakdown of items by each unit operation, major structures and civil works will be provided. Engineer will provide two options for phasing of construction as defined by the Owner. These options may include phased implementation of reverse osmosis skids.



### **1.200.10 Basis of Design Report**

Upon completion of Tasks 1.200.1 through 1.200.9, the Engineer will prepare a draft BODR for the selected alternatives including design criteria and descriptions of facilities, site plans showing the areas of proposed modifications, key equipment sizing calculations, key equipment cut sheet information, preliminary plant control philosophy description, concepts and design criteria for the new process units and a preliminary opinion of probable construction costs for the recommended alternatives. A project implementation schedule, construction and operating cost information suitable for future planning will also be included.

A regulatory assessment will be conducted and summarized in the BODR to describe anticipated permits required to construct and operate the proposed facilities. Applying for permitting or completing specialized studies required for permits are not included in this scope of work.

Engineer will submit a draft BODR to the Owner for review. Following a review meeting to receive and discuss the comments from the Owner; the BODR report will be finalized. Engineer will deliver hardcopies and an electronic copy in PDF format of the final BODR.

### ***A2.300 Engineering Report/ Environmental Information Document (ER/EID) Reports for SRF Program***

The Owner is submitting two applications to the North Carolina Department of Environmental Quality Division of Water Infrastructure (DWI) State Revolving Fund (SRF) program for the planned Northwest Water Treatment Plant Expansion and Improvements Project. One application is to be submitted to the Drinking Water SRF program for the Water Treatment Plan expansion and treatment improvements portion of the project. A second application is to be submitted to the Clean Water SRF program for the anticipated wastewater discharge pipeline associated with the reverse osmosis treatment facility. The applications are being prepared by Engineer under a separate Amendment.

It is anticipated that DWI will inform the Owner of intent to fund in late Summer 2018 with a Letter of Intent to Fund (LIF). Upon notification of Owner's receipt of LIF and authorization by the Owner, Engineer will begin work on the ER/EID.

The SRF Funding Program follows a prescribed schedule, where the LIF starts the reporting phase of the process. The Engineer will assist the Owner by preparing the ER/EID for each of the two applications submitted to and funded by DWI. It is assumed that the projects will be above the minor construction activities threshold, and therefore, a Major ER/EID will be required and prepared for both applications.

The required content, format, and schedule for the ER/EID for wastewater and drinking water projects is defined in DWI's guidance documents. The Engineer will prepare the ER/EID documents in accordance with the guidance provided on DWI. A BODR is being prepared by Engineer under Task A2.200 of this amendment. The BODR for the Northwest Water Treatment Evaluation project will be utilized in preparing the engineering content for the ER.

Nineteen copies of each draft report will be submitted to DWI by the required due date, as outlined in the LIF. The Engineer will respond to comments from DWI within the prescribed timeframe and, if required, issue a revised report. This scope does not include any amendments to the ER/EID. If ER/EID amendments are required, this scope of work will be amended.

#### ***A2.400 Unspecified Services Allowance***

An allowance for unspecified services not assigned in this amendment, but determined by the Owner to be necessary, may be included with this task. Work under this task will not proceed without written authorization from the Owner, defining the scope, fee, and schedule for tasks. Potential services under this allowance are not limited to those listed below, but may include:

- Additional assistance with project funding applications (WIFIA, etc.)
- Geotechnical services, if required prior to final design (No subsurface investigation or geotechnical evaluation is currently included)
- Surveying services (no surveying is currently included)
- Extra meetings to assist in educating about the project (eg: Public Information Meetings, Presentations to the County Commissioners, etc.)

#### ***A2.500 Development of Test Wells for Groundwater Blending***

An alternative to chemical re-stabilization of the reverse osmosis permeate is blending with groundwater that has sufficient alkalinity and mineral concentrations. A desktop evaluation comparing this alternative to chemical use for re-stabilization is included in Task A2.200 of this amendment. To field verify the data utilized in this evaluation, the Engineer will develop test wells to collect additional information on the available quality and quantity of the groundwater supply at the Northwest WTP site. Under this task, the Engineer will:

- Install one pilot well and three test wells (4" or 6" depending on conditions encountered) with installation by drilling subcontractor and oversight by Engineer
- Complete geophysical logging during well installation
- Provide completed well reports and a summary of finding for water quality and well yield

It is assumed the test wells will be installed on the Owner's property at the Northwest Water Treatment Plant. Engineer will obtain authorization prior to proceeding with this task and will prepare a well installation and test plan for review by Owner once authorized but prior to beginning the well installation.

#### **ASSUMPTIONS AND EXCLUSIONS:**

*The following summarizes assumptions and exclusions with respect to the scope of work, as well as the Owners Responsibilities as it relates to the Engineer's performance of the Project.*

##### **ASSUMPTIONS FOR BASIC SERVICES**

1. CAD files for the existing facilities at the Northwest WTP will be made available to the Engineer for use.
2. Past survey and geotechnical information are available from the Owner for the Northwest WTP site.
3. All tasks that are compensated as Cost Plus Fee have been assigned an Upper Limit. The scope and costs of the work in these tasks have not been fully defined (eg: subcontracted well drilling costs) and therefore it is unknown if the set Upper Limit is sufficient to fund the completion of the work described in these tasks. The Engineer will not work beyond the Upper Limit of the task and does not guarantee completion of the work described in the task.

If additional funding is required, the Engineer will provide the Owner with a proposal for Amendment to complete the work.

#### EXCLUSIONS FOR BASIC SERVICES

1. Any work that is not explicitly described as included in the Engineers scope of work is excluded from the lump sum tasks. However, additional work may be included in Task 400, pending available funds.
2. Final design of facilities resulting in construction drawings and specifications.
3. Additional site surveying, subsurface exploration and utility locating, and geotechnical investigations. This includes the corridor for the concentrate disposal pipeline.
4. This scope of work does not include any permitting or environmental related studies including wetland delineation, endangered/protected species surveys, etc.
5. This scope of work does not include any Clean Water Act Section 404/401 or Rivers and Harbors Act stream and wetland permitting activities, other than coordination with agencies during the initial interagency meeting.

#### OWNERS RESPONSIBILITIES

1. Provide Engineer with timely response to requests for information, data, or decisions
2. Participation of decision-makers in meetings and workshops to facilitate project progression
3. Provide Engineer with access to the Northwest WTP as needed to complete the work

*B. The Scope of Services currently authorized to be performed by Engineer in accordance with the Agreement and previous amendments, if any, is modified as follows:*

None.

*C. The responsibilities of Owner are modified as follows:*

None.

*D. For the Additional Services or the modifications to services set forth above, Owner shall pay Engineer the following additional or modified compensation:*

##### Lump Sum Compensated Tasks

- Task A2.100: Project and Quality Management, Lump Sum Amount of \$43,500
- Task A2.200: Basis of Design Report, Lump Sum Amount of \$353,800
- Task A2.300: ER/EID Reports for SRF Program, Lump Sum Amount of \$80,600
- *Total Lump Sum Tasks Amount of \$477,900*

##### Cost Plus Fee Compensated Tasks

- Task A2.400: Unspecified Services Allowance, Upper Limit of \$80,000
- Task A2.500: Groundwater Supply Planning for Re-Stabilization Blending, Upper Limit of \$221,000
- *Total Cost Plus Fee Tasks Amount of \$301,000 (Upper Limit)*

Total of Amendment (Lump Sum + Cost Plus Fee) = \$778,900.00

- 1) The Lump Sum includes compensation for Engineer's services and services of Engineer's Consultants, if any. Appropriate amounts have been incorporated in the Lump Sum to account for labor, overhead, profit, and reimbursable expenses.
- 2) The portion of the Lump Sum amount billed monthly for Engineer's services will be based upon Engineer's estimate of the percentage of the services completed during the billing period.
- 3) Task A2.400 and A2.500 will be invoiced as a Cost-Plus Fee payment for work performed. Refer to Section 8.01 of the original contract for Basis of Payment for Cost Plus Fee payment items.
  - a. The schedule for rendering services is modified as follows:
    - A draft BODR will be submitted 15 weeks following notice to proceed on this Amendment No. 2. A final BODR will be submitted 4 weeks following receipt of owner's written comments.
    - The ER/EID will be submitted 10 months from Letter of Intent to Fund from DWI.
    - The schedule for any tasks authorized under Tasks A2.400 shall be determined at the time of authorization.
    - The schedule for Task A2.500 will be 20 weeks following notice to proceed.

3. *Agreement Summary (Reference only)*

a. Original Agreement amount:	<u>\$599,600</u>
b. Net change for prior amendments:	<u>\$12,600</u>
c. This amendment amount:	<u>\$778,900</u>
d. Adjusted Agreement amount:	<u>\$1,391,100</u>

The foregoing Agreement Summary is for reference only and does not alter the terms of the Agreement, including those set forth in Exhibit B.

Owner and Engineer hereby agree to modify the above-referenced Agreement as set forth in this Amendment. All provisions of the Agreement not modified by this or previous Amendments remain in effect. The Effective Date of this Amendment is \_\_\_\_\_.

OWNER:

ENGINEER:

Brunswick County

CDM Smith Inc

By: \_\_\_\_\_

By: \_\_\_\_\_

Title: Chairman  
Board of Commissioners

Title: \_\_\_\_\_

Date  
Signed: \_\_\_\_\_

Date Signed: \_\_\_\_\_

Clerk to the Board

\_\_\_\_\_  
“This instrument has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act.”

\_\_\_\_\_  
Finance Director – Brunswick County

Request Info	
Type	Budget Amendment
Description	NW Water Treatment
Justification	Board Meeting 4/16/2018-Appropriate Proceeds from Revenue Bonds of \$900,000 for amendment 2 to the CDM Smith Contract for the Basis of Design Report and the cost of the Engineering Report and Environmental Information Document.
Originator	Tiffany Rogers

Items						
Department	Object	Dept Desc	Object Desc	Amount	Incr/Decr	Dr/Cr
418289	395007	NW Plant Treatment Expan 12MGD	Proceeds from Revenue Bonds	900000	Increase	Credit
418289	464001	NW Plant Treatment Expan 12MGD	Arch/Engnrg/Legal	900000	Increase	Debit

Total	
Grand Total:	1800000

**COUNTY OF BRUNSWICK, NORTH CAROLINA  
CAPITAL PROJECT ORDINANCE  
NW Plant Treatment Expansion 12MGD  
(418289)**

Be it ordained by the Board of County Commissioners of Brunswick County that pursuant to Section 13.2 of the General Statutes of North Carolina, the following ordinance is hereby adopted:

Section 1. The following amounts are hereby appropriated in the Brunswick County Water Capital Projects Fund:

**Water Capital Projects Fund:**

Revenues:

Proceeds from Revenue Bonds	900,000
Transfer from Water Fund	<u>599,600</u>
<b>Total Water Capital Project Revenues</b>	<b>\$ 1,499,600</b>

Expenditures:

Arch/Eng/Legal	<u>1,499,600</u>
<b>Total Water Capital Project Expenditures</b>	<b>\$ 1,499,600</b>

Section 2. It is estimated that the following revenues will be available in the Brunswick County Water Fund:

Current Funds Appropriated	\$ 599,600
----------------------------	------------

Section 3. The following amounts are hereby appropriated in the Brunswick County Water Fund:

Contribution to Capital Project Fund	\$ 599,600
--------------------------------------	------------

Section 4. This Capital Project Ordinance shall be entered into the minutes of the April 16, 2018 meeting of the Brunswick County Board of Commissioners.

**AMENDMENT TO OWNER-ENGINEER AGREEMENT**  
**Amendment No.   1**

1. *Background Data:*

- a. Effective Date of Owner-Engineer Agreement:   JANUARY 16, 2018
- b. Owner:   BRUNSWICK COUNTY
- c. Engineer:   CDM SMITH, INC.
- d. Project:   NORTHWEST WATER TREATMENT EVALUATION

2. *Description of Modifications:*

- a. Engineer shall perform or furnish the following Additional Services:

1) Prepare SRF Applications

ENGINEER will prepare two applications on behalf of OWNER for submission to the North Carolina Department of Environmental Quality Division of Water Infrastructure State Revolving Fund (SRF) program for the planned Northwest Water Treatment Plant 36-MGD Expansion and Improvements Project. One application is to be submitted to the Drinking Water SRF program for the Water Treatment Plan expansion and treatment improvements portion of the project. A second application is to be submitted to the Clean Water SRF program for the anticipated wastewater discharge pipeline associated with the reverse osmosis treatment facility. The purpose of submitting two applications for the one project is to maximize the potential for funding from the SRF program.

ENGINEER will facilitate one meeting with the Division of Water Infrastructure (DWI) to review the applications and solicit input from the staff reviewers prior to the formal submission.

The applications will be prepared and ready to be submitted to DWI on or before April 30, 2018. The applications require information and documents to be authorized and/or signed by representatives of OWNER. All forms and resolutions must be signed and returned to the ENGINEER by April 27, 2018.

It is anticipated that DWI will inform the OWNER of intent to fund in late Summer 2018 with a Letter of Intent to Fund (LIF). Upon notification of OWNER's receipt of LIF, preparation of SRF Reports will be completed under a separate Amendment.



b. The responsibilities of Owner are modified as follows:

Provide all forms and resolutions, signed and returned to the ENGINEER by April 27, 2018.

c. For the Additional Services or the modifications to services set forth above, Owner shall pay Engineer the following additional compensation:

Lump Sum amount of \$12,600.00.

- 1) The Lump Sum includes compensation for Engineer's services and services of Engineer's Consultants, if any. Appropriate amounts have been incorporated in the Lump Sum to account for labor, overhead, profit, and Reimbursable Expenses.
- 2) The portion of the Lump Sum amount billed for Engineer's services will be based upon Engineer's estimate of the percentage of the total services actually completed during the billing period.

d. The schedule for rendering services is modified as follows:

The date for project completion shall be 45 days from the Effective Date of the amendment.

3. *Agreement Summary (Reference only)*

a. Original Agreement amount:	\$599,600
b. Net change for prior amendments:	\$0
c. This amendment amount:	\$12,600
d. Adjusted Agreement amount:	\$612,200

The foregoing Agreement Summary is for reference only and does not alter the terms of the Agreement, including those set forth in Exhibit B.

Owner and Engineer hereby agree to modify the above-referenced Agreement as set forth in this Amendment. All provisions of the Agreement not modified by this or previous Amendments remain in effect. The Effective Date of this Amendment is MARCH 30 2018.

OWNER:

Brunswick County

By: Q. B. Hay

Title: County Manager

ENGINEER:

CDM Smith

By: J. D. Linsley

Title: ASSOCIATE

Date  
Signed: 3/23/18

Date Signed: 3/30/2018

Clerk to the Board

N/A

"This instrument has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act."

Julie G. Mich  
Finance Director – Brunswick County

Approved as to Form.

[Signature]  
Asst. County Attorney

# NORTHWEST WATER TREATMENT PLANT

BRUNSWICK COUNTY

## FINAL REPORT



## Advanced Treatment Options for the Northwest Water Treatment Plant

*Prepared for:*

Brunswick County Public Utilities  
Brunswick County, NC

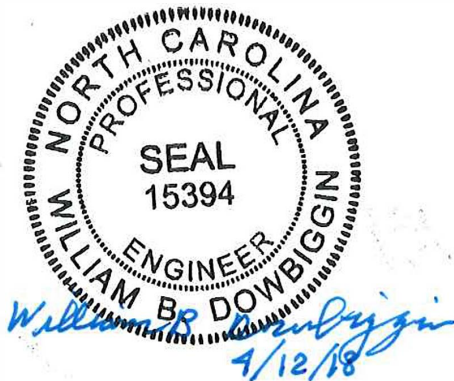
*April 2018*

**CDM  
Smith**

**NORTHWEST WATER TREATMENT PLANT  
BRUNSWICK COUNTY**

**ADVANCED TREATMENT OPTIONS FOR THE  
NORTHWEST WATER TREATMENT PLANT  
FINAL REPORT**

**APRIL 2018**



**CDM Smith, Inc.  
5400 Glenwood Avenue, Suite 400  
Raleigh, North Carolina 27612  
Tel: (919) 325-3500 Fax: (919) 781-5730  
NC License No. F-1255**



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## List of Abbreviations

ACT	Accelerated Column Test
AIX	Anionic Ion Exchange
ASTDR	Agency for Toxic Substances and Disease Registry
BAF	Biological Aerated Filtration
BV	Bed Volume
CAS	Chemical Abstracts Service
cm	Centimeter
DBP	Disinfection Byproducts
DEET	N,N-Diethyl-meta-toluamide
DWR	Division of Water Resources
EBCT	Empty Bed Contact Time
EDC	Endocrine Disruptive Compound
EPA	United States Environmental Protection Agency
ft <sup>2</sup>	Square Feet
ft <sup>3</sup>	Cubic Feet
GAC	Granular Activated Carbon
gfd	gallons per ft <sup>2</sup> per day = gpd/ft <sup>2</sup>
gpm	Gallon per Minute
g/mol	grams per mole/mol
hp	horsepower
IRIS	EPA Integrated Risk Information System
IX	Ion Exchange
lbs	pounds
lbs/day	pounds per day

## List of Abbreviations (continued)

LOX	Liquid Oxygen
LPRO	Low Pressure Reverse Osmosis
LR	Loading Rate
MCL	Maximum Contaminant Level
MIEX	Magnetic Ion Exchange Resin
mg/L	Milligrams per Liter
mgd	Million Gallons per Day
NCDEQ	North Carolina Department of Environmental Quality
NCSU	North Carolina State University
NDMA	N-Nitrosodimethylamine
NF	Nanofiltration
NPDES	National Pollutant Discharge Elimination System
ng/L	NanogramS per Liter
NTU	Nephelometric Turbidity Unit
PAC	Powdered Activated Carbon
PACL	polyaluminum chloride
PFAS	Per- and polyfluoroalkyl substances
PFBA	Perfluorobutanoic Acid
PFBS	Perfluorobutane Sulfonate
PFECA	Perfuoroalkyl Ether Carboxylic Acid
PFHxA	Perfluorohexanoic Acid
PFOA	Perflurooctanoic Acid
PFOS	Perfluorooctane Sulfonate
PFPeA	Perfluoropentanoic Acid
PFPrOPrA	Perfluoro-2-Propoxypropanoic Acid

## List of Abbreviations (continued)

PPCP	Pharmaceuticals and Personal Care Products
psi	Pounds per Square Inch
RO	Reverse Osmosis
RSSCT	Rapid Small-Scale Column Test
SDWA	Safe Drinking Water Act
TC	Target Contaminants
TCCP	tris (1-chloro-2-propyl) phosphate
TCEC	Target Contaminants of Emerging Concern
TCEP	tris(2-chloroethyl) phosphate
TDCPP	tris(1,3-dichloroisopropyl)phosphate
TFE	Tetrafluoroethylene
TDH	Total Dynamic Head
TOC	Total Organic Carbon
UCMR	Unregulated Contaminant Monitoring Rule
UV	Ultraviolet
VFD	Variable Frequency Drive
WTP	Water Treatment Plant

## Executive Summary

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As a result of what is believed to be decades of the release of high levels of manufacturing chemicals and by-products, organic chemicals including per- and polyfluoroalkyl substances (PFAS) have been detected in the Cape Fear River, which supplies the Northwest Water Treatment Plant (WTP). Research completed by Dr. Detlef Knappe and Dr. Mei Sun at North Carolina State University (NCSU) in 2016 and 2017 determined that conventional treatment is inadequate for the removal of newly identified emerging contaminants including the PFAS compounds GenX and Nafion by-products. Advanced water treatment methods will be required to remove the PFAS compounds.

Neither the Environmental Protection Agency (EPA) nor the North Carolina Department of Environmental Quality (NC DEQ) have set enforceable maximum contaminant levels (MCLs) for GenX or other PFAS. Due to the concern over potential health effects associated with these compounds in drinking water, Brunswick County is proactively considering the feasibility and effectiveness of advanced water treatment methods to address these emerging contaminants of concern.

To meet the projected water demands, Brunswick County is planning to expand the Northwest WTP capacity from 24 to 36 mgd. In response to the increased concern over water quality in the Cape Fear River, the County contracted CDM Smith to create a plan to improve treatment and removal of contaminants of concern during the planned capacity expansion.

This report presents a conceptual design of the major facilities and components required for the plant expansion, identification of several target contaminants associated with water from the lower Cape Fear River, establishment of preliminary treatment goals, and evaluation of water treatment technologies that have been proposed for the removal of these target contaminants. The evaluation of treatment alternatives is based on a desktop analysis. The analysis is based on experience at similar facilities plus assumptions and extrapolations that could be confirmed by bench-scale and/or pilot-scale testing before full-scale implementation. The desktop analysis results indicate:

- Implementation of Ultraviolet-Advanced Oxidation Process (UV-AOP), ozone (O<sub>3</sub>), and biologically active filtration (BAF or biofiltration), alternatives as single methods for advanced treatment at the Northwest WTP are ineffective as a treatment barrier for removing PFAS including GenX and Nafion by-products.
- Granular activated carbon adsorption (GAC), ion exchange (IX), and reverse osmosis are the primary advanced water treatment technologies that remove PFAS. GAC and IX are not very effective for certain other target compounds, particularly 1,4-dioxane, which has had high concentrations in the Cape Fear River. Advanced oxidation process (AOP) can remove 1,4-dioxane; therefore AOP has been included in the evaluation of GAC and IX options. AOP can be achieved using UV-AOP or using ozone with peroxide.

- The evaluation has highlighted three alternatives for advanced treatment at the Northwest WTP for the County's consideration, including:
  - Option 1 - Reverse Osmosis (RO)
  - Option 2 – Ozone with Biofiltration and Post-Filter GAC (Ozone/BAF-GAC)
  - Option 3 – Post-Filter GAC with IX and UV-AOP (GAC/IX/UV-AOP)

A summary of the planning-level opinion of capital cost and annual operation and maintenance costs for these advanced treatment alternatives is presented in Table E-1. Table E-1 also includes the calculated Net Present Worth (NPW) cost for the three major treatment options. The planning-level capital cost for the capacity expansion is assumed to be the same for all three alternatives as shown in Table E-2, which presents the total project capital cost for the combination of adding advanced treatment for PFAS and for expanding the Northwest WTP to 36 mgd capacity. Costs are preliminary, budgetary estimates and include 30 percent contingencies.

**Table E-1. Planning-Level Opinion of Capital Cost, Annual O&M Cost and Net Present Worth (NPW) for Advanced Treatment Options**

Planning-Level Cost Description	Reverse Osmosis	Ozone/BAF-GAC	GAC/IX/UV-AOP
Capital Cost	\$ 99 Million	\$ 99 Million	\$ 84 Million
Annual O&M Cost	\$ 2.9 Million/Year	\$ 4.7 Million/Year	\$ 4.7 Million/Year
25-yr NPW of Capital and Annual Costs	\$ 158 Million	\$ 193 Million	\$ 178 Million

**Table E-2. Total Project Capital Cost (Advanced Treatment + Capacity Expansion)**

Opinion of Capital Cost (Advanced Treatment + Capacity Expansion)			
	Reverse Osmosis	Ozone/BAF – GAC	IX/GAC/UV-AOP
Total Advanced Treatment Cost	\$ 99 M	\$ 99 M	\$ 84 M
Capacity Expansion Project Cost	\$ 38 M	\$ 38 M	\$ 38 M
<b>Opinion of Total Capital Cost</b>	<b>\$ 137 M</b>	<b>\$ 137 M</b>	<b>\$ 122 M</b>

Based on the evaluation of the alternatives, RO treatment provides the removal of the highest number of target contaminants and is recommended for the Northwest WTP expansion. To demonstrate the effectiveness of RO treatment, a pilot test at the Northwest WTP has been initiated. The RO pilot testing is expected to be completed in Summer 2018.

RO is recommended over the other options for the following reasons:

- RO is the Best Technology for Removal of PFAS. Some PFAS, such as GenX, PFMOAA and PFO2HxA would require very frequent change-out of GAC and IX for removal.
- GAC and IX would likely result in higher finished water concentrations of GenX, PFMOAA, and PFO2HxA than RO (technologies are not equal).
- RO has the lowest net present worth costs for removing 90% or more of the Target Contaminants.
- RO is the most robust technology for protecting against unidentified contaminants.
- RO treated water concentrations will not vary as much with influent concentrations as with GAC and IX. RO treated water quality does not rely on frequent media change-out to protect from the spills and contaminants in the Cape Fear River.
- RO does not release elevated concentrations after bed life is spent as can happen with GAC and IX if feed concentration drops.

The overall recommended project includes expansion of the existing facilities and the addition of RO advanced treatment.

# Section 1

## Background and Scope of Work

### 1.1 Project Background

#### 1.1.1 Existing Water Supply and Treatment

Brunswick County Public Utilities provides drinking water to a population of nearly 100,000 people annually and 200,000 seasonally. The County obtains its supply from two main water sources:

- 211 Water Treatment Plant (WTP) which is a groundwater plant located near the Town of Southport in the southeastern portion of Brunswick County
- Northwest WTP which is a surface water plant located near the Towns of Northwest and Leland

The Cape Fear River is the water source for the Northwest WTP and which serves the majority of the Brunswick County's customers. Raw water is pumped from the Cape Fear River using the Kings Bluff Pump Station, located north of Lock and Dam No. 1 to the Northwest WTP in the Town of Northwest (**Figure 1-1**). The Kings Bluff Pump Station, owned by the Lower Cape Fear Water and Sewer Authority, also provides raw water to the Cape Fear Public Utility Authority's (CFPUA) Sweeney WTP in Wilmington and the Pender County WTP. The Lower Cape Fear Water and Sewer Authority's Bladen Bluffs WTP has its own intake and pump station further upstream on the Cape Fear River.



**Figure 1-1**  
Lock and Dam No. 1 on the Cape Fear River



The Northwest WTP has a rated capacity of 24 million gallons per day and uses conventional treatment to provide safe drinking water to its residential, commercial, industrial, and wholesale customers. Raw water is treated with chlorine dioxide (pre-oxidant), powdered activated carbon (PAC) for taste and odor control, polyaluminum chloride (PAX) as a coagulant, and caustic. Pulsator® clarifiers and Greenleaf® filters, modified for a pumped backwash, provide solids and particulate removal from the treated water. Filtered water is treated with sodium fluorosilicate for fluoridation, orthophosphate for corrosion inhibition, caustic for pH adjustment, chlorine as primary disinfectant, and ammonia to form chloramines for distribution system residual. An aerial view of the existing plant site is shown on **Figure 1-2**.



**Figure 1-2**  
**Aerial View of Northwest WTP**

Since 2009, the County has been implementing a phased approach for the design and construction of the WTP expansion from 24 to 36 mgd. Phases 1 and 2 have been completed. Phase 3 of the expansion involves an increase in capacity of the core water treatment processes. In addition to the capacity expansion, it was determined in 2017 that advanced treatment will be required to remove emerging contaminants that have been recently identified, including GenX, per- and polyfluoroalkyl substances (PFASs), 1,4-dioxane, Nafion byproducts, and other potentially harmful contaminants found in the Cape Fear River.

Conventional treatment as with the existing plant does not effectively remove perfluorinated compounds such as GenX. Granular activated carbon adsorption (GAC), ion exchange (IX), and reverse osmosis are the technologies that remove per- and polyfluorinated alkyl substances and are hence studied in this report. GAC and IX are not very effective for certain other target compounds, particularly 1,4-dioxane, which has had high concentrations in the Cape Fear



River. Advanced oxidation process (AOP) can remove 1,4-dioxane, so AOP is included in GAC and IX options. AOP can be achieved using UV-AOP or using ozone with peroxide.

### 1.1.2 North Carolina State University Study of Emerging PFAS in Cape Fear Watershed

The first detections of perfluorinated compounds (PFAS) in the Cape Fear River were part of the Environmental Protection Agency's Third Unregulated Contaminant Monitoring Rule (UCMR-3) required monitoring from 2013 to 2015 administered by the United States Environmental Protection Agency (EPA). The results raised interest from researchers including Dr. Detlef Knappe at North Carolina State University (NCSU), who worked with students to assess the variety and distribution of PFAS throughout the Cape Fear River watershed as reported in multiple publications by Mei Sun, et al in 2016. As a result of research completed by Dr. Knappe and Dr. Mei Sun, it was discovered in 2016 that target contaminants found in the Cape Fear River were being found in high concentrations in the drinking water for the communities that withdrew raw water from the lower portion of the Cape Fear River at the Kings Bluff Pump Station, despite undergoing a treatment process.

The new PFAS contaminants including GenX were noted to be downstream of a Fluorochemical manufacturer (Mei Sun et al 2016) located upstream of the County's raw water intake. The wastewater discharge includes perfluorinated compounds (PFAS) and other industrial process waste streams, containing GenX, PFASs, Nafion byproducts, and other potentially harmful contaminants. The Fayetteville Works Plant discharges this wastewater via a permitted outfall under the State's National Pollutant Discharge Elimination System (NPDES) program and it is believed that these chemicals may have been released into the river for nearly four decades.

While a Ph.D. student at NCSU, Dr. Sun published an important research paper that discussed how long-chain PFASs are being replaced by short-chain PFAS and fluorinated alternatives such as GenX. The paper indirectly spurred attention to the issue of GenX in the Cape Fear River, after being reported by multiple news outlets. Relevant technical findings by Mei Sun et al., 2016, include:

1. For 10 legacy PFAS and seven recently discovered perfluoroalkyl ether carboxylic acids (PFECAs):
  - a. Confirming the presence and concentrations of these contaminants in the Cape Fear River watershed
  - b. The effectiveness of conventional and some advanced treatment processes on removing these contaminants
  - c. The effectiveness of treating these contaminants with PAC
2. In the headwater region of the Cape Fear River basin, PFECAs were not detected in the raw water where sampled, but concentrations of legacy PFAS were high.
3. In raw water drawn by the Sweeney WTP, the mean concentration of GenX was reported to be 631 nanograms per liter (ng/L) (n = 37). Six other PFECAs were detected, with three exhibiting chromatographic peak areas up to 15 times that of GenX.

4. At the Sweeney WTP, where advanced ozone treatment is utilized, PFECA removal by coagulation, ozonation, biofiltration, and disinfection was negligible.
5. The absorbability of PFAS by PAC increased with increasing chain length.

### 1.1.3 North Carolina House Bill 56 Study of GenX

North Carolina House Bill 56 (HB56) issued a mandate and funding for the current study being conducted by Cape Fear Public Utility Authority (CFPUA) to evaluate water treatment technology to remove GenX at the Sweeney WTP. Per HB56, CFPUA is to perform this work in coordination with Brunswick County Public Utilities and Pender County Utilities. The data from this study has been made public and a final report on this HB 56 pilot testing study is required by April 1, 2018.

HB56 also funded the University of North Carolina at Wilmington to identify and quantify GenX, the extent to which it biodegrades or bioaccumulates, and the risk the contaminant poses to human health; this study is ongoing.

It is important to note that the HB 56 pilot testing study is limited primarily to PFAS (some data on pharmaceuticals and personal care products (PPCPs) and endocrine disruptive compounds (EDCs) is available). The study includes pilot-plant evaluations of two treatment technologies for removal of PFAS: GAC and ion exchange (IX). Interim results from the HB 56 study are presented in the GAC and IX sections of this report.

### 1.1.4 North Carolina Department of Environmental Quality Division of Water Resources Studies on 1,4-Dioxane

As with PFAS, it was UCMR-3 that first required utilities to test for 1,4-dioxane from 2013 to 2015. Dr. Detlef Knappe further researched the UCMR-3 findings by testing and reporting on 1,4-dioxane concentrations across the Cape Fear River watershed. This attracted much public attention and “alerted”, the North Carolina Department of Environmental Quality (NCDEQ) to the issue in March 2014. As a result, NCDEQ Division of Water Resources (DWR) performed studies of 1,4-dioxane in the Cape Fear River (Ruhlman and Hill (2016), Wrenn and Hill (2017)). In advance of regulation for either water or wastewater, the State has been helping to identify sources and adding 1,4-dioxane monitoring to NPDES permits to indirectly lower concentrations by identifying and working with source contributors, many of which have reduced their 1,4-dioxane discharges.

## 1.2 Scope of Work

In response to the increased concern over water quality in the Cape Fear River, Brunswick County contracted CDM Smith to study and recommend a plan to improve treatment and removal of contaminants of concern during the planned capacity expansion. The following objectives were established for the project:

- Determine a subset of the target contaminants (TC) from the lower Cape Fear River that will be the focus of the project, including but not limited to the following contaminants:
  - Primary Target Contaminants: Per- and Polyfluoroalkyl substances (PFASs)

- *GenX and other new PFAS from the Mei Sun 2016 Article on occurrence in the Cape Fear River (PFMOAA, PFMOPrA, PFMOBA, PFPrOPrA (GenX), PFO2HxA, PFO3OA, and PFO4DA)*
- *Nafion by-products*
- *Others PFAS.*
- **Secondary Target Contaminants**
  - *1,4-Dioxane*
  - *N-Nitrosodimethylamine (NDMA)*
  - *General background Pharmaceuticals and Personal Care Products (PPCPs) and Endocrine Disruptive Compounds (EDCs)*
  - *Hexavalent Chromium*
  - *Brominated compounds*
- Establish treatment goals for the TC.
- Evaluate feasible treatment alternatives for the removal of TC at the Northwest WTP.
- Recommend a plan to improve treatment and the removal of TC at the Northwest WTP, including a planning-level opinion of probable construction cost estimate for the recommendation.
- Provide the County with an updated planning-level opinion of probable construction costs to expand the Northwest WTP to 36 mgd.

To meet the project objectives, the project approach includes the following tasks:

- Desktop Treatment Alternative Analysis
- Pilot and Bench-Scale Testing
- Treatment Recommendation and Final Report
- Pre-Permit Application Services
- Concentrate Discharge Dilution Study, Toxicity Testing, and NPDES Permit

This report presents a conceptual design of the plant expansion, identification of several TC associated with water from the lower Cape Fear River, establishment of preliminary treatment goals, and evaluation of water treatment technologies that have been proposed for the removal of these TCs. The evaluation of treatment alternatives is based on a desktop analysis. The analysis is based on experience at similar facilities along with assumptions and extrapolations that could be confirmed by bench-scale and/or pilot-scale testing before full-scale implementation where not addressed by current pilot testing. To present the results, this report is divided into the following sections:

Section 2	Target Contaminants and Preliminary Treatment Goals
Section 3	Granular Activated Carbon
Section 4	Ion Exchange
Section 5	Reverse Osmosis
Section 6	Ozone with Biofiltration
Section 7	Ultraviolet Radiation/Advanced Oxidation Process
Section 8	Existing Facilities Expansion
Section 9	Preliminary Findings, Planning-Level Cost Estimates, and Recommendations
Section 10	Implementation Plan

## Section 2

# Target Contaminants and Preliminary Treatment Goals

## 2.1 Target Contaminants

For presentation and evaluation, target contaminants have been identified and have been separated into primary target contaminants and secondary target contaminants:

- Primary Target Contaminants: Per- and Polyfluoroalkyl substances (PFAS)
  - GenX and other PFAS from the Mei Sun 2016 Article on occurrence in the Cape Fear River (PFMOAA, PFMOPrA, PFMOBA, PFPrOPrA (GenX), PFO2HxA, PFO3OA, and PFO4DA)
  - Nafion by-products
  - Other PFAS compounds
- Secondary Target Contaminants
  - 1,4-Dioxane
  - NDMA
  - General background Pharmaceuticals and Personal Care Products (PPCPs) and Endocrine Disruptive Compounds (EDCs)
  - Hexavalent chromium
  - Brominated Compounds

A description of these potential target contaminants follows.

### 2.1.1 Per- and Polyfluoroalkyl Substances (PFAS)

PFASs are a group of organic chemical compounds that are used in a wide variety of manufactured products including firefighting foams, coating for food packaging, ScotchGard™, and Teflon™, among other products (Fulmer 2016). PFAS are extremely resistant to degradation which helps these products resist stains, grease, and water. As referenced by Dickenson and Higgins (2016), PFAS can be found in source waters outside of industrial releases including street and stormwater runoff and land application of contaminated biosolids. Lists of compounds that make up PFASs, molecular weight, and chemical formula can be found in several references (including Dickenson and Higgins 2016; Sun et al. 2016; and Water Research Foundation 2016). A specific type of PFAS that is of interest is a chemical known by its trade name as GenX, which was detected by Sun et al. (2016) in the Cape Fear River at an average concentration of 631 nanograms per liter (ng/L).

### 2.1.2 GenX

GenX is a synthetic industrial chemical that was developed to replace PFOA, also used in products such as Teflon™. GenX is used as a processing aid for the production of fluoropolymers like Teflon™. According to Heydebreck et al. (2015), it is the ammonium salt of perfluoro-2-propoxypropanoic acid (PFPrOPrA). PFPrOPrA has the chemical formula  $C_6HF_{11}O_3$ , a molecular weight of 330 daltons, and Chemical Abstracts Service (CAS) Registry No. 13252-13-6 (Fulmer 2016). According to *The Intercept*, June 17, 2017 (Lerner 2017).

### 2.1.3 Nafion By-Products

Nafion by-products 1 and 2, a group of synthetic industrial chemicals similar to GenX, are two additional chemicals that have been detected in the Cape Fear River after GenX was first detected. Nafion itself is produced by the Chemours Company. Nafion was first developed in the 1960s by Dr. Walther Grot at DuPont by modifying Teflon™. Nafion is used in chemical processing, fuel cell technology, hydrogen production, paints, and chlorine production (Winkel 2018). Nafion was the first synthetic polymer developed with ionic properties, combining the physical and chemical properties of its Teflon™ base material with ionic characteristics giving it resistance to chemicals as it does not easily release fragments or degrade into its surroundings (Perma Pure 2014). Nafion can withstand extremely high working temperatures, up to 190 degrees Celsius, and functions well as an ion exchange polymer (Perma Pure 2014). Nafion is developed by the polymerization of a perfluorinated vinyl ether comonomer with TFE, resulting in the chemical formula  $C_7HF_{13}O_5S - C_2F_4$  (Mauritz and Moore 2004).

### 2.1.4 1,4-Dioxane

1,4-Dioxane is a synthetic industrial chemical that is a by-product present in many goods including paint strippers, dyes, greases, antifreeze, and in some consumer products including deodorants, shampoos, and cosmetics (ATSDR 2012; Mohr 2001). Traces of 1,4-dioxane may also be present in food supplements due to food-containing residues from packaging adhesives and or food crops treated with pesticides containing 1,4-dioxane. It is completely miscible in water and is unstable at high temperatures and pressures and may be explosive in nature with long periods of exposure to light or air (EPA 2006). Dr. Knappe began testing for 1,4-dioxane in NC surface water in 2013 and approached drinking water utilities and the North Carolina Department of Environmental Quality (NCDEQ) in 2014 to present evidence that 1,4-dioxane was present in the Cape Fear River basin waterways feeding public drinking water supplies (Clabby 2016).

### 2.1.5 N-Nitrosodimethylamine

N-Nitrosodimethylamine (NDMA) is a semi-volatile organic chemical that forms in industrial processes and is not produced in pure form or commercially used in the United States, except for research purposes (ATSDR 1989; HSDB 2012). NDMA has the CAS Registry No. 62-75-9, and a molecular weight of 74.08 grams per mol (g/mol). It was previously used in the production of rocket fuel, antioxidants, and additives for lubricants and softeners. NDMA is an unintended byproduct of the chlorination of wastewater and drinking water treatment plants using disinfection treatment technology (Bradly et al. 2005, Mitch et al. 2003).

### 2.1.6 Pharmaceuticals and Personal Care Products and Endocrine Disrupting Compounds

As mentioned above with 1,4-dioxane, PPCPs and EDCs are present in the environment and have been detected in many water bodies around the world. The presence of these compounds in the environment was discussed and published by Stumm-Zollinger et. al 1965; they indicated that steroid hormones are not completely eliminated by wastewater treatment. As reproductive efficiency of fish atment facilities declined in the 1990s, PPCPs and EDCs in the environment came to the forefront (Snyder et al., 2010). Acetaminophen, ibuprofen, caffeine, and atrazine are all well-known PPCPs and EDCs found in source drinking water (Snyder et al., 2010).

### 2.1.7 Hexavalent Chromium

Hexavalent chromium (chromium-6) is usually produced in industrial processes and is added to alloy steel to increase hardenability and corrosion resistance (USDL 2018). Chromium-6 may also be used in dyes, paints, inks, and plastics and as an anticorrosive agent added to paints, primers, and coatings. According to a report by the Engineering Working Group in September 2016, the tap water supplied to over 218 million people contains levels of chromium-6 above 0.02 parts per billion (ppb); a public health goal of 0.07 ppb has been set by North Carolina and New Jersey. Chromium-6 has a health advisory level of 100 micrograms per liter ( $\mu\text{g/L}$ ) (EPA 2012 DSWHA).

### 2.1.8 Brominated Compounds

Bromide-based compounds, including bromomethane and bromochloromethane, can occur both naturally in coastal environments and can be man-made as well. These chemicals are disinfection by-products originating from the group of four chemicals known as trihalomethanes.

Bromomethane,  $\text{CH}_3\text{Br}$ , also known as methyl bromide, is mostly used as a solvent in the planting and manufacturing of pesticides. Between 2010 and 2015, bromomethane was detected in the water of 345 utilities located in 32 states with a total service area population of approximately 5.2 million people (Environmental Working Group 2018).

Bromochloromethane,  $\text{CH}_2\text{BrCl}$  (Halon 1011), was developed to be a less toxic version of carbon tetrachloride to be used in fire-extinguishing but banned by the National Fire Protection Agency (NFPA) in favor of using safer halons.

Bromate,  $\text{BrO}_3^-$ , is an ion that is contained in compounds such as sodium-bromate and potassium-bromate. Bromates are formed most commonly during water treatment in the ozone process when ozone is used to treat the water source containing naturally occurring bromide. Bromate formation is dependent on many factors including ozone concentration, bromide ion concentration, water pH, and contact time. Both the World Health Organization (WHO) and EPA have set the MCL in public water systems at 10 ppb; bromate is included in the current EPA review of disinfectant by-product regulations so the current MCL level will be reconsidered in the near future.

## 2.2 Target Contaminant Identification

Many contaminants exist at concentrations that may represent a human health risk in rivers and lakes utilized as drinking water source; yet these contaminants are unregulated by EPA or state agencies. Creating new regulations for water contaminants has proven to be a lengthy and costly process for the EPA, with 15 years being the average time it takes to create new regulations for a drinking water contaminant. As a result, some states have created additional regulations for the removal of contaminants, in addition to the national drinking water regulations. For example, the North Carolina Department of Health and Human Services has established an advisory level of 140 ng/L for the concentration of GenX in drinking water.

The Unregulated Contaminant Monitoring Rule (UCMR) is a data collection program administered by EPA to collect data for contaminants suspected to be present in drinking water and may have impact on public health, but do not have regulations or health-based standards set under the Safe Drinking Water Act (SDWA). These contaminants are sometimes called Contaminants of Emerging Concern (CECs), but are not necessarily new contaminants to society. The UCMR monitoring provides EPA with nationally representative data on the occurrence of contaminants in drinking water, the number of people potentially being exposed, and an estimate of the levels of that exposure.

UCMR-3 took place from 2013 to 2015. UCMR-4 will begin in 2018 and continue to 2020. UCMR-3 asked participating utilities to collect data on raw and treated water for thirty contaminants.

To refine the list of Target Contaminants for this analysis, information was reviewed from the following sources:

- Historical water quality data
- UCMR data
- Related and relevant studies and academic research findings
- Data collected by NCDEQ

The list of contaminants found in the Cape Fear River were cross-referenced with the following criteria:

- Contaminants believed to have negative impacts on human health as indicated by an established limit or health advisory level at the federal or state level, including values from other states
- Contaminants at or above concentrations that are regulated (EPA, other states) for health impacts. Contaminants demonstrated by prior testing to be well below regulated levels were not included as target contaminants for testing.
- Contaminants that have approved methods for being measured in a lab
- Contaminants being evaluated for future regulations by the EPA (UCMR-3, -4)



A summary of the target contaminants that have health advisory criteria and are being monitored is presented in **Table 2-1**. Occurrence data confirm that treatment decisions are mainly affected by PFAS and 1,4-Dioxane. Concentrations of NDMA, Cr(VI), and PPCPs were found to be low in the lower Cape Fear River.

## 2.3 Preliminary Treatment Goals

For the target contaminants in this study, it is necessary to set treatment goals for removal. We understand the County's goal for this project is to select the best combination of PFAS removal efficiency and cost for implementation at the Northwest WTP. Accordingly, the comparison of options included herein are based on removing at least 90 percent of GenX and consequently over 90 percent of most of the PFAS contaminants. Certain technologies (GAC and IX) discussed herein are costed for 90 percent GenX removal, and will not remove 90 percent of several other PFAS (e.g. PFMOAA and PFO2HxA) though the majority of PFAS will have at least 90 percent removal. Since removing 90 percent or more of the PFAS requires a major project, it is logical to assess removals for other contaminants while comparing the technologies; hence the secondary target contaminants are also evaluated. These secondary target contaminants are compounds known to occur in the lower Cape Fear River that EPA has given some indication of potentially regulating in the future. Higher or lower percent removal targets can be selected by the County if desired. Changing the percent removal targets would affect all options capital and operations and maintenance (O&M) costs.

**Table 2-1 Preliminary List of Target Contaminants for Brunswick County Northwest WTP Treatment Evaluation**

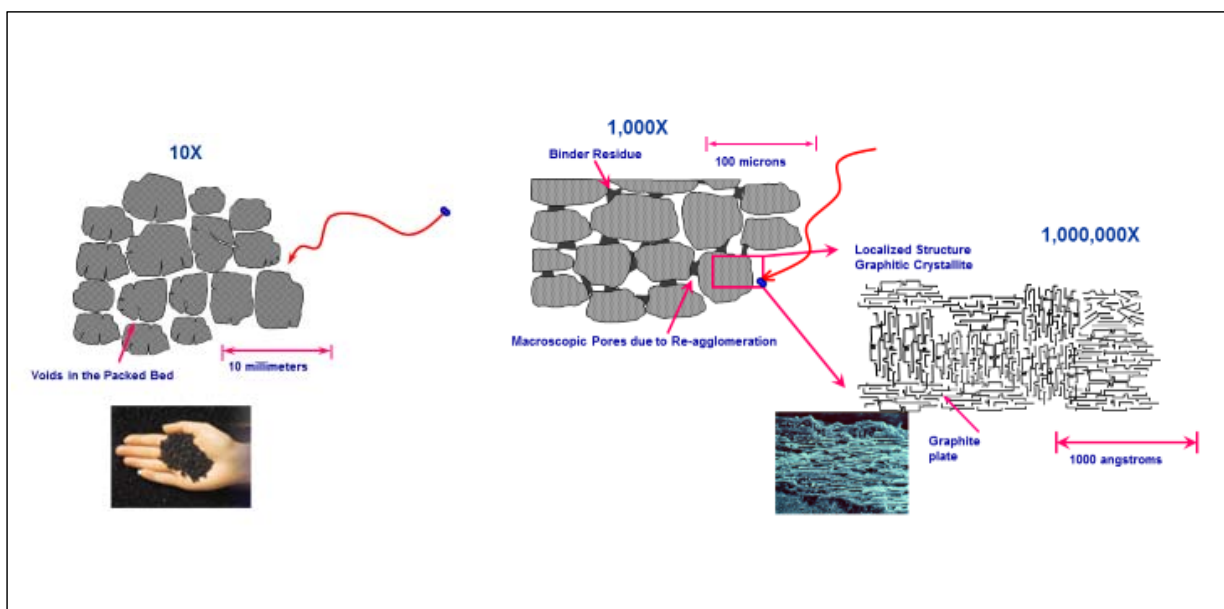
Contaminant	Health Advisory Level (µg/L)	Standards and Advisory Level References and Comments	Cape Fear River Occurrence Value (µg/L), unless otherwise specified	Comment
1,4-dioxane	0.46 (screening level for tap water) 3 (NC DEQ groundwater standard)	EPA 2017b, Regional Screening Level (RSL) Summary Table 15A NCAC 02L .0202, Groundwater Standards	0.9 - 7.7	Knappe, WRRRI Report
Perfluorobutanoic acid (PFBA)			<0.01 - 0.104, 0.023 - 0.0243	Sun et al. 2016, HB 56 Pilot
Perfluoropentanoic acid (PFPeA)			<0.01 - 0.116, 0.0556 - 0.0587	Sun et al. 2016, HB 56 Pilot
Perfluorohexanoic acid (PFHxA)			<0.01 - 0.024, 0.0645 - 0.0652	Sun et al. 2016, HB 56 Pilot
Perfluoroheptanoic acid(PFHpA)			<0.01 - 0.024, 0.0423 - 0.0426	Sun et al. 2016, HB 56 Pilot
Perfluorooctanoic acid (PFOA)	0.07*	EPA health advisory for PFOS + PFOA = 0.070 µg/L	<0.01 - 0.017, 0.0233 - 0.0237	Sun et al. 2016, HB 56 Pilot
Perfluorooctanesulfonic acid (PFOS)	0.07*	EPA health advisory for PFOS + PFOA = 0.070 µg/L	<0.025 - 0.040, 0.02 - 0.0214	Sun et al. 2016, HB 56 Pilot
Perfluorononanoic acid(PFNA)	0.013	NJ MCL	<0.01, 0.052 - 0.065	Sun et al. 2016, HB 56 Pilot
Perfluorodecanoic acid (PFDA)			<0.01, 0.047 - 0.059	Sun et al. 2016, HB 56 Pilot
Perfluoroundecanoic acid(PFUnA)			ND	HB 56 Pilot
Perfluorododecanoic acid(PFDoA)			ND	HB 56 Pilot
Perfluorotridecanoic acid (PFTrDA)			ND	HB 56 Pilot
Perfluorotetradecanoic acid (PFTeDA)			ND	HB 56 Pilot
Perfluorohexadecanoic acid (PFHxDA)			ND	HB 56 Pilot
Perfluorobutanesulfonic acid (PFBS)			<0.01, 0.059 - 0.063	Sun et al. 2016, HB 56 Pilot
Perfluoropenanesulfonic acid (PFPeS)			0.013	
Perfluorohexanesulfonic acid (PFHxS)	0.027 - 0.093	MN Guidelines - TX Guidelines (Lower Limit - Upper Limit)	<0.01 - 0.014, 0.092 - 0.093	Sun et al. 2016, HB 56 Pilot
Perfluoroheptanesulfonic acid (PFHpS)			ND	HB 56 Pilot
Perfluorononanesulfonic acid (PFNS)			ND	HB 56 Pilot
Perfluorodecanesulfonic acid (PFDS)			ND	HB 56 Pilot
N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)			ND	HB 56 Pilot
N-methyl perfluorooctanesulfonamidoacetic acid ( NMeFOSAA)			ND	HB 56 Pilot
Perfluorooctane sulfonamide (PFOSA)			ND	HB 56 Pilot
Perfluoro-2-proxypropanoic acid (GenX)	0.140 (NC DEQ health goal)	0.140 µg/L is NC DEQ health goal for exposure in drinking water	0.055 - 4.56, 0.028 - 0.029	Sun et. al 2016, HB 56 Pilot
Perfluoro-4-methoxybutanoic acid (PFMOBA)			<0.01	Late 2017, NCSU/EPA
Perfluoro-3-methoxypropanoic acid (PFMOPrA)			<0.01	Late 2017, NCSU/EPA
Perfluoro-2-methoxyacetic acid (PFMOAA)			0.3 - 0.4	Late 2017, NCSU/EPA
Perfluoro(3,5-dioxahexanoic) acid (PFO2HxA)			0.01 - 0.072	Late 2017, NCSU/EPA
Perfluoro(3,5,7-trioxaoctanoic) acid (PFO3OA)			<0.01 - 0.015	Late 2017, NCSU/EPA
Perfluoro(3,5,7,9-tetraoxadecanoic) acid (PFO4DA)			<0.01	Late 2017, NCSU/EPA
Nafion BP1(Other)			0.052	EPA, October 19, 2017
Nafion BP2(Other)			0.01 - 0.016	Late 2017, NCSU/EPA

## Section 3

# Granular Activated Carbon

### 3.1 Process Description

Granular activated carbon (GAC) has been identified as a potential treatment technique for the removal of PFAAs and PFSAAs (Dickinson 2016). GAC removal of the target contaminants occurs through adsorption and/or biofiltration. Granular media is produced from carbonaceous material such as wood, coal, and coconut shells which is activated by heat. GAC is used in water treatment to remove a wide variety of chemicals, taste and odor precursors, color forming organics, and some disinfection by-product precursors. **Figure 3-1** provides a series of magnifications of the GAC particle.



**Figure 3-1**  
**Granular Activated Carbon (courtesy of Calgon Corporation)**

GAC can be added to the treatment process through two possible methods:

- Gravity filters
- Pressure contactors

Equipment included in GAC treatment are shown in **Figures 3-2 and 3-3**.



**Figure 3-2**  
**GAC Gravity Filter**



**Figure 3-3**  
**GAC Pressure Contactors**

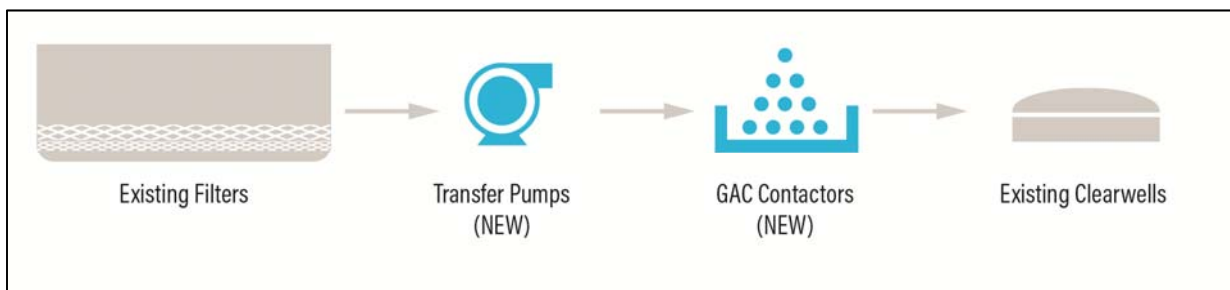
Design of the GAC filters and contactors is affected by the following parameters:

- Loading rate
- Empty Bed Contact Time (EBCT) – sufficient time is needed for the contaminants to be adsorbed onto the GAC for adequate removal
- Media replacement/regeneration frequency

The evaluation of replacing the anthracite with GAC in the existing filters at the Northwest WTP indicates that insufficient EBCT would be provided and that the quantity of media would require frequent replacement; therefore, replacement of the existing media alone with GAC for target contaminant removal is not recommended.

GAC application post-filter is a feasible alternative. Filtration would continue with the existing filters and contaminant removal post-filtration will occur through GAC adsorption.

**Figure 3-4** provides a flow schematic indicating how GAC can be incorporated into the existing treatment process. For the Northwest WTP, the use of pressure contactors should be more cost-effective than the construction of new concrete gravity filters. Hence, the GAC option evaluation focuses on post-filter pressure contactors.



**Figure 3-4**  
**Post-Filter GAC Process Flow Schematic**

Each GAC pressure contactor would include a steel tank with elliptical top and bottom heads, supported by four structural steel legs. The GAC pressure contactors would be furnished as a packaged system, with the manufacturer supplying all the controls, piping, valves, and appurtenances to minimize the connection points for the backwash system. Each vessel would include the following connections:

- Top head
  - Inlet for filtered water and backwash water discharge and vent
  - Inlet for media loading
- Bottom head
  - Backwash inlet
  - Outlet for media unloading
  - Manway



- Side wall
  - Outlet for media unloading
  - Sample taps at even increments across the GAC bed
  - Manway

The water from the existing filters would flow from the inlet header through an inlet valve and piping to the top of the GAC pressure contactors. The filtered water would be treated by flowing through GAC. The filtrate would be collected by an underdrain system located in the bottom of the tank, which also serves as the inlet distributor for the backwash system. The filtrate discharges to the filtrate header.

## 3.2 Application Experience

Full-scale testing conducted at two sites as part of the Water Research Foundation project (Dickinson and Higgins 2016) indicate that GAC is effective at removing longer chain PFAAs and PFSA's over PFCAs; GAC was less effective for the removal of shorter chain PFAS.

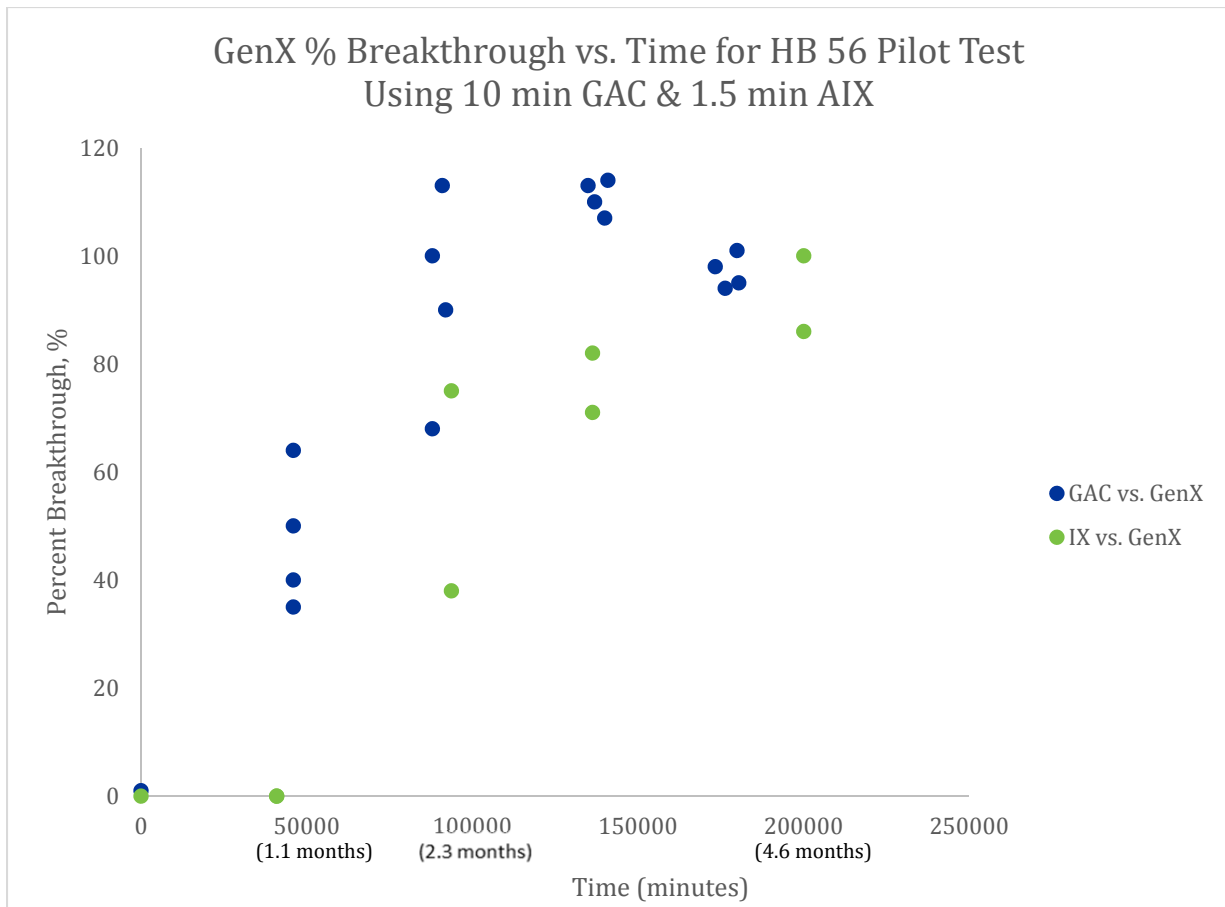
The House Bill 56 pilot study at the Sweeney WTP is evaluating the effectiveness of GAC for the removal of the PFAS and CECs. The GAC pilot test scenarios and media are listed in **Table 3-1**.

**Table 3-1. House Bill 56 GAC Pilot Test Scenarios – Phase 1**

Pilot Column	Pilot GAC Media	Contact Time (minutes)	Feed Water
1	Calgon F400	10	Settled water following intermediate ozonation (simulates replacing GAC in existing filters)
2	Calgon F300	10	Settled water following intermediate ozonation (simulates replacing GAC in existing filters)
4	Calgon F400	10	Effluent from biologically active filtration
5	Evoqua Aquacarb 1230CX	10	Effluent from biologically active filtration

Source: Black & Veatch. January 9, 2018. Final Progress Update No. 3 Emerging Contaminants Treatment Strategy Pilot Study, prepared for Cape Fear Public Utility Authority

Phase 1 of the tests results reported in Progress Report Update No. 3 dated January 9, 2018 indicate that PFAS were observed in the pilot GAC media effluent except for the long chain PFAS; breakthrough resulted after one month of testing. The HB 56 interim results are consistent with the Dickinson and Higgins (2016) results. The GenX breakthrough data versus time for the House Bill 56 (HB 56) pilot test results for GAC and IX are shown on **Figure 3-5**.



**Figure 3-5**  
**HB 56 Pilot GenX Breakthrough Versus Time Pilot Test Results**

The second phase of the pilot study began on January 16, 2018 and includes the GAC media and contact time listed in **Table 3-2**. The EBCT is increased from 10 to 20 minutes by flowing through two columns (10 and 11) in series. The pilot testing is ongoing and expected to continue through the first quarter of 2018.

**Table 3-2. HB 56 GAC Pilot Test Scenarios – Phase 2**

Pilot Column	Pilot Media	Contact Time (minutes)	Feed Water
10*	Calgon Filtasorb 400	10	Settled water following intermediate ozonation (simulates replacing GAC in existing filters)
11*	Calgon Filtasorb 400	10	Settled water following intermediate ozonation (simulates replacing GAC in existing filters)
12	Cabot Hydrodarco 4000	10	Effluent from biologically active filtration
13	Cabot GAC 400	10	Effluent from biologically active filtration

Source: Black & Veatch. February 26, 2018. *Final Progress Update No. 4 Emerging Contaminants Treatment Strategy Pilot Study*, prepared for Cape Fear Public Utility Authority

Parsons performed pilot testing on a residential well in Fayetteville, North Carolina. The results submitted to NCDEQ on January 11, 2018 indicate that GAC was effective in removing C3 dimer (GenX) and other PFAS (Garon (2018)). A WHS-400 GAC adsorption system consisting of dual carbon contactors. Parsons also conducted bench-scale tests to evaluate the removal of C3 dimer using Calgon Carbon F600 GAC.

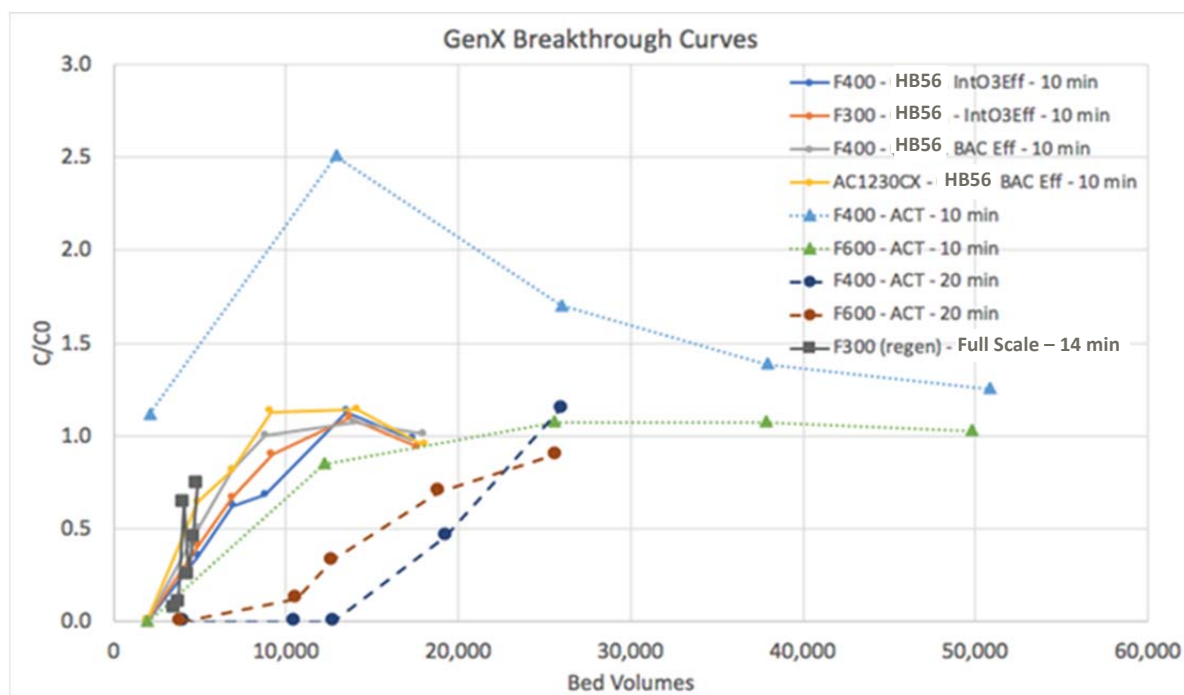
GenX breakthrough curves from various studies are shown on **Figure 3-6**; these curves were assembled and compared by Dr. Detlef Knappe of North Carolina State University to illustrate the HB 56 pilot test data with 10 minutes GAC EBCT and 1.5 minutes EBCT for the ion exchange along with projected curves from Calgon Carbon and full-scale results from another utility. The full-scale results and the HB 56 pilot results are in general agreement that 10 minutes EBCT of GAC starts passing GenX after 1 month and the adsorptive capacity for GenX is largely spent after two months for the GAC's tested.

The accelerated column test (ACT) is a bench-scale test with crushed GAC to expedite the test (similar to the rapid small-scale column test (RSSCT)). The ACT tests were done by Calgon Corporation. The ACT tests show longer GAC life for a 20-minute EBCT, particularly for one of the GACs tested. Separate GAC testing by Parsons reported in Chemours letter dated January 11, 2018 to NCDEQ showed their ACT tests did not agree with their pilot test findings. Given the detail of the HB 56 study and the general agreement of the Pender full-scale results, post-filter GAC application in this report assumes that two 10-minute EBCT GAC vessels in series would allow the first 10-minute vessel to run for two months before changing, so the effective life of 20 minutes of GAC is 4 months.

Therefore, for the Northwest WTP, thirty GAC pressure contactor would be needed, assuming 40,000-pound vessels and a density of 28 pounds per cubic foot (lbs/ft<sup>3</sup>). The media would be replaced in one set of vessels after two months and the lead/lag vessel would be alternated. After the next two months, the media in the second set of vessels would be replaced, and the lead/lag vessel would again be alternated.

GAC alone is not effective for the removal of all target contaminants. For example, GAC does not remove 1,4-dioxane so AOP is required in addition to GAC. Also, GAC is less effective for PFMOAA and PFO2HxA than for GenX. However, post-filter GAC in combination with other treatment alternatives, such as ozone with biofiltration, ultraviolet radiation and advanced oxidation (UV/AOP), are discussed in Section 9 and has merit in achieving 90-percent removal of most of the target contaminants.





**Figure 3-6**  
**GenX Breakthrough Curves**

### 3.3 Summary

Advantages and disadvantages associated with GAC treatment are provided in **Table 3-3**.

**Table 3-3. Advantages and Disadvantages of GAC Treatment**

Advantages	Disadvantages
Effective for strongly adsorbing compounds - Many SOCs/PPCPs/EDC such as pesticides, PFOA, PFOs	Much less effective (shorter life) for Gen-X (Above non-detect within a month) in the HB 56 10 min EBCT tests. Less effective for PFMOAA and PFO2HxA than for GenX.
EPA termed BAT for many SOCs	Not very effective for 1,4 dioxane and some other compounds. Consequently, UV-AOP or Ozone -AOP are required in addition to GAC to achieve target contaminant removals.
Some bio-removal continues long after adsorptive sites are filled	Amount removed decreases with time as adsorptive sites are filled
Proven Process on Cape Fear River source water	Following a sudden large drop in concentration of a compound like Gen-X in the Influent, the GAC releases some of the compound as it seeks the new equilibrium
	Spent GAC requires disposal or reactivation

## Section 4

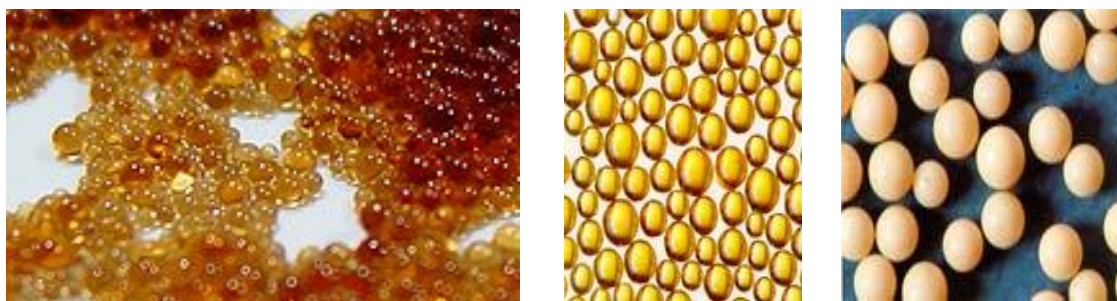
# Ion Exchange

### 4.1 Process Description

Ion exchange has been identified as a promising treatment technique for the removal of PFAAs and PFSAAs (Dickinson and Higgins 2016). In the ion exchange process, chemicals are removed through a substitution reaction using a resin. The resins are composed of bead-shaped particles similar to those shown on **Figure 4-1**. The beads are typically 20 by 30 mesh (approximately 0.03 inch by 0.01 inch) which is similar in size to a grain of sand. Resin beds contain these beads in columns that are 4 to 5 feet deep. The resin is either negatively (anionic) or positively (cationic) charged:

- Anionic
  - Exchange for negative ions
  - Typically charged with hydroxide (OH-) or chloride (Cl-) ions
- Cationic
  - Exchange for positive ions
  - Typically charged with hydrogen (H+) or sodium (Na+) ions

The removal of the target contaminants requires an anionic exchange resin (AER).

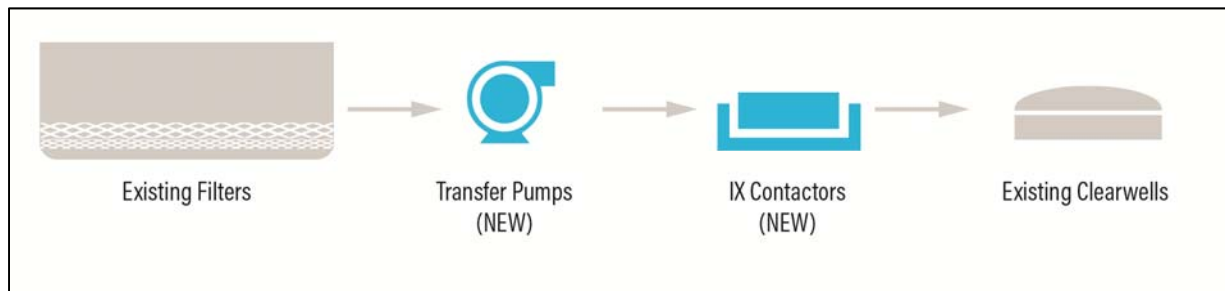


**Figure 4-1**  
**Ion Exchange Resin**

Two options are being considered for implementing anionic ion exchange (IX) in the existing treatment process:

- Post-filter
- Post-filter in addition to GAC

**Figure 4-2** provides a flow schematic indicating how IX can be incorporated into the existing treatment process at the Northwest WTP. The post-filter application in addition to GAC is intended to combine the benefits of both GAC and IX since IX is significantly better than GAC at removing many per- and polyfluorinated alkyl substances including GenX, and GAC offers much better removal of other secondary TC such as pharmaceuticals and personal care products (PPCPs) as well as providing the option of bio-removal for some organic compounds to reduce changeout frequency and associated costs.



**Figure 4-2**  
**Post-Filter Ion Exchange Process Flow Schematic**

**Figure 4-3** provides a photograph of a typical ion exchange vessel. The ion exchange system is available as a package system manufactured by companies such as Evoqua, AdEdge Water Technologies LLC, Tonka Equipment Company, or the Purolite Company. The system would be rated for up to 1.5 mgd per vessel with 26 vessels to provide 3 minutes empty bed contact time at 36 mgd (1.5-minute vessel followed by a second 1.5-minute vessel). In the option of combining ion exchange with GAC, there would be 10 minutes of GAC followed by 1.5 minutes of anion exchange. The package system will include the following components:

- Ion exchange vessels with anion exchange resin
- Piping including face piping and common headers for influent, effluent, backwash, rinse, regenerant feed
- Process control valves, flow meters, flow control valves, and isolation valves
- Instruments to measure flow, pressure, and perform water sampling
- Master control panel and electrical components

The system will be supplied with a stainless steel hydraulic panel to monitor the system inlet and outlet for pressures and water sampling.



**Figure 4-3**  
**Ion Exchange Pressure Vessel**

Each vessel will be provided with a grid consisting of a pipe header and laterals with orifices for proper flow distribution. The grid will be of a proven design, and properly supported and reinforced, located at the top of the resin bed. Cleaning provisions will also be provided, consisting of a separate feed/distribution system, properly sized and supported as required.

## 4.2 Application Experience

IX has been used in North Carolina as an effective water treatment technology; however, the applications have not involved the target contaminants of this project. IX is being used for removing natural organic matter to help lower concentrations of disinfection by-products in Dare County (Skyco plant), Currituck County, and the Castle Bay water system near Wilmington; the three systems use fixed bed IX for treatment of groundwater. Johnston County uses Magnetic Ion Exchange Resin (MIEX) for a surface water which is another example of IX resin applicability for removing natural organic matter.

Full-scale testing conducted at two sites as part of the Water Research Foundation project (Dickinson and Higgins 2016) indicate that IX is effective at removing longer chain PFAAs and PFSAAs over PFCAs; IX was less effective for the removal of shorter chain PFAS. Dickinson and Higgins (2016) indicated that the two sites did not specifically target these contaminants; they recommended that full-scale testing be conducted to specifically target PFSAAs where frequent resin changes would be required.

The HB 56 pilot testing at the Sweeney WTP is evaluating the effectiveness of IX for the removal of the PFAS and CECs. The pilot test resins that are being tested are listed in **Table 4-1**.

**Table 4-1. HB 56 Ion Exchange Pilot Test Scenarios – Phase I**

Testing Phase	Pilot Column	Pilot Media	Contact Time (minutes)	Feed Water
I <sup>1</sup>	5	Evoqua Aquacarb PSR-2	1.5	Effluent from biologically active filtration
1 <sup>1</sup>	6	Evoqua Aquacarb 2304	1.5	Effluent from biologically active filtration
2 <sup>2</sup>	7 <sup>3</sup>	Purolite PFA694E	1.5	
2 <sup>2</sup>	8 <sup>3</sup>	Purolite PFA694E	1.5	
2 <sup>2</sup>	9	Calgon CalRes 2301	1.5	

Sources:

1. Black & Veatch. November 3, 2018. *Final Progress Update No. 1 Emerging Contaminants Treatment Strategy Pilot Study*, prepared for Cape Fear Public Utility Authority
2. Black & Veatch. February 26, 2018. *Final Progress Update No. 4 Emerging Contaminants Treatment Strategy Pilot Study*, prepared for Cape Fear Public Utility Authority.
3. Operated in series to represent longer contact time.

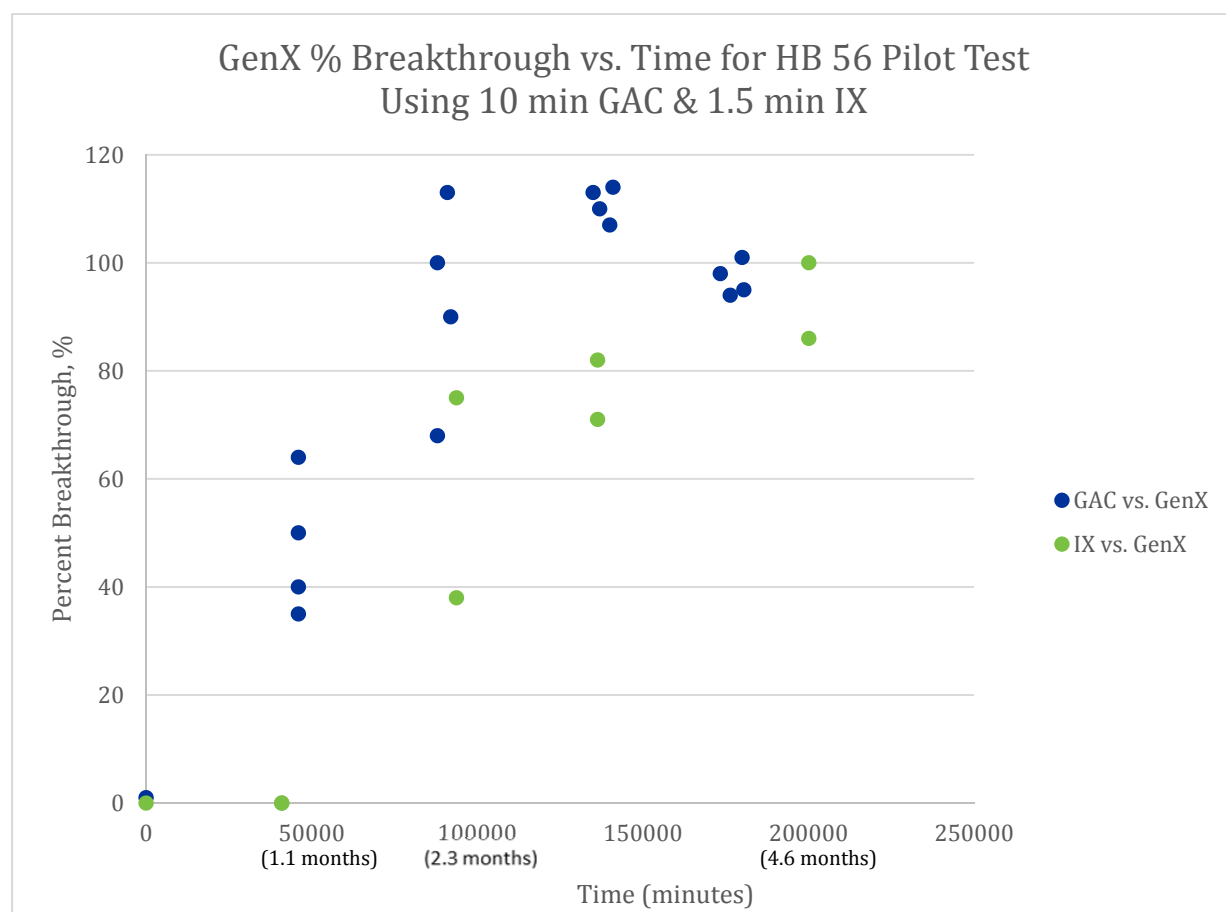
Phase 1 results provided in Progress Update No. 4 dated February 26, 2018 indicate that PFASs were observed in the pilot IX resin effluent except for the long chain PFASs; the Phase 1 results are consistent with the Dickinson and Higgins (2016) results. The HB 56 Pilot Phase 1 results from

the first two resins tested showed that GenX had about 38 to 75% breakthrough after 2.3 months and near 100% breakthrough for both resins after 4.6 months as shown in **Figure 4-4**.

PFASs with carboxylic acid function groups have shown early breakthrough; PFASs molecules with sulfonate functional groups have not shown breakthrough.

Three new IX pilot columns have been installed for the Phase 2 pilot testing to evaluate the performance of two additional resins and the effect of increasing EBCT on PFAS removal for both GAC and IX. To increase the EBCT, the flow will go through two columns in series, each with an EBCT of 1.5 minutes for the IX, resulting in a total EBCT of 3 minutes. The HB 56 pilot testing is ongoing and expected to continue through the first quarter of 2018.

Based on the HB 56 pilot test results, IX treatment is ineffective alone in removing some target contaminants, such as PPCPs. IX also does not remove 1,4 Dioxane so AOP is required along with IX. The use of IX in combination with other treatment technologies such as GAC and UV/AOP are discussed in Section 9 and has merit in achieving 90 percent removal of the target contaminants.



**Figure 4-4**  
**House Bill 56 Pilot Test Results for GenX Percent Removal with GAC and IX**

## 4.3 Summary

Major advantages and disadvantages of IX treatment are listed in **Table 4-2**.

**Table 4-2. Major Advantages and Disadvantages of Ion Exchange Treatment**

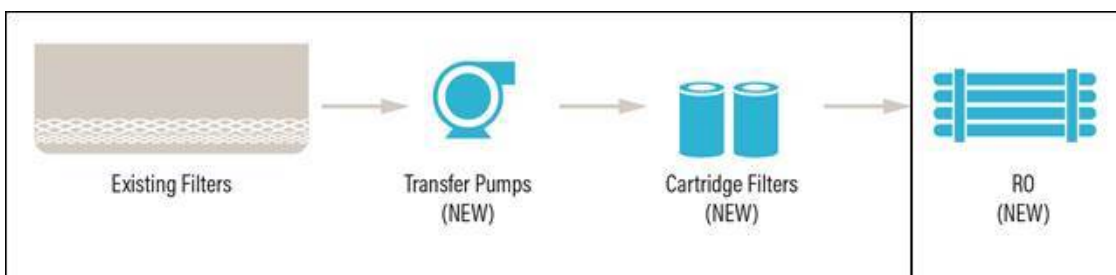
Advantages	Disadvantages
Excellent Removal of Most PFAS – Better than GAC, especially for GenX	Not Effective for PPCPs hence GAC joint use with IX is needed if PPCP removal is desired
Extra Barrier for Anions – PFAS, organics, bromide, etc.	Spent IX resin requires disposal
Disinfection Byproduct Control (D/DBPR - Stages 1 and 2 and future 3/NDMA)	Not effective for 1,4 Dioxane hence AOP is required along with the IX

## Section 5

# Reverse Osmosis

### 5.1 Process Description

In reverse osmosis (RO), water molecules pass through a semi-permeable membrane (permeate) in the direction opposite of natural osmosis (fluid with low concentration diffusing into a fluid of higher concentration in an effort to reach equilibrium) by applying a hydrostatic pressure greater than the osmotic pressure. The rate water molecules diffuse through the membrane is higher than the rate salts, metals, and contaminants diffuse through the membranes, so the result is permeate with a lower concentration of dissolved constituents. RO can be implemented after the granular media filters at the Northwest WTP to reduce dissolved contaminants as shown in **Figure 5-1**.



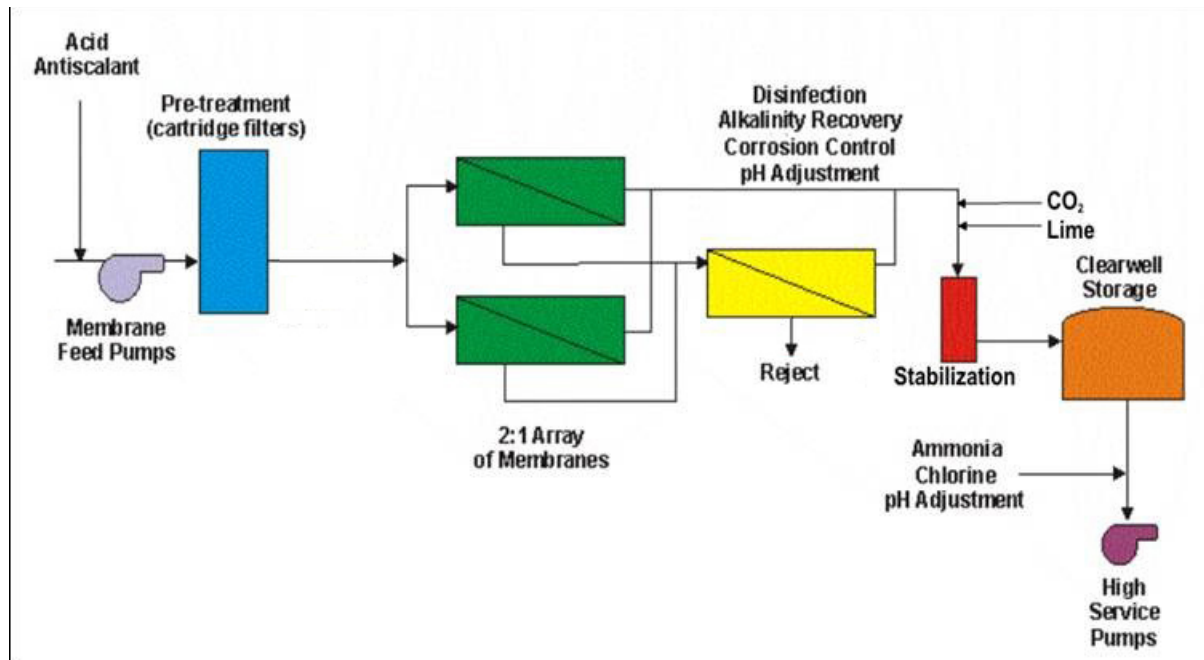
**Figure 5-1**  
**Post-Filter RO Process Flow Schematic**

**Figure 5-2** provides an example of a treatment process schematic for a two-stage RO system treating feedwater with minimal suspended solids. Similar RO systems are used extensively throughout the United States to remove total dissolved solids, hardness, metals, color, organics and radionuclides. Hundreds of RO facilities have been constructed to treat brackish or hard water to augment scarce water supplies. RO treatment plants range in capacity from a few hundred gallons per minute (gpm) to 100 mgd.

RO systems use a semi-permeable membrane that rejects dissolved ions, organics, and metals using a combination of ionic charge and molecular size. The RO membranes being proposed for this project and being tested in the pilot study are standard commercially available brackish water RO membranes rated for 99.3 percent rejection of a standard 2000 mg/L sodium chloride salt solution; this is considered a high rejection, broad spectrum RO membrane. Computer models provided by each membrane manufacturer are used to estimate treated water quality for major ions and pressures, but the rejection characteristics of trace contaminants is determined from pilot tests and full-scale operational data.

The associated pilot test of RO at the Northwest WTP is using the same membrane material and configuration as a potential full-scale system, but the membrane elements have only 80 to 85 ft<sup>2</sup> of membrane area compared to 400 to 440 ft<sup>2</sup> of membrane area for a standard 8-inch diameter by 40-inch long RO element.





**Figure 5-2**  
**RO Process Schematic Example**

RO systems require feedwater with low concentrations of suspended solids to avoid fouling the membranes. RO membranes operate in cross-flow mode; there is a constant residual stream of concentrated salts and contaminants discharged from the RO units (10 to 20 percent of feedwater). The system operates at an average flux of 15 gallons per day per square foot (gfd) so a 36-mgd facility requires approximately 2,400,000 ft<sup>2</sup> of membrane which is contained in 6000 standard 8-inch diameter by 40-inch long spiral-wound RO elements. Typically, 6 to 8 elements are contained in a pressure vessel that has a feed port, residual port and a permeate port.

Typical large municipal RO units have 2 to 5 mgd of permeate capacity with the size depending on the number of units needed for turndown capacity, desirable feedwater pump size, etc. The RO units have stacked 8-inch diameter pressure vessels and are approximately 25 feet long and the width varies from 10 feet for a 1-mgd unit to 15 to 20 feet for a 5-mgd unit. The height can also be varied from 6 to 20 feet above the floor to reduce the overall floor space needed for the RO units.

As the water permeates through the membranes, the salts become more concentrated on the feedwater side and become saturated. The salts, metals, and minerals are kept in the dissolved state using scale inhibitors and pH adjustment to prevent precipitation. Cape Fear River water has low concentrations of dissolved salts and hardness, so the precipitation potential is reduced. Since the source water is treated with alum, the main precipitation concern is colloidal aluminum fouling the membranes. The flux, feedwater dissolved solids, recovery, membrane salt rejection, and membrane age are the main factors affecting feedwater pressure; for the Northwest WTP RO system, the feedwater pressure is expected to be less than 130 pounds per square inch (psi).



The residual stream from the RO has the concentrated minerals and salts in the feedwater, but the TDS concentration for the Northwest WTP will be less than 1300 mg/L, which is significantly less than the concentration that has any effect on effluent toxicity.

Equipment included in RO treatment are shown on **Figures 5-3 through 5-5.**



**Figure 5-3**  
**Horizontal Cartridge Filter**



**Figure 5-4**  
**Horizontal Spilt Case RO Feed Pumps**



**Figure 5-5**  
**Two-Stage RO Membrane Skids Using Standard 8-Inch Diameter Pressure Vessels**

In contrast to the GAC option, RO requires 10 to 20 percent more feedwater than the required permeate flow to account for the discharge of a concentrated residual flow. It is assumed that the brine concentrate would be discharged as a river outfall, which would require an NPDES permit. The RO effluent also has low pH with minimal hardness and total dissolved solids, and will require pH adjustment and addition of calcium and alkalinity to reduce its corrosivity.

For the Northwest WTP, the following major components are needed for a low-pressure RO treatment system with 36-mgd permeate capacity:

- Seven duty 5.15-mgd permeate capacity 4 (82:41 array based on 400 ft<sup>2</sup> membrane elements) RO units and one stand-by 5.15-mgd permeate capacity two-stage RO unit
- Eight 500-horsepower (hp) RO feedwater pumps rated at 135 psi total dynamic head (TDH) @ 5.65 mgd and 75 percent pump efficiency
- Eight 5.15-mgd, 5-micron feedwater cartridge filters
- 4000-pound-per-day (lb/day) emulsified lime chemical feed system for 20 mg/L of alkalinity
- 5500-lb/day carbon dioxide feed system for final pH of 7.4
- 700- lb/day scale inhibitor (antiscalant) feed system
- Permeate Storage for RO System Flushing
- RO Membrane Clean-in-Place (CIP) system

- Brine discharge force main using residual RO pressure
- 15,000-ft<sup>2</sup> Building for RO equipment and ancillary facilities

Initial start-up conditions indicate that the RO feedwater pressure is approximately 100 psi. It was assumed that the ultimate pressure may reach 150 psi for 7-year-old fouled membranes treating colder water. This condition requires a 500-hp pump which is reasonable for 480-VAC variable frequency drives (VFDs). A typical layout of an RO equipment building is shown on **Figure 5-6**.

Each RO unit has a narrow operating range (4.5 to 5.2 mgd). Flow variation is obtained by starting and stopping the units. The potential for biological fouling is minimized when the RO units are operating. When the RO units are offline due to reduced demand, the units have to be flushed periodically with permeate to inhibit biological activity.

The operational manhours for control of RO systems is relatively low due to modern control and automation systems. Operators set the recovery within an approved design range (80 to 85 percent for a two-stage system) and set the desired flow rate (4.5 to 5.2 mgd per skid). The system modulates the concentrate valve to maintain the target recovery ratio (permeate flow/feedwater flow). The feedwater pump VFD will adjust the pump speed to provide the required feedwater flow and pressure to achieve the required permeate flow.

Computer models are used to estimate treated water quality of major ions and pressures, but the rejection characteristics of trace contaminants are determined from pilot tests and full-scale operational data. Pilot tests use the same membrane material and configuration as the full-scale system, but the membrane elements have only 80 to 85 ft<sup>2</sup> of membrane area compared to 400 to 440 ft<sup>2</sup> of membrane area for a standard 8-inch diameter by 40-inch long RO element.

## 5.2 Application Experience

Dickinson and Higgins (2016) indicate that RO is effective at removing both long and short chain PFAAs and PFSAAs, but would likely represent a higher initial capital cost. Their evaluation was based on two California potable water reuse sites that use the following membranes:

- Polyamide Hydranautics ESPA2 membranes in a three-stage array with 12 gfd flux rate and 85 percent recovery
- Toray and Hydranautics RO membranes with a flux rate of 11.6 to 11.9 gfd and 80 percent recovery

All PFASs were below the method reporting limits in the RO permeate.

Pilot testing of RO, prior to chlorine disinfection is being conducted at the Northwest WTP. RO is expected to remove the majority of CECs present to acceptable levels. There is typically some passage of N-Nitrosodimethylamine (NDMA), 1,4-dioxane, and the following PPCPs: tris(2-chloroethyl) phosphate (TCEP), tris (1-chloro-2-propyl) phosphate (TCPP), tris(1,3-dichloroisopropyl)phosphate (TDCPP), triclosan, and N,N-Diethyl-meta-toluamide (DEET).

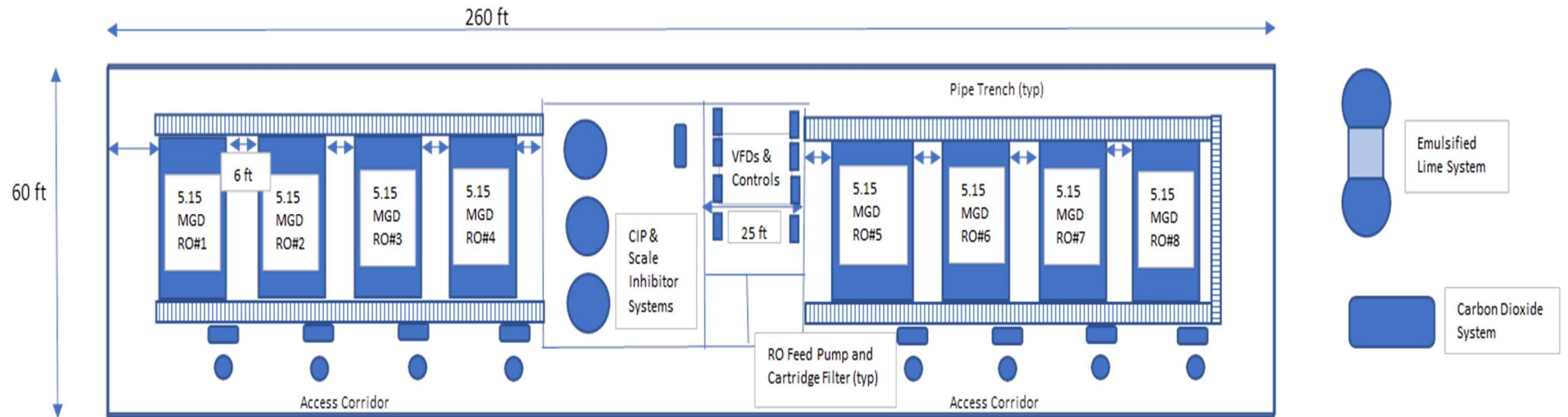


Figure 5-6  
Typical 36-mgd RO Equipment Building



It should be noted that the HB 56 study did not evaluate membrane treatment technology such as nanofiltration (NF) or RO. Low pressure RO/nanofiltration (LPRO/NF) was eliminated from the study during the desktop alternative analysis because of the perceived challenges for permitting the waste discharge, the higher cost and the additional property that the Sweeney WTP would need to purchase. It would also be unusual to pair LPRO/NF with ozone biofiltration, an advanced oxidation treatment technique utilized at the Sweeney WTP. Therefore, the early conclusion to eliminate LPRO/NF from consideration was specific to the Sweeney WTP and should not be applied to the Northwest WTP.

## 5.3 Summary

Advantages and disadvantages associated with RO treatment are listed in **Table 5-1**.

**Table 5-1. Advantages and Disadvantages of RO Treatment**

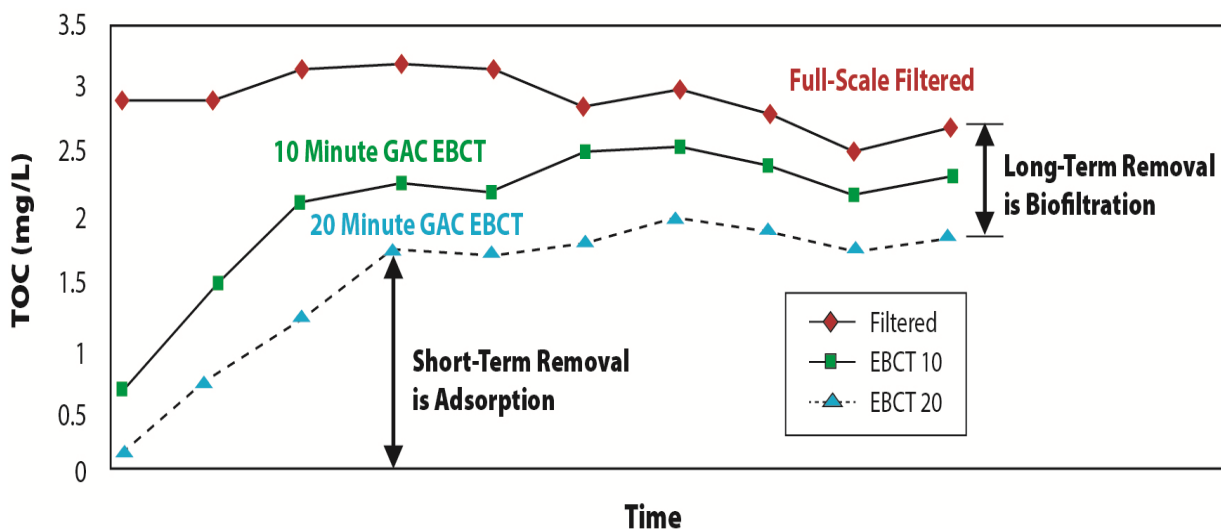
Advantages	Disadvantages
Best Technology for removing PFAS - will give non-detect for the largest number of parameters	Higher capital cost than GAC or IX
Barrier Approach – effluent contaminant concentrations will not rise as significantly with time of use or have breakthrough potential as much as is possible with GAC and IX	<ul style="list-style-type: none"> <li>■ O&amp;M Needs for RO membrane systems include annual or semi-annual chemical cleaning of the membrane elements while in the pressure vessels.</li> <li>■ Periodic flushing of the membranes with permeate when RO Units are off-line for more than 1 day</li> <li>■ Fouling potential</li> </ul>
Barrier to pathogens although need to add tracers to feedwater to verify integrity	Permeate requires stabilization with calcium, alkalinity and orthophosphate to minimize the corrosion potential
Reduces TOC so the Disinfection Byproduct formation potential is minimal. (D/DBPR - Stages 1 and 2 and future 3/NDMA)	RO concentrate with the dissolved solids in the feedwater requires disposal and a NPDES Permit
Greatest protection from future unidentified PFAS	
Lower O&M costs than GAC	

## Section 6

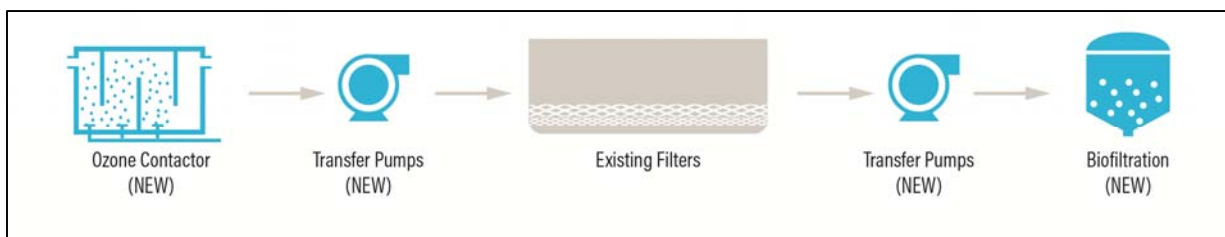
# Ozone with Biofiltration

## 6.1 Process Description

Ozonation of the settled water is intended to provide primary disinfection for *Giardia* and virus inactivation, taste and odor control, and enhance the downstream biological filtration process for both particle removal and disinfection by-product precursor reduction. With biofiltration, GAC migrates from adsorption to biofiltration after several months of operation. Ozonation makes more of the natural organic material biodegradable. **Figure 6-1** illustrates the impact of GAC in removing TOC over time. The ozonation process reduces the demand on the GAC media. A process schematic for implementing ozone with biofiltration at the Northwest WTP is shown on **Figure 6-2**.



**Figure 6-1**  
Example of TOC Removal Impact of Biofiltration

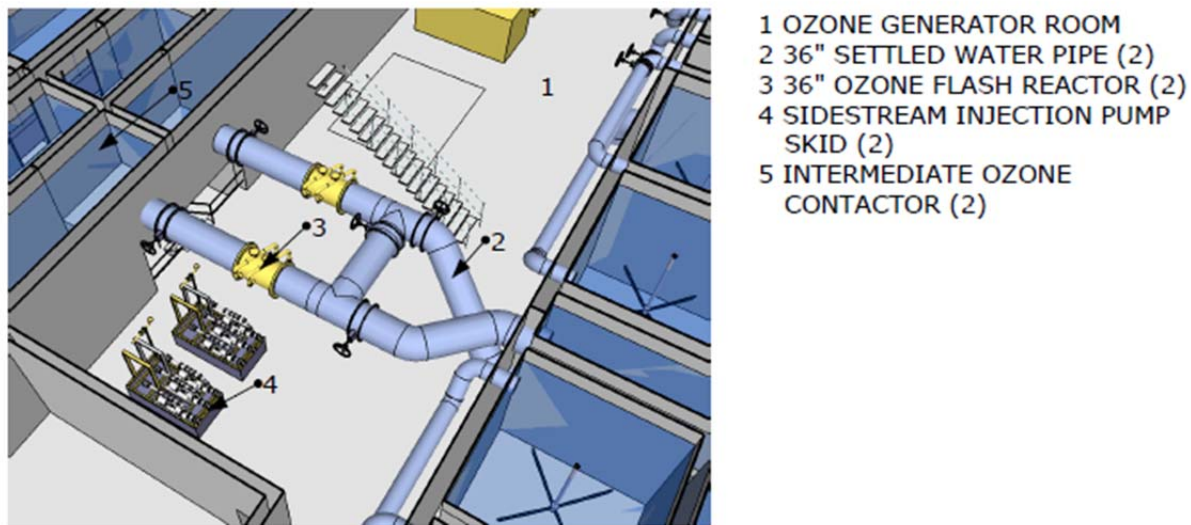


**Figure 6-2**  
Process Flow Schematic with Ozone/Biofiltration

### 6.1.1 Ozone System

The possible ozone system for the Northwest WTP would include a high concentration ozone generation system using liquid oxygen (LOX) as the feed gas. The recommended contacting system would be a horizontal flash mixer followed by a serpentine contactor. The ozone dissolution and contacting system would use sidestream injection, in lieu of traditional fine-bubble diffusers, to enhance treatment performance and minimize the need for confined-space entry to the contactor for diffuser maintenance. A key advantage of the flash reactor sidestream injection technology, used either in a horizontal or vertical configuration, is that it does not require hydrostatic pressure (typically 18-20 feet) to achieve reasonable ozone mass transfer rates, as do fine-bubble diffusion systems, and hence, can be used in combination with shallow-depth ozone contactors.

**Figure 6-3** provides an example of a plan and section view of a horizontal pipe flash reactor dissolution system. The flash reactors are installed on the two settled water pipes. Each pipe discharges into an ozone contactor train. Internal baffles are positioned upstream and downstream of the flash reactor to prevent migration of accumulated ozone gas in the horizontal pipe during low plant flow conditions. A bypass is provided between the pipes to transfer settled water flow from one contactor train to another.



**Figure 6-3**  
**Example of Horizontal Ozone Flash Reactor and Contacting System**

The ozone system consists of the following major components:

- LOX storage and feed gas system
- Ambient-air vaporizers
- Ozone generation and cooling water system
- Mazzei flash reactors (one per contactor train)
- Injection skids (with redundant pumps and injectors)

- Ozone dissolution and contacting system
- Ozone offgas system

**Figure 6-4** provides a photograph of the vertical LOX tanks and ambient air vaporizers at the Corbalis WTP in Virginia. Vertical tanks are often used when limited space is a constraint. The tanks are filled from both the top and bottom to control internal pressure build-up. The vaporizers are simple tube-and-fin heat exchangers that use atmospheric heat collected at the fins to vaporize the LOX as it passes through the tubes. The process slowly builds ice on the vaporizers as moisture in the air freezes to the cold fins. Consequently, the vaporizers must be alternated at timed intervals (typically every 4 to 8 hours) to allow for a defrost cycle.



**Figure 6-4**  
**Vertical LOX Tanks and Ambient Air Vaporizers at Corbalis WTP**

Qualified manufacturers for providing ozone generation equipment include: Ozonia, ITT-WEDECO, and Fuji Electric. **Figure 6-5** provides a photograph of the Ozonia generators and power supply units at the Corbalis WTP. These types of generators are classified as high concentration, medium frequency, tube- and shell-style generators. The generators typically operate economically at an ozone-in-oxygen concentration of 10 to 12 percent by weight, but can increase ozone production output by 30 to 40 percent by decreasing the ozone concentration to 6 to 8 percent, albeit at a more costly rate of oxygen usage.



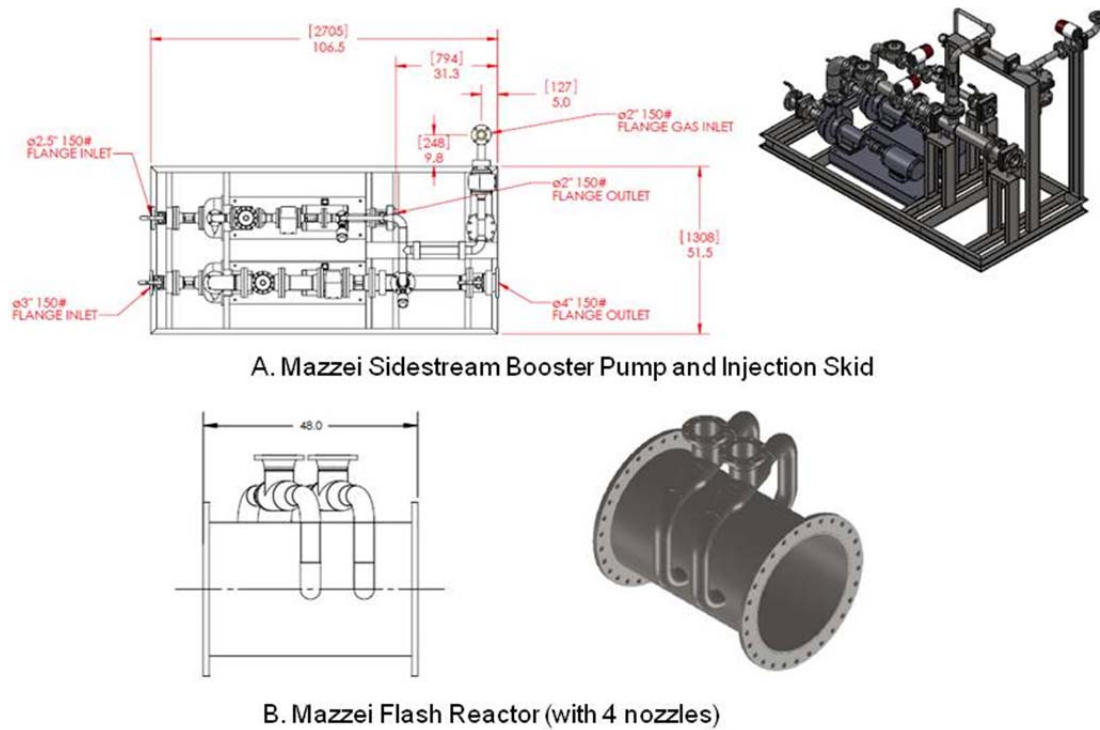


**Figure 6-5**  
**Ozone Generators at Corbalis WTP**

A schematic of the Mazzei flash reactor and sidestream injection booster pump skids, and a photograph of a typical ozone off-gas destruct unit are presented in **Figures 6-6 and 6-7**, respectively.

For the Northwest WTP, the ozone generation room, flash reactor room and ozone offgas destruct room will be housed in a new ozone building. The ozone contacting basins are proposed to be located outside, and adjacent to the ozone building. The ozonated water will flow to ozone contactor trains with a serpentine baffle layout, and exit through an outlet gate. Post-ozone treatment chemicals will be added in a chemical mixing chamber near the outlet of each ozone contactor train using a pumped injection mixing system.

The ozone sample gallery will include ozone residual sample piping and analyzers for each contactor train. Ozone residual sample collection taps will be provided at the beginning, middle and end of each pass of the serpentine contactor trains. Sample probes will be provided with the capability to move the sample probe from one tap to another to respond to changing ozone residual profiles, as water moves through the contactors under different flow or water temperature conditions.



**Figure 6-6**  
**Typical Flash Reactor and Sidestream Injection Pump Skids (Mazzei Injector Corporation)**



**Figure 6-7**  
**Ozone Offgas Blower and Destruct Unit Skid at Fairfax Water Corbalis WTP**

Ozone is a hazardous gas, so the design will include control measures such as ambient ozone and oxygen monitors to automatically shut down the system in the event of a leak.

### 6.1.2 Biological Filtration

The biological filtration process serves the dual purpose of particle removal and removal of biodegradable organic carbon through biological oxidation. Particle removal across a biological filter is achieved in the same way as a non-biological (chlorinated) filter—that is, by particle transport and attachment to filter media. The efficiency of particle or turbidity removal depends to a large extent on coagulation chemistry and the efficiency of the upstream clarification process.

Biological filtration is often used downstream of ozonation for removal of biodegradable ozone byproducts such as aldehydes and ketoacids. These byproducts are easily biodegradable and so enhance biological activity within the filter bed for removing other biodegradable organic compounds. Removal of these compounds reduces the potential for bacterial regrowth in the distribution system.

Ozone-enhanced biological filtration is also effective in removing algal-derived taste and odor (T&O) causing compounds for warm water conditions (including MIB and geosmin) and can reduce disinfection by-products by removing precursor material.

## 6.2 Application Experience

The ozone-biofiltration process is currently used at the Sweeney WTP and at the Cary-Apex WTP on the Cape Fear River (Cary-Apex being upstream on Jordan Lake). Ozone-biofiltration is widely used surface water treatment approach both in the region and nationally, including WTPs in Raleigh, Asheville, Greenville, Fairfax, Henrico, among others. Ozone is not typically implemented for removal of the primary TC (PFAS), but rather for partial removal of organic matter, PPCPs and EDCs, and for taste and odor issues. Ozone also has the benefit of oxidizing 1,4-Dioxane. The Sweeney WTP has been reported to remove approximately 60 to 70% of 1,4-Dioxane at typical influent concentrations.

Implementation of ozonation prior to GAC serves as an oxidizing phase that reduces the GAC removal requirements, hence reducing GAC media changeout frequency and costs. However, ozone with biofiltration alone is ineffective in removing the primary TC (PFAS). Ozone with biofiltration plus post-filter GAC is discussed in Section 9 and has merit in achieving more than 90 percent reduction of most of the TC.

## 6.3 Summary

Major advantages and disadvantages associated with ozone and biofiltration treatment are provided in **Table 6-1**.

**Table 6-1. Major Advantages and Disadvantages of Ozone and Biofiltration Treatment**

Advantages	Disadvantages
Extra barrier – ozone gives some oxidation of 1,4-Dioxane – especially if add $H_2O_2$ for AOP	Cost and complexity to operate
OBF removes biodegradable ozone byproducts such as carboxylic acids and aldehydes – bulk TOC removal	Ozone forms some NDMA (but lowers FP) and NDMA formed can be biodegraded
Removals of some SOC/PPCPs	OBF does not remove PFAS well (still need post treatment) – more an alternate to UV-AOP in this case
Longer GAC life for bulk organics	
Additional disinfection (SWTR)	
Taste & Odor/Aesthetics	
Disinfection byproduct control (D/DBPR)	

## Section 7

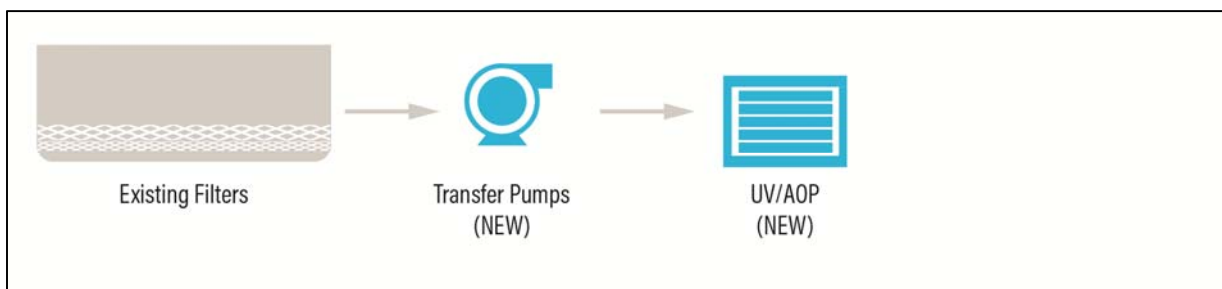
### UV/AOP

#### 7.1 Process Description

Advanced Oxidation Process (AOP) is used in conjunction with UV to remove compounds that are not fully removed by granular activated carbon (GAC), ion exchange (IX), or reverse osmosis (RO). Accordingly, AOP is particularly useful for compounds such as:

- 1,4-Dioxane
- NDMA

Hence, the implementation of UV/AOP downstream of GAC and IX treatment is being considered at the Northwest WTP, along with possible future use downstream of RO. UV/AOP is not included downstream of RO (Section 9) because RO is expected to provide about 90-percent removal of 1,4-dioxane and because NDMA levels were very low in prior sampling under the EPA Unregulated Contaminant Monitoring Rule (UCMR) program. This assumption will be checked against the pilot data when it is available. The potential process flow schematic for the addition of UV/AOP at the Northwest WTP is shown on **Figure 7-1**.



**Figure 7-1**  
**Post-Filter UV/AOP Process Flow Schematic**

##### 7.1.1 AOP

AOP relies on the formation of hydroxyl radicals or chlorine radicals to degrade chemical contaminants, usually through the application of peroxide or chlorine in drinking water treatment. At low pH, chlorine reacts with UV to create hydroxyl and chlorine radicals. The chlorine-AOP reaction is highly pH dependent. For this application, the estimated dosage requirement is 10 mg/L for peroxide and 5 mg/L for chlorine. If this technology is selected then a more detailed analysis of chemical and UV dosing will be needed to optimize the treatment.

AOP can be achieved with ozone-peroxide as well as with UV-peroxide. Consequently, the ozone option as described in Section 6 can provide AOP, and is hence an option for 1,4-dioxane control as is the UV-AOP option discussed in this Section.



### 7.1.2 Ultraviolet Disinfection

Two types of UV reactors are commercially available for municipal drinking water treatment applications: low pressure high output (LPHO) and medium pressure (MP) reactors. There are significant differences in capital and operating costs for these systems, with LPHO systems typically having higher capital costs and lower O&M costs than MP systems. In addition, the electrical requirements can be 2 to 3 times higher for MP systems than LPHO systems, due to differences in the germicidal efficiency of the UV lamps used. Consequently, these systems are typically pre-selected by the owner based on an evaluated bid and life-cycle cost approach so that the UV system can be efficiently designed around the selected vendor and UV equipment system during final design.

UV transmittance (UVT) is the most critical water quality parameter for sizing UV reactors. Other design parameters that affect sizing and configuration of the UV system include the combined lamp aging and fouling (CAF) factor and maximum head loss across the UV reactor. RO produces a high-quality discharge that reduces the power demand of the UV reactor. For this application, the UV dose is estimated to be approximately 0.5 kilowatt-hour (kW-hr) per 1,000 gallons.

Commercially available UV reactors for drinking water applications are closed-vessel designs installed in pressurized pipelines. The primary components of a closed-vessel UV reactor include:

- UV reactor vessel
- UV lamps
- Quartz sleeves (enclosing the lamps)
- Lamp ballasts
- UV intensity sensors
- Flow and UVT sensors
- Temperature-flow sensors
- Lamp cleaning system

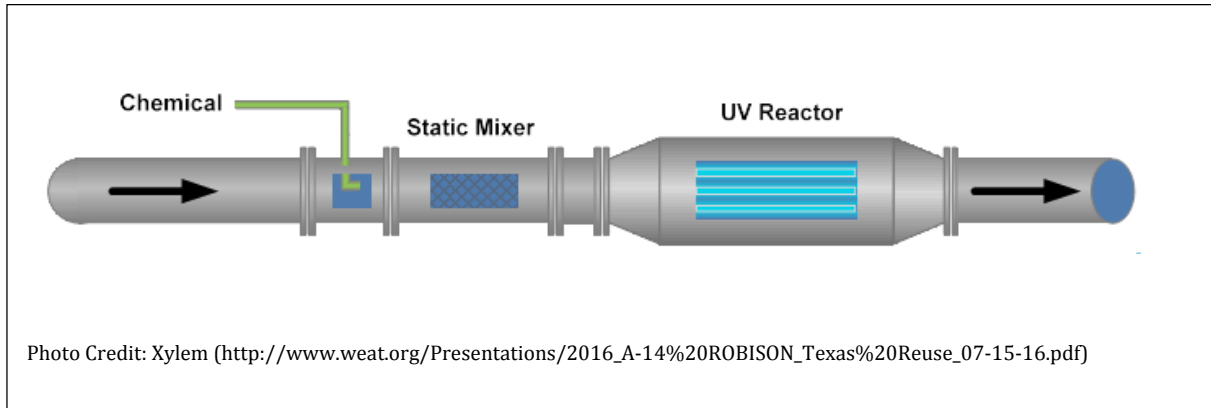
The four major UV equipment suppliers for municipal UV drinking water applications in the United States are Calgon, ITT-WEDECO (Xylem), and Trojan Technologies. **Table 7-1** presents a comparison of the types of UV systems (MP vs. LPHO) and design features for large UV reactors offered by these companies. An example of a UV reactor configuration is shown on **Figure 7-2**.

Each UV treatment train consists of the following components:

- UV piping system to receive water
- Flow meter
- UV (MP or LPHO) reactor
- Outlet control valve for automatic start-up and shutdown of the UV trains and for flow modulation, as necessary, to maintain flows below validated setpoint limits.
- Weir chambers to receive UV-treated flows from each UV train.

**Table 7-1. Major UV System Suppliers and UV Reactor Design Features**

Description	Calgon Sentinel/ Chevron	WEDECO K143	Trojan Torrent	Ozonia Aquaray
Type of Reactor	MP	LPHO	LPHO	MP
Maximum Flange Size	48-inch diameter	48-inch diameter	48-inch diameter	36-inch diameter
Lamps per Bank	1 to 3	12	8	8, 10, 12
Banks per Reactor	1 to 3	2 to 12	2 to 6	1
Validated Flow Range	1-50 mgd	2-40 mgd	5-52 mgd	5.3 – 55.4 mgd
Lamp Type	MP	LPHO Amalgam	LPHO Amalgam	MP
Lamp Life	5,000 hr	12,000 hr	12,000 hr	10,000 hr
Cleaning System	Mechanical Wiper	Off-line Acid	Physchem Wiper	Mechanical Wiper
Sleeve Life	10 yrs	20 yrs	10 yrs	10 yrs
Lamps per Ballast	1	2	2	1
Ballast Life	15 yrs	5 yrs	10 yrs	10 yrs
UV sensors	1 / lamp	1 / bank	1 / bank	1 / lamp
UV sensor life	10 yrs	10 yrs	2 yrs	2 yrs
Power Supply	480 V, 60 Hz, 3 Ph	480 V, 60 Hz, 3 Ph	480 V, 60 Hz, 3 Ph	480 V, 60 Hz, 3 Ph

**Figure 7-2**  
**Example of UV-AOP Reactor**

## 7.2 Application Experience

UV/AOP has not been widely implemented in drinking water treatment for the target contaminants. However, the technology has been widely applied to potable water reuse, particularly in the State of California. California regulations for indirect potable water reuse

(groundwater replenishment, subsurface application) requires implementation of RO and AOP for Full Advanced Treatment (FAT).<sup>1</sup>

The first UV/AOP hypochlorite system was added to the Terminal Island Water Reclamation Plant and Advanced Water Purification Facility in San Pedro, California.<sup>2</sup> The AOP specifications included 6-log virus credit, 0.5 log 1,4-dioxane removal, and less than 10 ppt NDMA in effluent with a UV dose of 920 mJ/cm<sup>2</sup> and free chlorine dose of 2 to 4 mg/L.<sup>3</sup>

UV/AOP has also been added downstream of the RO process at the Leo J. Vander Lands Advanced Water Treatment Facility in Long Beach, California. AOP has been incorporated through the addition of up to 3.5 mg/L of peroxide. The UV/AOP system is designed to achieve a net log removal of NDMA between 1.62 to 2.03 and a 0.5 log reduction of 1,4 dioxane.<sup>4</sup>

Bench scale testing of UV/AOP is currently being conducted at the Northwest WTP to meet the following objectives:

- Evaluate whether UV/AOP using chlorine can be used to remove 1,4-dioxane, NDMA and/or PPCPs
- Evaluate temporal variability of treatment using UV/AOP with chlorine over three-time points, collected monthly

UV/AOP alone is not anticipated to remove the target contaminants. However, UV/AOP in combination with other treatment technologies, such as GAC and GAC/IX, may have merit in removing approximately 90 percent of most of the target contaminants and is being considered for the Northwest WTP, as discussed in Section 9.

## 7.3 Summary

Major advantages and disadvantages of UV/AOP treatment are listed in **Table 7-2**.

**Table 7-2. Major Advantages and Disadvantages of UV/AOP Treatment**

Advantages	Disadvantages
Oxidant Barrier – mainly for 1,4 Dioxane, NDMA	Power Requirement / O&M Cost
Removals of some SOC/PPCPs	UV/AOP does not remove PFAS well (still need other post treatment)
Additional Disinfection/Pathogen Inactivation	
Taste & Odor/Aesthetics	
Disinfection Byproduct Control (D/DBPR)	

<sup>1</sup>[https://www.waterboards.ca.gov/drinking\\_water/certlic/drinkingwater/documents/lawbook/RWregulations\\_20140618.pdf](https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/lawbook/RWregulations_20140618.pdf) (Last accessed February 27, 2018)

<sup>2</sup> [https://watereuse.org/wp-content/uploads/2017/04/WateReuse-OC-Newsletter-2017.1\\_Spring\\_Summer.pdf](https://watereuse.org/wp-content/uploads/2017/04/WateReuse-OC-Newsletter-2017.1_Spring_Summer.pdf) (Last accessed February 27, 2018)

<sup>3</sup> [http://www.weat.org/Presentations/2016\\_A-14%20ROBISON\\_Texas%20Reuse\\_07-15-16.pdf](http://www.weat.org/Presentations/2016_A-14%20ROBISON_Texas%20Reuse_07-15-16.pdf) (Last accessed February 27, 2018)

<sup>4</sup> <http://www.spi-engineering.com/wp-content/uploads/2016/03/2016-AWWA-Wesner-LVL.pdf> (Last accessed February 27, 2018)



## Section 8

### Existing Facilities Expansion

The Northwest WTP is currently rated at a finished water treatment capacity of 24 mgd. The County has approached the need to expand the Northwest WTP through a three-phased process, and has previously completed Phase 1 (2011) and 2 (2015) of the expansion. With the completion of the upcoming Phase 3, the Northwest WTP will be ready to be rated at 36-mgd finished water capacity.

The purpose of this section is to describe the major facilities that will need to be expanded for the Phase 3 Northwest WTP Improvements Project. The Phase 3 scope of work was evaluated in 2010 and then again in 2014, with modifications to the future planned improvements being made with each update. With the recent discovery of GenX, Nafion by-products, and other emerging contaminants, and the associated need to add advanced treatment technologies to the Northwest WTP, the scope of Phase 3 again requires modifications. Advanced treatment technologies that are being considered as part of the expansion and their associated costs are discussed in Section 9. This section discusses elements of the expansion that are required regardless of the advanced treatment technology selected. The plant expansion is illustrated on **Figure 8-1**.

#### 8.1 Parallel Raw Water Transmission Main

Raw water for the Northwest WTP is purchased from the Lower Cape Fear Water and Sewer Authority (LCFWASA). The water is conveyed by the Kings Bluff Pump Station, which is located upstream of Lock and Dam No 1, through a 48-inch diameter main, to a 3-million-gallon ground storage tank. Raw water is then conveyed by gravity through 48-inch and 36-inch diameter raw water mains to the Northwest WTP. Based on previous studies, the County has planned for a new parallel raw water main extending approximately 1,860 feet to feed the rapid mix basins. The planning-level opinion of probable capital cost estimate for the parallel raw water transmission main including 30-percent contingency is \$1.1 million.

#### 8.2 New Rapid Mix and Raw Water Flow Meters

The addition of new centralized rapid mixing and raw water flow meters is included as part of the Northwest WTP upgrade and expansion to provide efficient use of coagulant chemicals and to initiate coagulation upstream of the basins converted to Superpulsators® as shown on the site plan. Three rapid mixers are included for firm capacity equal to the Superpulsators® capacity even when one mixer is out of service. Each rapid mixer will have an upstream flow meter for metered pacing of coagulant chemicals. The rapid mixers are sized for 1 minute of contact time in the mixer with variable speed drives for controlling mixing intensity. Coagulation continues in the piping and vacuum chambers downstream of the mixers. The planning-level opinion of probable capital cost estimate for the rapid mixers and flow meters including 30-percent contingency is \$2.9 million.



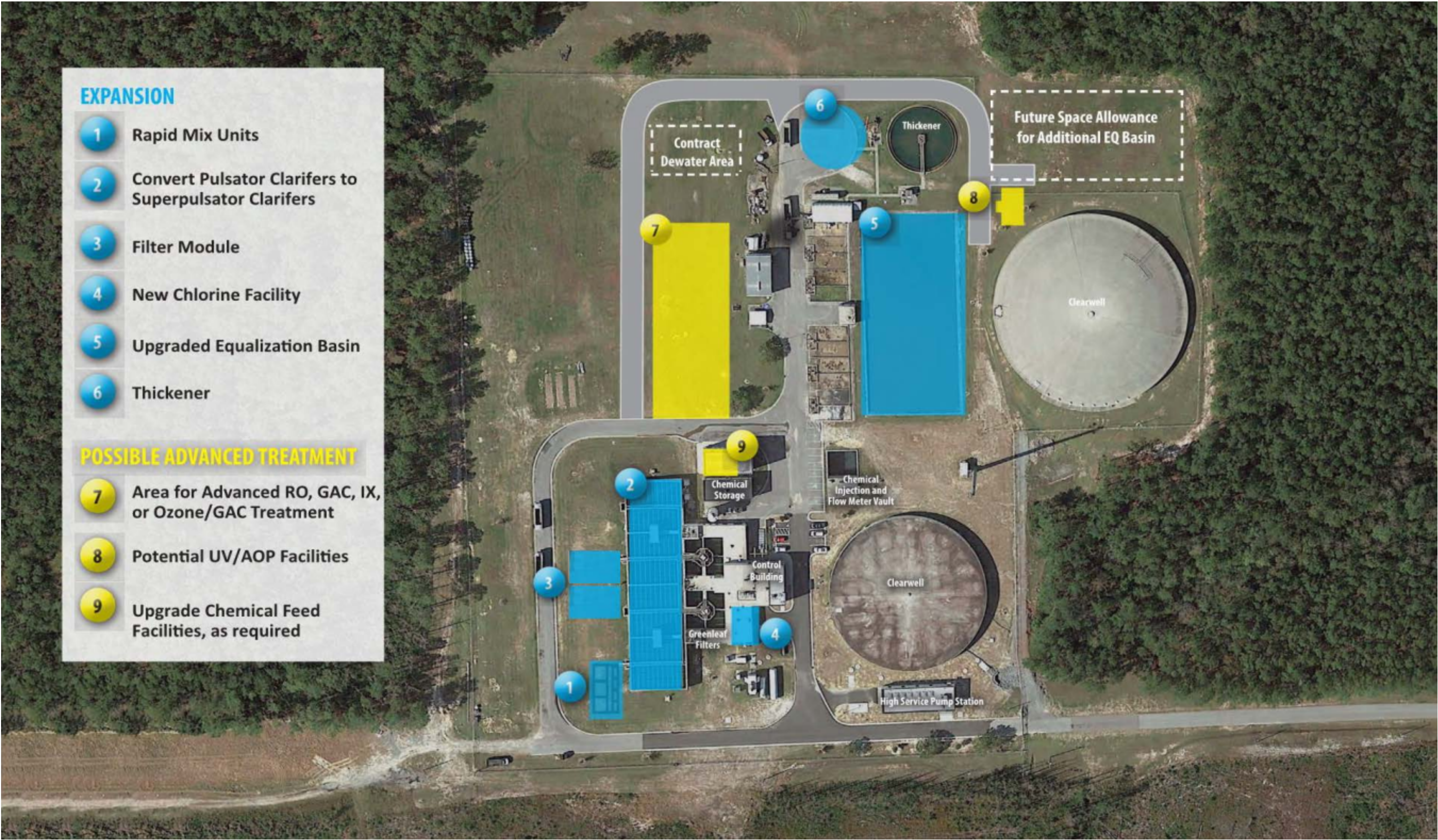


Figure 8-1 – Site Plan



### 8.3 Conversion of Existing Pulsator® Clarifiers to Superpulsators®

The Northwest WTP has two Pulsator upflow clarifier treatment trains with two clarification units in each train; each unit is rated at 6 mgd. To provide sufficient capacity for the expansion, the existing Pulsators® will need to be converted to Superpulsators®. The conversion to Superpulsators® will include the following improvements based on previous recommendations provided by the manufacturer:

- Retrofit with inclined plates
- Replacement of 8-inch circular collection pipe laterals with 12-inch laterals

Hydraulics will be checked in design and may result in raising of the Pulsator walls and the vacuum chamber walls, so cost is being carried for those items in case needed. Each Superpulsator® will have a capacity of up to 12 mgd with a hydraulic loading rate of up to 2 gpm/ft<sup>2</sup>. The planning-level opinion of probable capital cost estimate for the conversion of the existing Pulsators® to Superpulsators®, including 30-percent contingency, is \$8.5 million.

### 8.4 Addition of Greenleaf Filters with Pumped Backwash and Air Scour

The capacity expansion requires installation of two additional Greenleaf filter modules with pumped backwash and air scouring. Each Greenleaf filter module will have four cells as with the existing modules, each cell approximately 24 feet by 24 feet, similar to the existing Greenleaf filters. Each filter will have 9 inches of sand, and 18 inches of anthracite to match the existing filters. To provide the extra capacity for plant losses (backwashing, clarification blowdown, and concentrate loss in the RO option), the total amount to be filtered while producing a net capacity of 36 mgd would be 39 – 45 mgd. The low end of the range (39 mgd) is for conditions without RO advanced treatment, while the high end of the range (45 mgd) is for conditions with a 2-stage RO advanced treatment system following the filters. The planning-level opinion of probable capital cost estimate for two additional Greenleaf filter modules with pumped backwash and air scouring, including 30-percent contingency, is \$12.5 million.

### 8.5 Chemical Storage and Feed Improvements

Chemical feeds through the Northwest WTP are listed in **Table 8-1**. Chlorine dioxide is used for oxidation and disinfection. Sodium hydroxide is fed to raise the pH. Polyaluminum chloride is the primary coagulant. Powdered activated carbon (PAC) is stored in a silo and added just as needed for taste and odor control. Coagulant aid polymer assists in holding together the Pulsator® sludge blanket. Sodium fluorosilicate is added as a fluoride source to help lessen customer tooth decay. Phosphate is for corrosion control and particularly Lead and Copper Rule Compliance. Chlorine is added for disinfection. Ammonia is added to react with the chlorine to form chloramines for a residual disinfectant carried into the distribution system that forms less disinfection byproducts than free chlorine.

**Table 8-1. Chemicals Used at the Northwest WTP**

Chemical	Application Points	Use
Chlorine Dioxide (Chlorine + Sodium Chlorite)	Pre-Rapid Mix Filter Influent Channel Post-filter	Oxidation Disinfection
Sodium Hydroxide (Caustic)	Rapid Mix Post-Filter	pH Adjustments
Polyaluminum Chloride (PAX)	Rapid Mix	Coagulation
Powdered Activated Carbon (PAC)	Rapid Mix	Taste and Odor Control (Infrequently Used)
Coagulant-Aid Polymer	Rapid Mix Effluent	Coagulation Aid
Sodium Fluorosilicate	Post-Filter in Clearwell Influent Piping	Fluoridation
Phosphate	Post-Filter in Clearwell Influent Piping	Corrosion Inhibition
Chlorine	Post-Clearwell	Disinfection
Ammonia	Post-Clearwell	Disinfection

The plant is designed for five 500-pounds-per-day (ppd) chlorine dioxide generators with four generators currently installed. There is one 10,000-gallon sodium chlorite tank. There are two 6,750-gallon caustic tanks and three 18,000-gallon PAX tanks. The PAC silo is 12-foot diameter by 19-foot-3-inch straight wall height. There is one 10,000-gallon phosphate tank.

The plant was recently expanded with storage capacity added to provide for the future expansion as shown in **Table 8-2**, with the exception of chlorine gas storage which requires both upgrade and expansion as discussed in Section 8.6. An allowance of \$400,000 is included in the probable capital cost for the expansion for improvements that may be necessary to increase the capacity of chemical feed equipment.

## 8.6 Upgrades to Chlorine Facility

The chlorine facilities require upgrades to increase capacity, add containment around the 1-ton cylinders, and to implement safety measures such as all-vacuum operation and scrubber addition. The exact location of the new chlorine room will be refined during preliminary design, and is currently planned to go in the room previously used for high service pumping. Additions are to include new all-vacuum system with four on-line cylinders with automatic switchover to four more cylinders, leak detection and scrubber. Micromotion flow meters will continue to be used in place of scales for chlorine gas as the plant has successfully done for 17 years. The planning-level opinion of probable capital cost estimate, including building addition to enclose the chlorine facilities and 30-percent contingencies, is \$1.6 million.

**Table 8-2. Projected Chemical Needs and Bulk Storage Facilities**

Chemical Storage Estimate for 36 MGD - Average Flow @ Chemical Use						
Chemical	Projected Average Flow Rate (mgd)	Average Concentration (mg/L)	lbs-chemical/day	30-day Storage Requirement	Units	Existing Storage
PAX-18	20.0	53	8,840	23,361	gallons	38,000
Caustic	20.0	12	2,002	9,295	gallons	15,000
Corrosion Inhibiter (Phosphate)	20.0	0.80	133	1,020	gallons	10,000
Sodium Chlorite	20.0	1.9	317	3,691	gallons	10,000
Chlorine*	20.0	4.7	784	12	tons	8
Ammonia**	20.0	0.8	133	2	tons	2.1
* Suggested discharge rate < 15lbs/hr – at least 6 one-ton tanks online with auto-switchover to 6 more ** Ammonia storage tank maximum 85% full						
Chemical Storage Estimate for 45 MGD - Average Flow @ Average Chemical Use						
Chemical	Projected Average Flow Rate (mgd)	Average Concentration (mg/L)	lbs-chemical/day	30-day Storage Requirement	Units	Existing Storage
PAX-18	25.0	53	11,051	29,014	gallons	38,000
Caustic	25.0	12	2,502	11,764	gallons	15,000
Corrosion Inhibiter (Phosphate)	25.0	0.80	167	1,281	gallons	10,000
Sodium Chlorite	25.0	1.9	396	4,638	gallons	10,000
Chlorine*	25.0	4.7	980	15	tons	8
Ammonia**	25.0	0.8	167	2	tons	2.1
* Suggested discharge rate < 15lbs/hr – 8 one-ton tanks online with auto-switchover to 8 more preliminarily ** Ammonia storage tank maximum 85% full						

## 8.7 Residuals Improvements

Currently, all sludge from the Pulsators®, all backwash wastewater and filter-to-waste water, and filtrate from the contract belt-press dewatering operations is conveyed to a 260-foot by 120-foot residuals equalization basin for equalization and settling (refer to **Figure 8-2**). These flows enter the basin through a common pipe on the east side. Settled solids are collected in the basin with a 12-inch diameter polyvinyl chloride (PVC) pipe with 2-inch perforations every 2 feet on the bottom of the basin spanning only 100 feet into the effluent side of the basins. A dry-pit pump station is used to pump the sludge from the residuals equalization basin to the 80-foot diameter thickener. Dry-pit sludge pumps are then used to pump sludge from the thickener to the contract belt filter presses where the sludge is dewatered and hauled off-site. The dewatering system is owned and operated by Synagro Technologies, Inc. Decant water from the equalization basin is

removed with a fixed 12-inch decanting pipe with 2-inch perforations on 1-foot centers. Decant from the equalization basin and decant from the thickener are conveyed to the NPDES discharge.



**Figure 8-2**  
**Residuals Equalization Basin**

The 2014 Northwest Water Treatment Plant Phase II Improvements Study delineated residuals handling improvements that included adding sludge collectors to remove sludge from the floor of the existing equalization basin for the 36-mgd expansion. This approach, which is shown on **Figure 8-3** is still a valid option, though the alternatives are recommended to be limited to cable-driven devices as pneumatic-driven devices have been replaced in many locations due to excessive maintenance issues. For increased reliability, improved operations and to accommodate flows up to 45 mgd, a new (second) thickener is also recommended along with upgraded pumping to and from the thickener. The recycle pumps are currently not working and need replacement. The proposed improvements are shown on the site plan. The planning-level opinion of probable capital cost estimate for the recommended residuals improvements, including 30-percent contingencies, is \$4.3 million.



The existing electrical system consists of a 3MVA utility transformer, a 2000kW generator, 4000A ATS, 2000A switchboard MSB, and 2000A switchboard HS with provision for temporary generator connection. It appears the existing electrical distribution system does not have the capacity for the expansion. The planning-level opinion of probable capital cost estimate for the electrical system is \$2.4 million for the expansion.

Miscellaneous yard piping and site work will also be required as part of the expansion. This includes addressing hydraulic bottlenecks, including the need for additional piping between the rapid mix basins and the Pulsator basins. The planning-level opinion of probable capital cost estimate for the miscellaneous work, including 30-percent contingencies is \$4.5 million.

## 8.10 Summary

A summary of the planning-level opinion of probable capital costs for the expansion is provided in **Table 8-3**.

**Table 8-3. Summary of Planning-Level Opinion of Probable Capital Costs for Expansion**

Description	Planning-Level Opinion of Probable Capital Costs (\$ Million)*
Parallel 36-inch Diameter Raw Water Transmission Main	\$1.1
New Rapid Mix and Raw Water Flow Meters	\$2.9
Conversion of Existing Pulsator® Clarifiers to SuperPulsator® Clarifiers	\$8.5
Addition of Two Greenleaf Filter Modules with Pumped Backwash and Air Scour	\$12.5
Chemical Storage and Feed Improvements	\$0.4
Upgrades to Chlorine Facility	\$1.6
Residuals Improvements	\$4.3
Electrical Improvements	\$2.4
Miscellaneous Yard Piping and Site Work	\$4.5
<b>TOTAL</b>	<b>\$38.2</b>

\*Includes 30-percent contingency and 18-percent implementation



## Section 9

# Preliminary Findings, Planning-Level Cost Estimates, and Recommendations

### 9.1 Technologies Summary

Multiple advanced treatment alternatives have been evaluated for the feasibility of removing target contaminants at Brunswick County's Northwest WTP. CDM Smith has concluded that in most cases a combination of advanced treatment processes is required to meet the treatment goals established by Brunswick County for the project.

The advanced treatment technologies evaluated are listed below. A short summary of the technologies treatment effectiveness is also provided.

- **GAC:** Pilot testing has demonstrated effective treatment for GenX and other PFAS; however, long-term effective treatment with GAC requires media changeout to avoid breakthrough of compounds. HB 56 testing, as well as other large scale studies, indicate approximately 8,000 bed volumes (approximately 4 months at 20 minute contact time) is the appropriate frequency of media changeout for GenX and most PFAS (PFO<sub>2</sub>HxA and PFMOAA are not as readily adsorbed for example). The use of new GAC has been assumed. There is a potential for cost reduction through use of reactivation, but permitting acceptability, removal of contaminants and effectiveness of the reactivated material would all require further research and/or testing. Pilot scale testing results showed more frequent changeout requirements than accelerated column tests (ACT) indicate. GAC is not effective at removal of 1,4 Dioxane, a secondary target contaminant, plus other secondary contaminants including brominated disinfection by-products.
- **Ion Exchange:** Pilot testing has demonstrated effective treatment for GenX and other PFAS using IX resins. Effective long-term treatment requires media replenishment to avoid breakthrough. It is assumed that reactivation is not cost effective and disposal of the media will be required. IX resins are not effective at removing 1,4 Dioxane.
- **Reverse Osmosis:** Reverse osmosis is expected to provide high level of removal (90 percent or greater) for the largest range of contaminants including most of those on the list of target contaminants. A pilot study is on-going at the Northwest WTP and will provide more detailed information on the removal potential of target contaminants.
- **Ozone with Biofiltration:** Ozone with biofiltration is not effective at removal of GenX and many other PFAS. However, ozone with biofiltration is effective at oxidation of 1,4 Dioxane and removal of PPCPs and disinfection by-product precursors.
- **UV-AOP:** Ultraviolet irradiation combined with advanced oxidation is not effective for removal of GenX and many other PFAS. UV-AOP is effective at oxidation and removal of 1,4 Dioxane.

The primary target contaminants and a select sub-set of secondary target contaminants have been consolidated into categories presented in **Table 9-1**.

A summary of the effectiveness of potential treatment options, developed by combining one or more processes, towards meeting the treatment objectives is shown in Table 9-1.

**Table 9-1. Effectiveness of Potential Treatment Options in Removing Target Contaminants**

Alternative	Gen X <sup>1</sup>	PFMOAA, PF02HxA	Other PFAS <sup>2</sup>	1,4-Dioxane	PPCPs <sup>3</sup>
Reverse Osmosis	> 95% <sup>4</sup>	> 90% <sup>4</sup>	> 95% <sup>4</sup>	90%+/- <sup>4</sup>	> 90% <sup>4</sup>
Ozone Biofiltration/ GAC	90%+/-	< 90%	> 90% for most PFAS	60-70% <sup>5</sup>	> 90%
Ion Exchange/ GAC/ UV-AOP	> 90%	< 90%,	> 90% for most PFAS	> 90%	> 90%

<sup>1</sup> Gen X may be representative of other short chain PFAS

<sup>2</sup> Does not include all known PFAS.

<sup>3</sup> PPCPs describes a wide variety of contaminants. Results shown apply to representative contaminants with available data. Some PPCPs may not be removed to the extent shown.

<sup>4</sup> Confirmed with Pilot Testing Sampling completed through March 30, 2018; refer to Appendix A for tabular results.

<sup>5</sup> Based on full-scale data. Potentially up to 90% with higher ozone dose and/or peroxide addition

Of the treatment alternatives evaluated, RO is the most effective advanced treatment technology for removing the target contaminants. However, the following combination of these technologies have been shown to be capable of approximately 90-percent removal for most of the target contaminants and hence are compared to RO in the cost-effective analysis of this report:

- Ozone with biofiltration and post-filter GAC (Ozone/BAF-GAC)
- GAC/IX/UV-AOP

Although these three advanced treatment options are not equal; RO, Ozone/BAF-GAC, and GAC/IX/UV-AOP are each considered feasible alternatives for consideration at the Northwest WTP. The combinations developed, costed and presented herein are all based on removing at least 90 percent of GenX and hence over 90 percent of most of the PFAS and of 1,4 Dioxane. RO is expected to remove well over 90 percent for all of the PFAS and hence is without question the best technology for PFAS removal. The target goals have a significant impact on costs and the comparison of alternatives. If the target 90 percent removal of all PFAS including PFMOAA and PFO2HxA, that favors RO even more. Similarly, lower targets would help GAC and IX, though the costs of all options would drop if targets are lowered. The planning-level opinion of probable capital costs and annual operation and maintenance (O&M) costs for these alternatives are below.

## 9.2 Planning-Level Opinion of Probable Capital and O&M Costs

The planning-level opinion of probable capital costs and annual O&M costs for the treatment alternatives are provided in Table 9-2. The capital cost estimates rely on the use of previous estimates and historical data from comparable work, estimating guides, handbooks, cost curves, budget costs from equipment suppliers, and CDM Smith's experience. The planning-level costs includes markups for indirect costs associated with contractor's builders risk insurance, general liability insurance and bonds, general conditions, contractor's overhead and profit, and 30-percent contingency for undefined scope. The capital costs also include the implementation costs Brunswick County would incur as a result of contracting services such as surveying, subsurface investigations, permitting, engineering design and general services during construction. The planning-level opinion of cost is presented in 2018 dollars with an Engineering News Record construction cost index (CCI) of 10959 for March 2018.

The annual planning-level opinion of O&M costs are developed for an average daily flow of 16 mgd over the planning period (25 years). Specific O&M costs are estimated for chemicals, power, operating and maintenance labor, testing, and process maintenance (e.g., GAC media replacement or membrane replacement). Annual O&M costs are prepared for the advanced treatment processes. RO annual costs include an estimated cost to treat a higher raw water flow to compensate for process flow loss associated with the concentrate stream.

**Table 9-2** presents the cost summary for the 3 options considered. A discussion of assumptions specific to the development of the planning-level cost estimates of each treatment alternative follows. **Table 9-3** presents the total capital cost for the combination of adding advanced treatment for PFAS and for expanding the Northwest WTP to 36 mgd capacity. Costs are preliminary, budgetary estimates and include 30 percent contingencies.

**Table 9-2. Summary of Capital Cost, O&M Costs, and Net Present Worth (NPW) for Three Advanced Treatment Alternatives**

	Reverse Osmosis	Ozone/BAF - GAC	IX/GAC/UV-AOP
<b>Opinion of Capital Cost (Advanced Treatment Only)</b>			
Advanced Treatment Improvements	\$ 99 M	\$ 86 M	\$ 73 M
Building for GAC and IX	-	\$ 13 M	\$ 11 M
<b>TOTAL CAPITAL COSTS</b>	<b>\$ 99 M</b>	<b>\$ 99 M</b>	<b>\$ 84 M</b>
<b>Annual O&amp;M Cost (Advanced Treatment Only)</b>			
Initial Annual Cost	\$ 2.9 M	\$ 4.7 M	\$ 4.7 M
25-yr Present Worth of Annual Costs	\$ 59 M	\$ 94 M	\$ 94 M
<b>25-yr Net Present Worth (Capital + Operating Costs)</b>			
<b>Total 25-yr NPW (Capital + Annual O&amp;M)</b>	<b>\$ 158 M</b>	<b>\$ 193 M</b>	<b>\$ 178 M</b>

**Table 9-3. Total Capital Cost (Advanced Treatment + Capacity Expansion)**

Opinion of Capital Cost (Advanced Treatment + Capacity Expansion)			
	Reverse Osmosis	Ozone/BAF - GAC	IX/GAC/UV-AOP
Total Advanced Treatment Cost	\$ 99 M	\$ 99 M	\$ 84 M
Capacity Expansion Cost	\$ 38 M	\$ 38 M	\$ 38 M
<b>Opinion of Total Capital Cost</b>	<b>\$ 137 M</b>	<b>\$ 137 M</b>	<b>\$ 122 M</b>

## 9.2.1 RO Treatment

### 9.2.1.1 Capital Costs

The planning-level opinion of probable capital cost was developed based on recent and similar RO construction projects. The estimated cost of a standard RO system with a treated water capacity of 36 mgd is \$99 million based on the components described in Section 5.1. The capital cost estimate was based on the following key assumptions:

1. RO equipment and ancillary facilities will be installed in a stand-alone equipment building at the existing WTP site. The building will have a small control room for the operator while working in the RO building, but the existing WTP building will be used for the main control room, lab, training and operator support functions.
2. Existing chemical systems for final disinfection and orthophosphate addition will continue to be used for the RO-treated water. Costs for an emulsified lime feed system and carbon dioxide system have been included in the RO system costs to provide alkalinity, calcium, and pH adjustment of the RO treated water to reduce the corrosion potential of the RO-treated water.
3. Residual pressure from the RO system will be used to discharge the RO concentrate to the Cape Fear River via a pressurized force main.
4. The RO system will operate at 85-percent recovery, which will require the feedwater water capacity to be increased to 43 mgd. With a potential raw water allocation of up to 50 mgd for the Northwest WTP, Brunswick County is considering the requirements for expanding the capacity of the conventional treatment process train. Preliminary engineering will review alternatives for increasing treatment capacity.
5. The RO facility will be designed to produce 36 mgd of treated water with one of the RO units off line for maintenance or chemical cleaning; all other systems will have redundant units.
6. Filtered water from the existing filters will have average turbidities less than 0.1 nephelometric turbidity unit (NTU), no free chlorine, no significant chlorate or chlorite residual from the chlorine dioxide, and negligible concentrations of polymers and dissolved aluminum from the coagulation and filtration processes. If a deviation from these conditions will exist for extended periods then additional pre-treatment systems will be required.

It appears the existing electrical distribution system does not have the capacity or space for the RO process. The planning-level opinion of probable costs for the electrical system upgrade includes a new system for the RO facility.

Table 9-2 presents the planning-level opinion of cost for the RO system.

### 9.2.1.2 O&M Costs

The primary costs associated with the operation of a RO system are power costs for the RO pumps, chemical costs for pre-treatment of the feedwater and post treatment of the permeate, RO membrane replacement costs, and labor to operate and maintain the RO system. The power and chemical costs are proportional to the volume of treated water produced; it is assumed for this estimate that annual average production is 16 mgd.

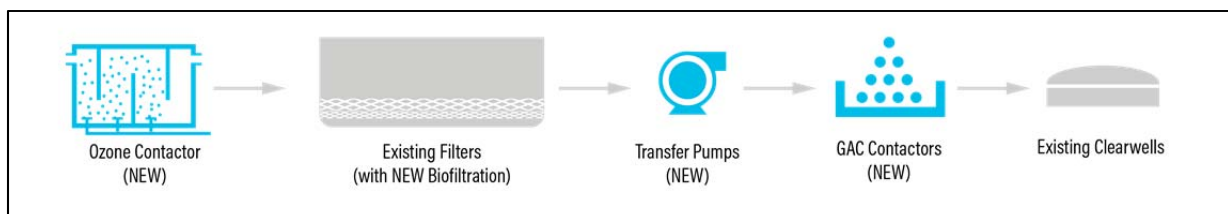
RO membranes typically last 7 to 10 years when treating feedwater with low concentrations of potential organic or biological foulants and oxidants. Potential scaling minerals can be controlled with pH adjustment and scale inhibitors. The low concentration of dissolved solids in the filtered water will reduce the scaling potential at 85-percent recovery, but there is a moderate fouling potential associated with heterotrophic bacteria and residual aluminum from the coagulation and filtration process. Therefore, a membrane life of 7 years was assumed for estimating the operating costs.

Table 9-2 presents the planning-level opinion of probable O&M costs for the RO alternative. The power costs for the proposed low pressure RO system are approximately 25 percent of the annual operating costs and slightly higher than the estimated labor costs, assuming two operators during the day shift and one operator during the night and weekend shifts. Membrane replacement accrual costs are slightly less than 20 percent of the annual cost; the total RO-related chemical cost represent approximately 20 percent of the annual operating cost.

O&M costs are estimated to be \$2.9 million annually at a flow of 16 mgd. The 25-year net present worth of O&M costs is \$59 M.

### 9.2.2 Ozone/BAF-GAC

The application of ozone upstream of the existing filters, conversion of the existing filters to biofiltration, and the addition of post-filter GAC pressure vessels is an option that is anticipated to provide 90-percent removal for most of the target contaminants. A simplified process flow schematic of this alternative is shown in **Figure 9-1**.



**Figure 9-1**  
**Ozone with Post-Filter BAF/GAC Process Flow Schematic**

### 9.2.2.1 Capital Costs

A planning level-opinion of probable capital cost was developed based on similar Ozone/BAF-GAC construction projects. The estimated cost of an Ozone/BAF-GAC system with a water treatment capacity of 36 mgd is \$99 million based on the components described in Sections 3.1 and 6.1. The capital cost estimate is based on the following key assumptions:

- GAC contactors constructed for 20-minute empty bed contact time
- Biofiltration occurs within the existing (and proposed future) filters

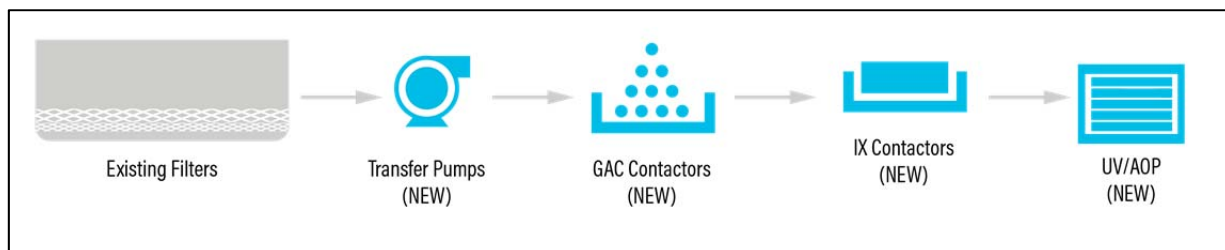
### 9.2.2.2 O&M Costs

The value in primary costs associated with the operation of the GAC portion of the system will differ based on changes in EBCT and media replacement and regeneration frequency. Based on pilot testing completed per HB 56, a 20-minute EBCT is assumed with a media change out frequency of 4-months. Under this option, GAC media changeout represents over 80 percent of the annual operating cost. Other costs include filtered water pumping power, liquid oxygen chemical purchase, ozone generator power, water quality testing, and O&M labor.

O&M costs are estimated to be \$4.7 million annually at a flow of 16 mgd. The 25-year net present worth of O&M costs is \$94 M.

## 9.2.3 GAC/IX/UV-AOP

The implementation of post-filter GAC pressure vessels followed by IX and UV-AOP is an option that is anticipated to provide similar removal as RO. A process flow schematic of this alternative is shown in **Figure 9-2**.



**Figure 9-2**  
**Post-Filter GAC/IX/UV-AOP Process Flow Schematic**

### 9.2.3.1 Capital Costs

A planning level-opinion of probable capital cost was developed based on similar GAC/IX/UV-AOP projects. The estimated cost of a GAC/UV-AOP system with a treated water capacity of 36 mgd is \$84 million based on the components described in Sections 3.1 and 7.1.2. The capital cost estimate is based on the following key assumptions:

- IX contactors sized for a 1.5-minute EBCT
- GAC contactors constructed for 10-minute EBCT

### 9.2.3.2 O&M Costs

The value in primary costs associated with the operation of the IX and GAC portion of the system will differ based on changes in EBCT and media replacement and regeneration frequency. Based on pilot testing completed per HB 56, a 1.5-minute IX EBCT and 10-minute GAC EBCT is assumed with a media change out frequency of 4-months. Under this option, GAC and IX media changeout represents over 75 percent of the annual operating cost. Other costs include filtered water pumping power, water quality testing, and O&M labor.

O&M costs are estimated to be \$4.7 million annually at a flow of 16 mgd. The 25-year net present worth of O&M costs is \$94 M.

### 9.2.4 Existing Facilities Expansion

The detailed planning-level OPCC for the existing facilities expansion is provided in Section 8.10. The estimated capital cost of facilities to expand the main process area from 24-mgd to approximately 50-mgd is \$38 million.

## 9.3 Recommendation

Based on the evaluation of the alternatives, RO treatment provides the removal of the highest number of target contaminants and is recommended for the Northwest WTP expansion. To demonstrate the effectiveness of RO treatment, a pilot test at the Northwest has been initiated. The RO pilot testing is expected to be completed in approximately 3-4 months.

RO is recommended over the other options for the following reasons:

- RO is the Best Technology for Removal of PFAS. Some PFAS, such as GenX, PFMOAA and PFO2HxA would require very frequent change-out of GAC and IX for removal.
- GAC and IX would likely result in higher finished water concentrations of GenX, PFMOAA, and PFO2HxA than RO (technologies are not equal).
- RO has the lowest net present worth costs for removing 90 percent or more of the Target Contaminants.
- RO is the most robust technology for protecting against unidentified contaminants.
- RO treated water concentrations will not vary as much with influent concentrations as with GAC and IX. RO treated water quality does not rely on frequent media change-out to protect from the spills and contaminants in the Cape Fear River.
- RO does not release elevated concentrations after bed life is spent as can happen with GAC and IX if feed concentration drops.

The overall project includes expansion of the existing facilities to 36 mgd, as discussed in Section 8, and the addition of RO.



## Section 10

# Implementation Plan

Implementation of RO advanced treatment as part of the water treatment plant expansion will include the following major phases:

- Project Planning – includes Desktop Analysis and Pilot Testing
- Project Permitting
- Design – includes Preliminary Engineering and Final Design
- Bidding
- Construction and Start-up

The following sections describe the current status and path forward for the project.

### 10.1 Pilot Testing

Pilot testing of RO is currently underway at the Northwest WTP. Goals of pilot testing are to demonstrate the effectiveness of the technology at removing target contaminants, to familiarize Brunswick County staff with the membrane process, and to provide information that will be used to establish the design criteria. Pilot testing began in February 2018 and is expected to continue through at least May 2018.

The performance of the pilot unit is monitored daily by staff at the Northwest WTP. Staff log flow, pressure, conductivity, temperature, and pH at various locations on the pilot unit. Information from the daily logs is transferred to a tracking spreadsheet where performance is monitored and trends are developed over the historical operating period for the pilot unit.

Once per month, samples from the pilot unit feed, combined permeate, and combined concentrate are collected for analysis. The samples are analyzed for PFAS (including GenX, Nafion ByProducts 1 and 2, and numerous others), 1,4-dioxane, and many other target contaminants. The results from the February 26, 2018 sampling event are provided in Appendix A. The pilot unit reduced the concentrations for nearly all of the target contaminants to levels below detection of the analytical method used. The following contaminants were detected in the RO permeate during the February 26, 2018 sampling event:

- PFMOAA = 11 ng/L; greater than 98% removal at membrane
- 1,4-Dioxane = 0.2 µg/L; greater than 94% removal at membrane
- PPCPs: Acetaminophen = 7.8 ng/L
- EDCs: 4-Nonylphenol = 260 ng/L; Sulfadiazine = 29 ng/L



Additional results from other sampling events will be provided with the final pilot plant technical memorandum.

## 10.2 Permits and Approval

Implementation of the water treatment plant expansion with RO treatment will require permits and approval from various regulatory agencies. Representatives from Brunswick County and CDM Smith have conducted a project scoping meeting with representatives from NCDEQ (multiple divisions), U.S. Army Corps of Engineers, U.S. Fish and Wildlife, and National Oceanic and Atmospheric Administration. Securing an NPDES permit for discharge of the RO concentrate is a critical element for the project. The project team discussed potential options for the concentrate discharge and identified a path ahead.

The next steps in the process of obtaining an NPDES permit for the concentrate discharge are:

- Complete toxicity testing for required species and dilutions of concentrate
- Collect bathymetric information and complete profiling (temperature, salinity) at potential discharge locations
- Complete CORMIX modeling at potential discharge locations
- Prepare and submit NPDES permit application

The activities for the submitting the NPDES permit application are currently underway and submittal of the application is expected in Summer 2018.

## 10.3 Design, Bidding, and Construction Schedule

The projected completion schedule for various milestones required to implement the water treatment plant expansion with RO advanced treatment is presented in Table 10-1.

**Table 10-1. Implementation Schedule**

Milestone	Duration	Estimated Completion
Pilot Testing <sup>1</sup>	4 months <sup>1</sup>	June 2018 <sup>1</sup>
Preliminary Design	4 months	August 2018
Final Design/ Permitting	9 months	May 2019
Bidding and Award	2 months	July 2019
Construction	18 - 24 months <sup>2</sup>	July 2021

<sup>1</sup> Pilot Testing may be extended to collect additional information

<sup>2</sup> Intermediate milestones can be used to bring advanced treatment facilities on-line ahead of expansion completion; e.g. 18 months for RO facilities and 24 months for expansion

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## Appendix A

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### Results From Pilot Plant Sampling February 26, 2018 and March 26, 2018

# RESULTS OF PILOT PLANT SAMPLING EVENTS

FEBRUARY 26 SAMPLING EVENT							MARCH 26 SAMPLING EVENT						
Analyte	Raw Water	Pilot Feed	Pilot Concentrate	Pilot Permeate	Units	Pilot Feed	Pilot Concentrate	Pilot Permeate	Units	Pilot Feed	Pilot Concentrate	Pilot Permeate	Units
PER- AND POLY- FLUORINATED ALKYL SUBSTANCES (PFAS)													
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	< 2	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	< 2	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	= 4.8	= 5.8	= 29	< 2	ng/L	= 2.2	= 12	< 2	ng/L	= 2.2	= 12	< 2	ng/L
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	< 2	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L
ADONA	< 2	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L
F-53B Major	< 2	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L
F-53B Minor	< 2	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L
GenX	= 12	= 14	= 140	< 5	ng/L	= 6.7	= 42	< 5	ng/L	= 6.7	= 42	< 5	ng/L
Nafion Byproduct 1	< 5	< 5	< 5	< 5	ng/L	< 5	< 5	< 5	ng/L	< 5	< 5	< 5	ng/L
Nafion Byproduct 2	< 5	< 5	= 11	< 5	ng/L	< 5	= 8.1	< 5	ng/L	< 5	= 8.1	< 5	ng/L
N-ethylperfluorooctane sulfonamide (NETFOSA)	< 2	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L
N-ethylperfluorooctane sulfonamidoethanol	< 2	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L
N-methylperfluorooctane sulfonamide (NMeFOSA)	< 2	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L
N-methylperfluorooctane sulfonamidoethanol	< 2	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L
Perfluorobutanesulfonic acid (PFBS)	< 3.3	= 3.6	= 24	< 2	ng/L	= 2.3	= 16	< 2	ng/L	= 2.3	= 16	< 2	ng/L
Perfluorobutanoic acid (PFBA)	= 7.5	= 7.7	= 49	< 5	ng/L	= 6.7	= 52	< 5	ng/L	= 6.7	= 52	< 5	ng/L
Perfluorodecanoic acid (PFDA)	< 2	< 2	= 11	< 2	ng/L	< 2	= 9.5	< 2	ng/L	< 2	= 9.5	< 2	ng/L
Perfluorohexanoic acid (PFHpA)	= 11	= 11	= 77	< 2	ng/L	= 15	= 94	< 2	ng/L	= 15	= 94	< 2	ng/L
Perfluorohexanesulfonic acid (PFHxS)	= 5.6	= 6	= 40	< 2	ng/L	= 3.5	= 23	< 2	ng/L	= 3.5	= 23	< 2	ng/L
Perfluorohexanoic acid (PFHxA)	= 19	= 19	= 130	< 2	ng/L	= 20	= 130	< 2	ng/L	= 20	= 130	< 2	ng/L
Perfluorododecanoic acid (PFDoA)	< 2	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L
Perfluorononanoic acid (PFNA)	< 2	< 2	= 12	< 2	ng/L	< 2	= 10	< 2	ng/L	< 2	= 10	< 2	ng/L
Perfluorooctanesulfonic acid (PFOS)	= 16	= 16	= 94	< 2	ng/L	= 9.8	= 64	< 2	ng/L	= 9.8	= 64	< 2	ng/L
N-ethyl Perfluorooctanesulfonamidoacetic acid	< 2	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L
N-methyl Perfluorooctanesulfonamidoacetic acid	< 2	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L
Perfluorooctanoic acid (PFOA)	= 9.9	= 9.8	= 64	< 2	ng/L	= 8.5	= 52	< 2	ng/L	= 8.5	= 52	< 2	ng/L
Perfluorotridecanoic acid (PFTTrDA)	< 2	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L
Perfluoroundecanoic acid (PFUnA)	< 2	< 2	= 2.6	< 2	ng/L	< 2	= 2.3	< 2	ng/L	< 2	= 2.3	< 2	ng/L
Perfluorododecanesulfonic acid (PFDoS)	< 2	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L
Perfluorododecanesulfonic acid (PFDS)	< 2	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L

# RESULTS OF PILOT PLANT SAMPLING EVENTS

FEBRUARY 26 SAMPLING EVENT										MARCH 26 SAMPLING EVENT			
Analyte	Raw Water	Pilot Feed	Pilot Concentrate	Pilot Permeate	Units	Pilot Feed	Pilot Concentrate	Pilot Permeate	Units				
PER- AND POLY- FLUORINATED ALKYL SUBSTANCES (PFAS)													
Perfluorohexanesulfonic acid (PFHpS)	< 2	< 2	= 4.1	< 2	ng/L	< 2	= 3	< 2	ng/L				
Perfluorohexadecanoic acid (PFHxDA)	< 2	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L				
Perfluoro-2-methoxyethoxyacetic acid	< 5	< 5	< 5	< 5	ng/L	< 5	< 5	< 5	ng/L				
Perfluoro-4-isopropoxybutanoic acid	< 5	< 5	< 5	< 5	ng/L	< 5	< 5	< 5	ng/L				
Perfluoro-2-methoxyacetic acid	= 1600	= 750	= 5600	= 11	ng/L	= 320	= 950	< 5	ng/L				
Perfluoro-4-methoxybutanoic acid (PFMOBA)	< 5	< 5	< 5	< 5	ng/L	< 5	< 5	< 5	ng/L				
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	< 5	< 5	< 5	< 5	ng/L	< 5	< 5	< 5	ng/L				
Perfluorononanesulfonic acid (PFNS)	< 2	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L				
Perfluoro(3,5-dioxahexanoic) acid	= 32	= 26	= 140	< 5	ng/L	= 12	= 38	< 5	ng/L				
Perfluoro(3,5,7-trioxaoctanoic) acid	= 5.2	= 6.1	= 28	< 5	ng/L	< 5	= 9.4	< 5	ng/L				
Perfluoro(3,5,7,9-tetraoxadecanoic) acid	< 5	< 5	= 7.2	< 5	ng/L	< 5	< 5	< 5	ng/L				
Perfluorooctane sulfonamide (PFOSA)	< 2	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L				
Perfluoropentanoic acid (PFPeA)	= 17	= 17	= 110	< 2	ng/L	= 16	= 100	< 2	ng/L				
Perfluoropentanesulfonic acid (PFPeS)	< 2	< 2	= 5.2	< 2	ng/L	< 2	= 5.4	< 2	ng/L				
Perfluorotetradecanoic acid (PFTeDA)	< 2	< 2	< 2	< 2	ng/L	< 2	< 2	< 2	ng/L				
1,4-DIOXANE													
1,4-Dioxane	= 3.3	= 3.2	= 21	= 0.2	ug/L								

# RESULTS OF PILOT PLANT SAMPLING EVENTS

FEBRUARY 26 SAMPLING EVENT														MARCH 26 SAMPLING EVENT			
Analyte	Raw Water	Pilot Feed	Pilot Concentrate	Pilot Permeate	Units	Pilot Feed	Pilot Concentrate	Pilot Permeate	Units	Pilot Feed	Pilot Concentrate	Pilot Permeate	Units				
SEMI-VOLATILE ORGANIC COMPOUNDS																	
Chlorpyrifos	< 0.03	< 0.03	< 0.03	< 0.03	ug/L												
Dimethipin	< 0.2	< 0.2	< 0.2	< 0.2	ug/L												
Ethoprop	< 0.03	< 0.03	< 0.03	< 0.03	ug/L												
alpha-Hexachlorocyclohexane	< 0.01	< 0.01	< 0.01	< 0.01	ug/L												
Oxyfluorfen	< 0.05	< 0.05	< 0.05	< 0.05	ug/L												
cis-Permethrin	< 0.0109	< 0.0109	< 0.0109	< 0.0109	ug/L												
trans-Permethrin	< 0.029	< 0.029	< 0.029	< 0.029	ug/L												
Permethrin, cis & trans	< 0.04	< 0.04	< 0.04	< N/A	ug/L												
Profenofos	< 0.3	< 0.3	< 0.3	< 0.3	ug/L												
Tebuconazole	< 0.2	< 0.2	< 0.2	< 0.2	ug/L												
Tribufos	< 0.07	< 0.07	< 0.07	< 0.07	ug/L												
Butylated hydroxyanisole	< 0.03	< 0.03	< 0.03	< 0.03	ug/L												
Quinoline	< 0.02	< 0.02	< 0.02	< 0.02	ug/L												
o-Toluidine	< 0.007	< 0.007	< 0.007	< 0.007	ug/L												
1-Butanol	< 2	< 2	< 2	< 2	ug/L												
2-Methoxyethanol	< 0.4	< 0.4	< 0.4	< 0.4	ug/L												
2-Propen-1-ol	< 0.5	< 0.5	< 0.5	< 0.5	ug/L												
INORGANICS																	
Iodide	< 1	= 1.1	= 6.8	< 1	ug/L												
Bromide	= 120	= 110	= 710	< 10	ug/L												
Chlorate	< 10	= 120	= 680	< 10	ug/L												
Chlorite	< 10	= 410	= 2800	< 10	ug/L												
MICROCYSTS AND CYANOTOXINS																	
Total Microcystins & Nodularins	< 0.3	< 0.3	< 0.3	< 0.3	ug/L												
Anatoxin-a	< 0.03	< 0.03	< 0.03	< 0.03	ug/L												
Cylindrospermopsin	< 0.09	< 0.09	< 0.09	< 0.09	ug/L												



# RESULTS OF PILOT PLANT SAMPLING EVENTS

FEBRUARY 26 SAMPLING EVENT							MARCH 26 SAMPLING EVENT				
Analyte	Raw Water	Pilot Feed	Pilot Concentrate	Pilot Permeate	Units	Pilot Feed	Pilot Concentrate	Pilot Permeate	Units		
HALOACETIC ACIDS											
Bromochloroacetic acid	< 1	= 1.7	= 14	< 1	ug/L						
Bromodichloroacetic acid	< 1	< 1	= 1.3	< 1	ug/L						
Chlorodibromoacetic acid	< 2	< 2	< 2	< 2	ug/L						
Dibromoacetic acid	< 1	< 1	= 9	< 1	ug/L						
Dichloroacetic acid	< 1	= 2.1	= 13	< 1	ug/L						
Monobromoacetic acid	< 1	< 1	= 2.7	< 1	ug/L						
Monochloroacetic acid	< 2	< 2	< 2	< 2	ug/L						
Tribromoacetic acid	< 4	< 4	< 4	< 4	ug/L						
Trichloroacetic acid	< 1	< 1	= 2.3	< 1	ug/L						
Total HAA5	< 2	= 2.1	= 27	< 2	ug/L						
VOLATILE ORGANIC COMPOUNDS											
Acetone	< 5	< 5	< 5	< 5	ug/L						
Acrylonitrile	< 1	< 1	< 1	< 1	ug/L						
Allyl chloride	< 5	< 5	< 5	< 5	ug/L						
tert-Amyl Methyl ether	< 3	< 3	< 3	< 3	ug/L						
Benzene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L						
Benzyl chloride	< 0.5	< 0.5	< 0.5	< 0.5	ug/L						
Bromobenzene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L						
Bromochloromethane	< 0.5	< 0.5	< 0.5	< 0.5	ug/L						
Bromodichloromethane	< 0.5	< 0.5	= 1.3	< 0.5	ug/L						
Bromoform	< 0.5	< 0.5	= 0.6	< 0.5	ug/L						
Bromomethane	< 0.5	< 0.5	< 0.5	< 0.5	ug/L						
1,3-Butadiene	< 5	< 5	< 5	< 5	ug/L						
2-Butanone (MEK)	< 5	< 5	< 5	< 5	ug/L						
n-Butyl acrylate	< 1	< 1	< 1	< 1	ug/L						
tert-Butyl alcohol	< 2	< 2	< 2	< 2	ug/L						
n-Butylbenzene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L						
sec-Butylbenzene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L						
tert-Butylbenzene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L						
Carbon disulfide	< 5	< 5	< 5	< 5	ug/L						
Carbon tetrachloride	< 0.5	< 0.5	< 0.5	< 0.5	ug/L						

# RESULTS OF PILOT PLANT SAMPLING EVENTS

FEBRUARY 26 SAMPLING EVENT										MARCH 26 SAMPLING EVENT				
Analyte	Raw Water	Pilot Feed	Pilot Concentrate	Pilot Permeate	Units	Pilot Feed	Pilot Concentrate	Pilot Permeate	Units	Pilot Feed	Pilot Concentrate	Pilot Permeate	Units	
VOLATILE ORGANIC COMPOUNDS														
Chloroacetonitrile	< 5	< 5	< 5	< 5	ug/L									
Chlorobenzene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
1-Chlorobutane	< 5	< 5	< 5	< 5	ug/L									
Chloroethane	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
Chloroform	< 0.5	< 0.5	= 1.4	< 0.5	ug/L									
Chloromethane	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
Chloroprene	< 5	< 5	< 5	< 5	ug/L									
2-Chlorotoluene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
4-Chlorotoluene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
Cyclohexanone	< 5	< 5	< 5	< 5	ug/L									
Dibromochloromethane	< 0.5	< 0.5	= 1.4	< 0.5	ug/L									
1,2-Dibromo-3-chloropropane (DBCP)	< 0.2	< 0.2	< 0.2	< 0.2	ug/L									
1,2-Dibromoethane (EDB)	< 0.2	< 0.2	< 0.2	< 0.2	ug/L									
Dibromomethane	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
1,2-Dichlorobenzene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
1,3-Dichlorobenzene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
1,4-Dichlorobenzene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
Total Dichlorobenzene	< 0.5	< 0.5	< N/A	< 0.5	ug/L									
trans-1,4-Dichloro-2-butylene	< 5	< 5	< 5	< 5	ug/L									
Dichlorodifluoromethane	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
1,1-Dichloroethane	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
1,2-Dichloroethane	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
1,1-Dichloroethylene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
cis-1,2-Dichloroethylene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
trans-1,2-Dichloroethylene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
Di(2-chloroethyl)ether	< 2	< 2	< 2	< 2	ug/L									
Dichloromethane	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
1,2-Dichloropropane	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
1,3-Dichloropropane	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
2,2-Dichloropropane	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
1,1-Dichloropropanone	< 5	< 5	< 5	< 5	ug/L									

# RESULTS OF PILOT PLANT SAMPLING EVENTS

FEBRUARY 26 SAMPLING EVENT										MARCH 26 SAMPLING EVENT				
Analyte	Raw Water	Pilot Feed	Pilot Concentrate	Pilot Permeate	Units	Pilot Feed	Pilot Concentrate	Pilot Permeate	Units					
VOLATILE ORGANIC COMPOUNDS														
1,1-Dichloropropylene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
1,3-Dichloropropylene, cis & trans	< 0.5	< 0.5	< N/A	< 0.5	ug/L									
cis-1,3-Dichloropropylene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
trans-1,3-Dichloropropylene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
Diisopropyl ether	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
1,4-Dioxane	< 5	< 5	= 29	< 5	ug/L									
Epichlorohydrin	< 1	< 1	< 1	< 1	ug/L									
Ethyl acrylate	< 1	< 1	< 1	< 1	ug/L									
Ethyl Ether	< 2	< 2	< 2	< 2	ug/L									
Ethyl methacrylate	< 1	< 1	< 1	< 1	ug/L									
Ethylbenzene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
Ethyl tert-butyl ether	< 3	< 3	< 3	< 3	ug/L									
Hexachlorobutadiene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
Hexachloroethane	< 2	< 2	< 2	< 2	ug/L									
2-Hexanone	< 5	< 5	< 5	< 5	ug/L									
Isopropylbenzene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
4-Isopropyltoluene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
Methacrylonitrile	< 5	< 5	< 5	< 5	ug/L									
Methylacrylate	< 1	< 1	< 1	< 1	ug/L									
Methyl iodide	< 2	< 2	< 2	< 2	ug/L									
Methylmethacrylate	< 1	< 1	< 1	< 1	ug/L									
4-Methyl-2-pentanone (MIBK)	< 2	< 2	< 2	< 2	ug/L									
Methyl-t-butyl ether (MTBE)	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
Naphthalene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
Nitrobenzene	< 5	< 5	< 5	< 5	ug/L									
2-Nitropropane	< 2	< 2	< 2	< 2	ug/L									
Pentachloroethane	< 2	< 2	< 2	< 2	ug/L									
Propionitrile	< 5	< 5	< 5	< 5	ug/L									
n-Propylbenzene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
Styrene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									
1,1,1,2-Tetrachloroethane	< 0.5	< 0.5	< 0.5	< 0.5	ug/L									

# RESULTS OF PILOT PLANT SAMPLING EVENTS

FEBRUARY 26 SAMPLING EVENT							MARCH 26 SAMPLING EVENT						
Analyte	Raw Water	Pilot Feed	Pilot Concentrate	Pilot Permeate	Units	Pilot Feed	Pilot Concentrate	Pilot Permeate	Units	Pilot Feed	Pilot Concentrate	Pilot Permeate	Units
VOLATILE ORGANIC COMPOUNDS													
1,1,2,2-Tetrachloroethane	< 0.5	< 0.5	< 0.5	< 0.5	ug/L								
Tetrachloroethylene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L								
Tetrahydrofuran	< 5	< 5	< 5	< 5	ug/L								
Toluene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L								
Total Trihalomethanes	< 0.5	< 0.5	= 4.7	< 0.5	ug/L								
1,2,3-Trichlorobenzene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L								
1,2,4-Trichlorobenzene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L								
1,1,1-Trichloroethane	< 0.5	< 0.5	< 0.5	< 0.5	ug/L								
1,1,2-Trichloroethane	< 0.5	< 0.5	< 0.5	< 0.5	ug/L								
Trichloroethylene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L								
Trichlorofluoromethane	< 0.5	< 0.5	< 0.5	< 0.5	ug/L								
1,2,3-Trichloropropane	< 0.5	< 0.5	< 0.5	< 0.5	ug/L								
1,1,2-Trichloro-1,2,2-trifluoroethane	< 0.5	< 0.5	< 0.5	< 0.5	ug/L								
1,2,3-Trimethylbenzene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L								
1,2,4-Trimethylbenzene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L								
1,3,5-Trimethylbenzene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L								
Vinyl acetate	< 5	< 5	< 5	< 5	ug/L								
Vinyl chloride	< 0.2	< 0.2	< 0.2	< 0.2	ug/L								
1,2-Xylene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L								
1,3 + 1,4-Xylene	< 0.5	< 0.5	< 0.5	< 0.5	ug/L								
Xylenes, Total	< 0.5	< 0.5	< N/A	< 0.5	ug/L								
TOTAL ORGANIC CARBON													
Total Organic Carbon (TOC)	= 6.83	= 3.08	= 13.5	< 0.5	mg/L								

# RESULTS OF PILOT PLANT SAMPLING EVENTS

Analyte	FEBRUARY 26 SAMPLING EVENT					MARCH 26 SAMPLING EVENT				
	Raw Water	Pilot Feed	Pilot Concentrate	Pilot Permeate	Units	Pilot Feed	Pilot Concentrate	Pilot Permeate	Units	
	EDC/PPCP/HORMONE SMALL VOLUME SCAN									
Acesulfame-K	= 420	= 330	= 3600	< 20	ng/L					
Acetaminophen	= 7.1	= 13	= 25	= 7.8	ng/L					
Albuterol	< 5	< 5	< 5	< 5	ng/L					
Amoxicillin	< 20	< 20	< 20	< 20	ng/L					
4-Androstene-3,17-dione	< 5	< 5	< 5	< 5	ng/L					
Antipyrine	< 5	< 5	< 5	< 5	ng/L					
Atenolol	< 5	< 5	= 40	< 5	ng/L					
Atrazine	= 60	= 58	= 460	< 5	ng/L					
Azithromycin	< 20	< 20	< 20	< 20	ng/L					
Bendroflumethiazide	< 5	< 5	< 5	< 5	ng/L					
Bezafibrate	< 5	< 5	< 5	< 5	ng/L					
Bisphenol A	< 10	< 10	< 10	< 10	ng/L					
Bromacil	< 5	< 5	< 5	< 5	ng/L					
Butalbital	< 5	< 5	= 25	< 5	ng/L					
Butylparaben	< 5	< 5	< 5	< 5	ng/L					
Caffeine	= 26	= 30	= 330	< 5	ng/L					
Carbadox	< 5	< 5	< 5	< 5	ng/L					
Carbamazepine	= 14	= 13	= 94	< 5	ng/L					
Carisoprodol	< 5	< 5	< 5	< 5	ng/L					
Chloramphenicol	< 10	< 10	< 10	< 10	ng/L					
Chloridazon	< 5	< 5	< 5	< 5	ng/L					
Chlorotoluron	< 5	< 5	< 5	< 5	ng/L					
Cimetidine	< 5	< 5	< 5	< 5	ng/L					
Clofibric acid	< 5	< 5	< 5	< 5	ng/L					
Cotinine	= 16	= 15	= 150	< 10	ng/L					
Cyanazine	< 5	< 5	< 5	< 5	ng/L					
2,4-D	< 5	= 10	= 54	< 5	ng/L					
DEET	= 30	= 44	= 240	< 10	ng/L					
Dehydronifedipine	< 5	< 5	< 5	< 5	ng/L					
Desethylatrazine	= 14	= 7	= 34	< 5	ng/L					
Desisopropylatrazine	= 14	= 12	= 160	< 5	ng/L					

# RESULTS OF PILOT PLANT SAMPLING EVENTS

FEBRUARY 26 SAMPLING EVENT										MARCH 26 SAMPLING EVENT				
Analyte	Raw Water	Pilot Feed	Pilot Concentrate	Pilot Permeate	Units	Pilot Feed	Pilot Concentrate	Pilot Permeate	Units					
EDC/PPCP/HORMONE SMALL VOLUME SCAN														
Diaminochlorotriazine	< 5	< 5	= 63	< 5	ng/L									
Diazepam	< 5	< 5	< 5	< 5	ng/L									
Diclofenac	< 5	< 5	< 5	< 5	ng/L									
Dilantin	< 20	< 20	< 20	< 20	ng/L									
Diltiazem	< 5	< 5	< 5	< 5	ng/L									
1,7-Dimethylxanthine	< 10	< 10	= 20	< 10	ng/L									
Diuron	< 5	= 5.5	= 24	< 5	ng/L									
Erythromycin	< 10	< 10	< 10	< 10	ng/L									
17beta-Estradiol	< 5	< 5	< 5	< 5	ng/L									
Estriol	= 81	< 5	< 5	< 5	ng/L									
Estrone	< 5	< 5	< 5	< 5	ng/L									
Ethylparaben	< 20	< 20	< 20	< 20	ng/L									
17alpha-Ethynyl estradiol	< 5	< 5	= 40	< 5	ng/L									
Flumequine	< 10	< 10	< 10	< 10	ng/L									
Fluoxetine (Prozac)	< 10	< 10	< 10	< 10	ng/L									
Gemfibrozil	< 5	< 5	< 5	< 5	ng/L									
Ibuprofen	< 10	< 10	< 10	< 10	ng/L									
Iohexal	= 43	< 10	= 880	< 10	ng/L									
Iopromide	< 5	< 5	< 5	< 5	ng/L									
Isobutylparaben	< 5	< 5	< 5	< 5	ng/L									
Isoproturon	< 100	< 100	< 100	< 100	ng/L									
Ketoprofen	< 5	< 5	< 5	< 5	ng/L									
Ketorolac	< 5	< 5	< 5	< 5	ng/L									
Lidocaine	= 20	= 15	= 46	< 5	ng/L									
Lincomycin	< 10	< 10	< 10	< 10	ng/L									
Linuron	< 5	< 5	< 5	< 5	ng/L									
Lopressor	< 20	< 20	= 91	< 20	ng/L									
Meclofenamic acid	< 5	< 5	< 5	< 5	ng/L									
Meprobamate	< 5	< 5	= 7.9	< 5	ng/L									
Metazochlor	< 5	< 5	< 5	< 5	ng/L									
Methylparaben	< 20	< 20	< 20	< 20	ng/L									

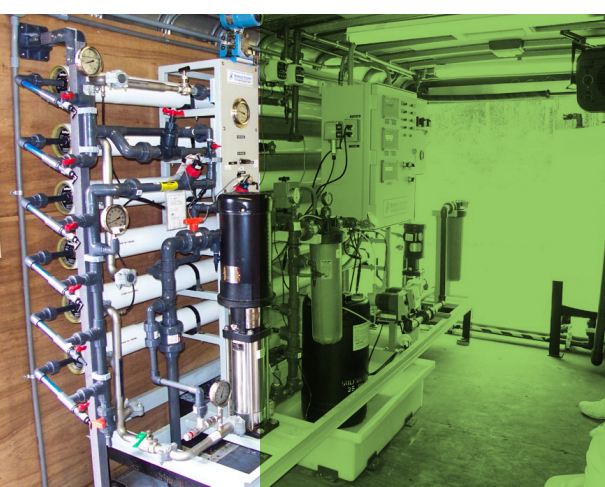
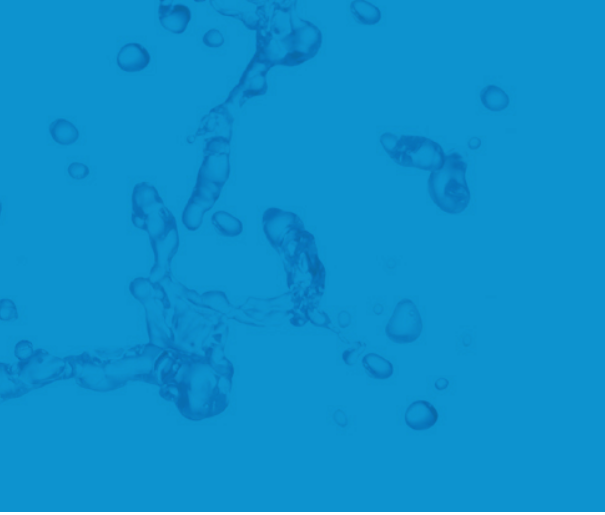
# RESULTS OF PILOT PLANT SAMPLING EVENTS

Analyte	FEBRUARY 26 SAMPLING EVENT					MARCH 26 SAMPLING EVENT				
	Raw Water	Pilot Feed	Pilot Concentrate	Pilot Permeate	Units	Pilot Feed	Pilot Concentrate	Pilot Permeate	Units	
	EDC/PPCP/HORMONE SMALL VOLUME SCAN									
Metolachlor	= 5.8	= 5.2	= 37	< 5	ng/L					
Naproxen	< 10	< 10	< 10	< 10	ng/L					
Nifedipine	< 20	< 20	< 20	< 20	ng/L					
4-Nonylphenol	= 510	= 520	= 840	= 260	ng/L					
Norethisterone	< 5	< 5	< 5	< 5	ng/L					
4-tert-Octylphenol	< 50	< 50	< 50	< 50	ng/L					
Oxolinic acid	< 10	< 10	< 10	< 10	ng/L					
Pentoxifylline	< 5	< 5	< 5	< 5	ng/L					
Primidone	< 5	< 5	= 47	< 5	ng/L					
Progesterone	< 5	< 5	< 5	< 5	ng/L					
Propazine	< 5	< 5	= 9.3	< 5	ng/L					
Propylparaben	< 5	< 5	< 5	< 5	ng/L					
Quinoline	< 5	< 5	= 13	< 5	ng/L					
Salicylic acid	< 100	< 100	< 100	< 100	ng/L					
Simazine	= 68	= 57	= 160	< 5	ng/L					
Sucralose	= 740	< 100	< 100	= 300	ng/L					
Sulfachloropyridazine	< 5	< 5	< 5	< 5	ng/L					
Sulfadiazine	= 150	= 84	= 350	= 29	ng/L					
Sulfadimethoxine	< 5	< 5	< 5	< 5	ng/L					
Sulfamerazine	< 5	< 5	< 5	< 5	ng/L					
Sulfamethazine	< 5	< 5	< 5	< 5	ng/L					
Sulfamethizole	< 5	< 5	< 5	< 5	ng/L					
Sulfamethoxazole	= 10	< 5	< 5	< 5	ng/L					
Sulfathiazole	< 5	< 5	< 5	< 5	ng/L					
Sulfometuron Methyl	< 5	< 5	= 9.5	< 5	ng/L					
Testosterone	< 5	= 5.4	< 5	< 5	ng/L					
Theobromine	= 14	< 10	= 63	< 10	ng/L					
Theophylline	< 20	< 20	< 20	< 20	ng/L					
Thiabendazole	< 5	< 5	< 5	< 5	ng/L					
Triclocarban	< 5	< 5	< 5	< 5	ng/L					
Triclosan	< 10	< 10	< 10	< 10	ng/L					

RESULTS OF PILOT PLANT SAMPLING EVENTS

FEBRUARY 26 SAMPLING EVENT					MARCH 26 SAMPLING EVENT				
Analyte	Raw Water	EDC/PPCP/HORMONE SMALL VOLUME SCAN				Pilot Feed	Pilot Concentrate	Pilot Permeate	Units
		Pilot Feed	Pilot Concentrate	Pilot Permeate	Units				
Trimethoprim	< 5	< 5	< 5	< 5	ng/L				
Tris(2-carboxyethyl)phosphine hydrochloride	< 10	= 13	= 90	< 10	ng/L				
Tris(1,3-dichloro-2-propyl) phosphate	< 100	= 120	= 960	< 100	ng/L				
Warfarin	< 5	< 5	< 5	< 5	ng/L				





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**Brunswick County Board of Commissioners**  
**ACTION AGENDA ITEM**  
**April 16, 2018**

**From:**  
Andrea White

**Action Item # X. - 1.**

Closed Session - Approve Closed Session Minutes and Consult with Attorney

**Issue/Action Requested:**

Request that the Board of Commissioners enter into Closed Session pursuant to G.S. 143-318.11(a)(1) to approve Closed Session Minutes and G.S. 143-318.11(a)(3) to consult with its attorney.

**Background/Purpose of Request:**

**Fiscal Impact:**

**Approved By County Attorney:**

Yes

**Advisory Board Recommendation:**

Not Applicable

**County Manager's Recommendation:**

Recommend that the Board of Commissioners enter into Closed Session pursuant to G.S. 143-318.11(a)(1) to approve Closed Session Minutes and G.S. 143-318.11(a)(3) to consult with its attorney.