2. Any deficiencies identified by the engineering assessment conducted pursuant to N.C.G.S. § 62-133.1A(b)(2) and a five-year plan for prudent and necessary infrastructure improvements by the acquiring entity.

Response:
(a) No deficiencies noted.
(b) Carteret County does not have a current five-year plan.
(c) CWSNC plans no significant improvement above routine O&M, such as tank coatings which are covered in the current maintenance contract and chlorine conversion from gas to liquid due to safety concerns.

CWSNC W-354, Sub 398
Carteret Fair Value Determination
Form Application Exhibit 3

Projected Average Monthly Bill @ 4,000 gallons

Year	Carteret Avg. Residential Bill Water		% Increase
2023	$	70.55	
2024	$	70.55	0.00%
2025	$	70.55	0.00%
2026	$	70.55	0.00%
2027	$	98.24	28.19%

4. The averaging of the appraisers' valuations, which shall constitute fair value for purposes of N.C.G.S. § 62-133.1A.

Response:

THREE APPRAISALS	
Carteret County	$ 14,575,000
Public Staff	$ 7,332,000
CWSNC	$ 10,900,000
TOTAL	**$ 32,807,000**
AVERAGE	**$ 10,935,667**

Thus, Fair Value for purposes of N.C.G.S. 62-133.1A is $9,500,000

FORM FV1(a)
ESTABLISHED 12/2020

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

FAIR VALUE ENGINEERING ASSESSMENT FORM

INSTRUCTIONS

If additional space is needed, supplementary sheets may be attached. If any section does not apply, write "not applicable". Additional information that is relevant to the application that is not listed on this form should be included as an attachment or addendum

Note: This form is only to be used in conjunction with Form FV1, Application for Determination of Fair Value of Utility Assets Pursuant to G.S. 62-133.1A.

SELLER-LOCAL GOVERNMENT UTILITY

1. Trade name used for utility business: North River / Mill Creek Water System

2. Name of owner (if different from trade name): Carteret County, NC

3. Description of the water system Water System that serves Carteret County

4. County where located Carteret County

5. Description of the sewer system N/A

6. County where located N/A

7. Number of current customers: water 1,245 sewer: N/A

ENGINEER INFORMATION

1. Name of Engineer Providing Utility Assessment : Steven R. Gandy, Ph.D., P.E.
2. Engineer Background Information:
   License No. and Issuing Authority: 031020
   Education: B.S. Chemical Engineering, M.S. Civil Engineering, Ph.D. Biology & Agriculture Engineering
   Has Engineer been subject to Discipline by any State Licensing Authority (if yes, provide date and cause of discipline): No

3. Engineer's experience with engineering design, planning, construction, renovations, replacements and operations of water and wastewater utility systems: See attached resume

See attached resume

ASSESSMENT OF TANGIBLE ASSETS OF SYSTEM TO BE ACQUIRED

Water Utility System Information

Distribution System Information

1. Water Mains (Provide the following information for each section of water mains):

a. Year installed: 1988 - 2004

b. Pipe diameter: 2" - 10"

c. Length of main: 2" = 26,400 ft; 4" = 1,320 ft; 6" = 156,288 ft; 8" = 107,712 ft; 10" = 3,168 ft

d. Type of pipe material (i.e., asbestos cement, galvanized, PVC Class 160, PVC SDR 21, C-900, ductile iron, other):
Ductile Iron, PVC SDR21 - Less than 3% of the water lines are DI, with the remainder being PVC

e. Copy of Department of Environmental Quality (DEQ) approval for each section, if available:
Project details for distribution projects have been attached, including project Serial Number and approval date

f. Describe the condition of the water distribution system valves:
Good - All believed to be functional; a monthly exercise program for valves is in place

g. Describe condition of service lines, including materials:
Aged less than 25 years - PVC and ductile iron

h. Describe the condition of the fire hydrants in each section:
Good condition - replaced when demaged, also replaced/repaired when Fire Dept performs annual test or staff discovers issue during routine visual inspection, or from customer reporting

2. Water Meters

a. Type of meters (i.e., manual read, AMR, AMI, other):
Sensus meters with Sensus transmitters, Drive-By reading, approx. 4 hour read time

b. Average age of residential water meters: Less than 15 years

3. Customer growth – number of customers added or lost during last 3 years in each of the following categories:

a. Residential: 63 customers added (1101 in 2017, 1164 in 2020)

b. Commercial: 17 customers lost (39 customers in 2017, 22 in 2020)

c. Industrial: 17 customers added (23 customers in 2017, 41 in 2020)

d. Governmental, including schools: 1 customer added (25 in 2017, 26 in 2020)

4. Water Storage:

a. Describe each water storage facility by type and capacity (i.e. hydropneumatic, ground storage, elevated storage, other):
Three 2,000 gallon aerial tanks for Laurel Road system - Taylor Farm Road (2012), Laurel Road (1988), and Mayflower Drive (2012); one 10,000 gallon ground tank for Merrimon System (approx. 2012)

b. Provide the year each storage facility placed in service:
Laurel Road Tank - 1988; Taylor Farm Road, Mayflower Drive, and Merrimon - 2012

c. Provide the most recent year each storage facility was recoated on interior and exterior:
All three elevated storage tanks - Interiors and exteriors painted in 2015
Scheduled to be repainted in 2027

5. Water Production – Water Wells

a. Provide number of water supply wells in service:

2

b. For each water supply well in service provide the year first placed in service:

Laurel Road - 1988; Merrimon - approx. 2012

c. Provide for each water supply well the original 24 hour well drawdown test, if available. N/A

d. Provide the original DEQ approval for each supply well.

See attached

e. Provide the three most recent inorganic analyses for each well.

see attached

f. Provide the average gallons per minute pumped from each well for the most recent 24 months:

Laurel Road WTP - 450 gpm; Merrimon WTP - 50 gpm

g. Environmental Compliance:

(i) Does any well exceed the EPA or State of North Carolina maximum contaminant level for a primary drinking water contaminant?

No

(ii) If yes, please provide the three most recent analyses for that primary contaminant from that well.

N/A

h. Provide a description of the installed treatment for each primary contamination MCL:

2 Filters for Iron and Manganese Removal, 2 softeners, gas chlorine disinfection, ion exchange, bleach treated (Merrimon)

i. Does the water system exceed the EPA action levels for lead and/or copper?

Yes, but no NOV - distribution lines treated with Carus 8600 for corrosion control, staff contends contamination is from private lines rather than system contamination

j. Provide a summary of the condition of each well house, including controls and valve banks and needed renovations. Good condition; controls 8 years old, plumbing 3 years old, full media replacement in 2019; SCADA 12 years old; well buildings are concrete block with brick exteriors and flat roofs, and they are in good condition

k. Describe the water treatment of each well, including filters and the need for replacements or renovations as necessary. good condition; see above

6. Surface Water Treatment Plant N/A

a. Year of original construction_____

b. Capacity of "original plant"_____

c. Describe all treatment stages, including advanced treatment based on ultrafiltration technology, if applicable. _____

d. Type of structure (i. e., steel, concrete, other)_____

e. History of Expansion

(i) Year of each expansion, if any_____

(ii) Additional capacity of each expansion_____

(iii) Treatment stages of each expansion_____

(iv)Type of structure of each expansion (i.e., steel, concrete, other)_____

f. Provide copies of DEQ construction permits for the original construction and all expansions, if any._____

g. Provide copy of the most recent DEQ permit.

h. Provide copies of the two most recent DEQ inspection reports.

i. Provide copies of all DEQ issued Notices of Violation (NOV) for the last five years, if any._____

j. Provide copies of all the selling government entity's responses to each DEQ issued NOV the last five years, if any._____

k. Provide the monthly average gallons per day produced by the surface treatment plant for each of the last 36 months_____

l. Provide the non-revenue water percentage for each of the last three years (water produced at the surface water treatment plant less water billed to customers, divided the water produced)_____

m. Describe in detail renovations and remediations, if any, performed by the selling government entity, the most recent ten years_____

7. Water and General Upgrading and Renovations – Costs

Provide the estimated cost of each water system upgrades/renovations necessary during the first five years No additional upgrades beyond typical annual maintenance are anticipated for the next 5 years

8. Violations – Water System

a. Provide all water system NOVs received from DEQ the last five years.
N/A

b. Provide all the selling government entity's written responses to the NOVs received the last five years.
N/A

Wastewater System N/A

Collection System

1. For each section of gravity collection mains provide:

a. Year installed_____

b. Pipe diameter_____

c. Length of main_____

d. Type material – i.e., clay pipe, steel pipe, concrete pipe, HDPE pipe, PVC Class 160, PVC SDR 21, C-900, ductile iron, lined ductile iron, other

_____

e. Copy of DEQ construction permit for each section, if available.

f. Number of manholes_____

g. Condition of manholes_____

h. Service line materials_____

i. Last time section camera evaluated_____

2. For each section of collection force mains, provide:

a. Year installed_____

b. Pipe diameter_____

c. Length of main_____

d. Type material – i.e. PVC SDR 21, C-900, ductile iron, lined ductile iron, other

_____

e. Copy of DEQ construction permit for each section, if available.

3. Wastewater Lift Stations – For each provide:

a. Year installed_____

b. Capacity of installed pumps_____

c. Permitted capacity of lift station_____

d. Control system_____

e. Alarm System_____

f. Description of recent renovations, if any._____

g. Material of wet well _____

h. Provide summary of the conditions of each lift station

_____

4. Wastewater Treatment Plant, provide the following:

a. Year of original construction_____

b. Capacity of "original plant"_____

c. Type Treatment_____

d. Type structure i.e., steel, concrete, other_____

e. (i) Year of each expansion, if any (ii) Additional capacity of each expansion (iii) Type treatment of each expansion (iv) Type of structure each expansion i.e.

steel, concrete,
other_____

f. Provide copies of DEQ construction permits for the original construction and all expansions, if any.

g. Provide copy of most recent NPDES Permit, if applicable.

h. If effluent land application, provide copy of most recent land application permit.

i. If land application, provide the permitted capacity of the installed irrigation system or infiltration system.

j. Does the seller own or have perpetual easements or leases for all of the effluent irrigation/infiltration areas.
_____

k. If an easement or lease, provide a copy of the recorded document(s).

l. Provide copies of the monthly DMRs (NPDES Permit) or NDMR (land application) for the most recent 36 months.

m. Provide copy of the most recent wastewater treatment plant permit, including all required monitoring parameters

n. Provide copies of the two most recent DEQ inspection reports for the wastewater treatment plant.

5. Wastewater, general information

a. Provide copies of all DEQ issued NOVs for the last five years, if any.

b. Provide copies of all the selling government entity's responses to each of the DEQ issued NOV the last five years, if any.

c. Provide the average total gallons per day sold to metered water customers by the water utility provider for each of the last three years.

d. Provide the infiltration percentage for each of the last three years (influent wastewater to wastewater treatment plant less metered water sold, divided by the metered water
sold)_____

e. Describe in detail collection system infiltration remediation if any, performed by the selling government entity the most recent ten
years_____

f. Provide the monthly number of wastewater customers the most recent 36 months:

(i) Residential_____

(ii) Commercial_____

(iii) Industrial_____

(iv) Governmental, including schools_____

Steven Gandy, PhD, PE

Chief Engineer

Steven has utilized his engineering expertise on a broad range of projects including design of the first stand-alone microsand enhanced flocculation water treatment plant in North Carolina. He has mitigated risk management of cooling water supply to Duke Energy's Smith Energy Complex. Steven is a member of the Solid Waste Association of North America's Technical Committee on Emerging Contaminants.

1 year with the firm
20 years of experience

Education

NC State University/ PhD/2004/ Biological and Agricultural Engineering

NC State University/ MS/2000/Civil Engineering/

NC State University/ BS/1998/Chemical Engineering

Professional Registration

2021/VA/PE/#0402063178

2017/SC/PE/#34408

2005/NC/PE/#03120

Certifications

Registered Environmental Consultant, Hazardous Waste Section NCDEQ

Areas of Expertise

- Design of PFAS Removal Systems
- Collection and Distribution Systems
- Groundwater Assessments and Corrective Action Plans
- Environmental Assessments and Remediation

**Individual Experience*

Design of PFAS Removal System for Maysville Water Treatment Plant, Maysville, NC: As Project Manager, responsible for the design of a PFAS removal system for modification of an existing water treatment plant in the Town of Maysville, NC. An Ion Exchange resin is being utilized to adsorb PFAS and PFOA compounds in a raw water source for use as potable water. Pretreatment optimization was also designed to mitigate media fouling and extend media life to the extent possible. This project is currently being bid.

Wastewater Treatment Plant Septic Offloading, City of Dunn, NC: Project Engineer. Prior to 2020, the City of Dunn Wastewater Treatment Plant did not accept septic or portable toilet waste due to the plant's headworks not being designed to screen large amounts of non-biodegradable debris that is often associated with portable toilet waste and septic tank waste. Several of the local septic hauling businesses had approached the City about being able to dispose of septic waste at the City's WWTP for several years. The only other local facility accepting this type of waste was frequently turning away the haulers and charging extreme rates for the service. The City saw an opportunity to support their local businesses as well as add a revenue stream to the City, and engaged Draper Aden to design a septic receiving station and headworks modification at the WWTP specifically for this purpose. Draper Aden assembled a team that included site, utility, and structural engineers to tackle the challenge. A design was created in early 2021, that allowed for a non-mechanical offload station with a large debris screen, waste chute, and new covered dumpster. The project design is complete and permitted but not yet constructed.

Site Assessment and Corrective Action, Swepsonville Closed Landfill, Alamance County, NC*: As Project Manager, provided assessment and remediation strategies to mitigate environmental damage and prevent any human health related issues in areas where VOC, elevated metal concentrations, and emerging contaminants have been identified. Also provided delineation and assessment of contaminant plumes and mitigation strategies for a closed and unlined facility that received waste from 1971-1996. Performed environmental data collection and analysis to determine treatment and repair strategies. Coordinated with DEQ Division of Water Resources, Solid Waste Section, Army Corps of Engineers, and owner to develop short- and long-term solutions to problems that have been occurring for over 20 years at the closed landfill. Shallow and nested deep well

installation, well replacement and abandonment, water quality monitoring, soils and gas analysis were used to support environmental decisions.

Landfill Expansions for Iredell, Cherokee, and Surry Counties, NC*: As Project Manager, responsible for design, permitting (Permit to Construct), construction observation, and certification (Permit to Operate) for three lined landfills in North Carolina. Provided design of Leachate Collection, pumping and storage facilities.

Scale House Design for Surry and Alamance County, NC*: As Project Manager, provided design of a multi-scale facility for Surry and Alamance County, including transaction windows, emergency generator, DA restrooms, and potable well and septic systems.

Transfer Station Permit Renewal for Franklin County, NC*: As Project Manager, updated all information and plans in accordance with all current NCDEQ SWS regulations.

Permit to Operate Renewal for Alamance County Municipal Solid Waste Landfill and C&D Landfill*: As Project Manager, performed revisions to site operations and engineering plans in accordance with current SWS rules, renovations to the recycling center, and mitigation of operational issue affecting efficient performance.

Corrosion Inhibition, NCDOT Project 18-01071, Boone Maintenance Facility NC*: As Project Manager, provided design of improvements and modifications to a maintenance facility water system, including the addition of corrosion inhibitors by manipulating pH through the use of lime slurry and providing for disinfection to meet NCDEQ regulations for potable water systems.

Water Treatment Project, Duke Energy Progress, Hamlet, NC*: As Project Manager, provided the following services:

1) Design of sludge removal system for settled water reservoir
2) Trouble shooting and implementation of water turbidity removal from cooling system for advanced cycle steam turbine system and heat exchangers
3) Single point failure analysis for settled water transfer and cooling system for Smith Energy Complex
4) Design of service roads for 13 miles of water infrastructure support through environmentally-sensitive areas and crossing 9 NCDOT roads

Water Treatment Plant, Richmond County, NC*: As Project Manager, provided the following services:

1) Design of a 2.3 million gallon-apday water treatment plant expansion (expanding from 6.7 MGD to 9 MGD), including Environmental Assessment and utility audit/cost analysis
2) Design of 60,000± LF of new high service line
3) Troubleshooting and optimization of existing Claricone settled water at treatment plant

4) Design and permitting of solids handling system, including new thickeners, sludge pumping system, and belt press facility
5) Design and permitting of new flow paced dosing chemical delivery system for potable water treatment plant

One Million Gallon Per Day Water Treatment Plant Expansion, Town of Jonesville, NC*: Project Manager for the design, permitting, and construction contract administration/observation of a Microsand Enhanced Flocculation Water Treatment System. Design and implementation of new SCADA and telemetry system for new one MGD water treatment plant. Also responsible for design and permitting of new raw water pump station and controls for settled water reservoir levels.

Phase I Environmental Site Assessments*:
1) Scotland County Industrial Park
2) Newport Wastewater Treatment Plant
3) Richmond County Industrial Park Property, Water treatment Plant Property
4) National Salvage Industrial Park Site in Dudley, NC
5) Iredell County Municipal Solid Waste Landfill Property
6) Town of Lillington Potential Municipal Property

Water Treatment Plant Design, Jamesville Water Treatment Plant, NC: As Project Manager, provided funding assistance, design, permitting, bidding, construction contract administration and construction observation. A Reverse Osmosis (RO) water treatment plant was designed to replace a failing water treatment plant for groundwater supplied to the Town of Jamesville. The plant's capacity is 100,000 gallons per day installed in a dual mode where one half of the system can be removed for service without interrupting service. Likewise, a dual train softening system and a fully automated disinfection system will allow the plant to operate autonomously with minimal oversight to free up the single operator for much needed maintenance throughout the existing distribution system. The work needs to be completed while keeping the existing plant online until the new plant is running and certified by the Engineer and PWS. When complete, this plant will be as advanced and capable as any in the State, allowing for the removal of emerging contaminates such as 1-4 Dioxane and GenX (PFOS).

Inspection, Evaluation, Design of Repairs and Replacements, Oversight and Certification for Lewiston-Woodville, NC*: As Senior Project Manager, searched grant applications, secured funding, and organized a comprehensive evaluation of the entire collection system and WWTP. Designed and oversaw repair work for manholes, gravity, and force main transport of wastewater to WWTP. Scope included: traffic plans; bypass pumping; locating unmapped manholes under courses of pavement grown over with vegetation or buried under soil, as well as unmapped sewer lines and services; point repairs; CIP; manhole relining; and general structural repairs of manholes and sewer lines within the DOT ROW. Designed and permitted new WWTP and final certification of all work.

Wastewater System Integrity and Repair for Eaton Cooperation, Roxboro, NC: As Chief Engineer, responsible for troubleshooting the existing system composed of an older collection system (made primarily from brick with cast iron lines) in conjunction with a more modern wastewater system comprised of prefabricated concrete manholes and PVC lines. Evaluated different repair techniques including poly-urea relining, CIPP, and point repairs. Provided Inflow and Infiltration estimates and mitigation design in a confined environment, under existing structures, and in high traffic areas where options were very limited.

Concrete Deterioration Evaluation, Jonesville, NC: As Senior Project Manager, inspected concrete basins for aging WTP facility. Fieldwork included concrete testing for pH, spalling, and water infiltration to determine the degree of Alkaline-Silica Reaction that had taken place over 50 years for two basins while in use. Made an eventual recommendation for removal while maintaining constant WTP operation and replacement with prefabricated process units.

Precast Concrete Pipe Evaluation for Alamance County, Swepsonville, NC: As Senior Project Manager, performed field evaluation of inlet and outlet stormwater structures and coordination of CCTV inspection for 1500 LF of 48" RCP in an extremely corrosive environment. Determined priority repairs and pipe rating index for individual sections and defects for 48" RCP traversing orphaned landfill under 30' of compacted waste.

Publications

MS Thesis: "Evaluation of Algae Removal Effectiveness for Dissolved Air Flotation (DAF), Microsand Enhanced Flocculation (MEF), and Conventional Drinking Water Treatment."

ASCE Conference Presentation Paper: "Streaming current values and comparative coagulant doses/aids for effective algae removal at the PZC."

Ph.D. Dissertation: "Applicability, Implementation, and Modeling of Calcium Oxide in the Stabilization and Storage of Belt-Separated Swine Manure Solids."

ASAE Conference Presentation Paper: "Quicklime stabilization of belt separated swine manure for the purpose of land application, elimination of storage lagoons and vector reduction."

113 OAKMONT DRIVE
GREENVILLE, N.C. 27858
PHONE (252) 756-6208
FAX (252) 756-0633

LEAD AND COPPER - SOURCE WATER - ANALYSIS

WATER SYSTEM ID#: 04-16-197 COUNTY: CARTERET

Name of Water System: NORTH RIVER

Sample Type: (X) Source Water ( ) Special/Non-compliance

Location Where Collected: 534 LAUREL RD WTP

Facility ID No. (Source Water): WT1

Sample Point: E01

Collection Date	Collection Time
08/31/21	07:00 AM

Collected By: JOHN SIMMONS

Mail Results to (water system representative):

NORTH RIVER
ATTN: JOHN SIMMONS
5231 BUSINESS DRIVE
NEWPORT, NC 28570

Phone #: (252) 241-4646

Fax #: (252) 728-0793

Responsible Person's Email:
john.simmons@carteretcountync.gov

LABORATORY ID#: 37715 ( ) SAMPLE UNSATISFACTORY ( ) RESAMPLE REQUESTED

CONTAM CODE	CONTAMINANT	METHOD CODE	REQUIRED REPORTING LIMIT (R.R.L.)	NOT DETECTED ABOVE R.R.L. (X)	QUANTIFIED RESULTS *	ALLOWABLE LIMITS
1022	Copper	200.8	0.050 mg/l	X	mg/l	1.300 mg/l
1030	Lead	200.8	0.003 mg/l	X	mg/l	0.015 mg/l

* Note: If Lead is detected above 0.015 mg/L, the Laboratory must fax analytical results to the State within 48 hours.

	DATE:	TIME:
ANALYSES BEGUN:	09/02/21	08:42 AM
ANALYSES COMPLETED:	09/13/21	04:22 PM

Laboratory Log #: 8018-083121-E01S

Certified By: MAO

COMMENTS:

8018

LEAD AND COPPER - SOURCE WATER - ANALYSIS

WATER SYSTEM ID#: 04-16-197 COUNTY: CARTERET

Name of Water System: NORTH RIVER

Sample Type: (X) Source Water ( ) Special/Non-compliance

Location Where Collected: 534 LAUREL RD WTP

Facility ID No. (Source Water): WT1

Sample Point: E01

Collection Date	Collection Time
08/30/21	08:00 AM

Collected By: JOHN SIMMONS

Mail Results to (water system representative):

NORTH RIVER
ATTN: JOHN SIMMONS
5231 BUSINESS DRIVE
NEWPORT, NC 28570

Phone #: (252) 241-4646

Fax #: (252) 728-0793

Responsible Person's Email:
john.simmons@carteretcountync.gov

LABORATORY ID#: 37715 ( ) SAMPLE UNSATISFACTORY ( ) RESAMPLE REQUESTED

CONTAM CODE	CONTAMINANT	METHOD CODE	REQUIRED REPORTING LIMIT (R.R.L.)	NOT DETECTED ABOVE R.R.L. (X)	QUANTIFIED RESULTS *	ALLOWABLE LIMITS
1022	Copper	200.8	0.050 mg/l	X	mg/l	1.300 mg/l
1030	Lead	200.8	0.003 mg/l	X	mg/l	0.015 mg/l

* Note: If Lead is detected above 0.015 mg/L, the Laboratory must fax analytical results to the State within 48 hours.

	DATE:	TIME:
ANALYSES BEGUN:	09/02/21	08:42 AM
ANALYSES COMPLETED:	09/13/21	04:22 PM

Laboratory Log #: 8018-083021-E01S Certified By: MAO

COMMENTS:

Environment 1, Incorporated

114 OAKMONT DRIVE
GREENVILLE, N.C. 27858

PHONE (252) 756-6208
FAX (252) 756-0633

DISTRIBUTION LEAD AND COPPER ANALYSIS

WATER SYSTEM ID#: 04-16-197 COUNTY: CARTERET

Name of Water System: NORTH RIVER

Sample Type: [X] Routine Distribution (Compliance) [ ] Non-compliance

Sample Site Type: [X] Tier 1 [ ] Tier 2 [ ] Tier 3 [ ] Other

Location Code: 110 Tap Location: 125 RIVERSIDE DR-LEFT SIDE

Street Address: 125 RIVERSIDE DR City: BEAUFORT

Check if sample site is owned or controlled by water system. [ ]

Check if sample site is a daycare or a K-12 school. [ ]

Facility ID No. (Distribution): D01

Sample Point: LCR

Collection Date	Collection Time X
08/17/21	06:55 AM

Collected By: MARY JO EDWARDS

Mail Results to (water system representative):

NORTH RIVER
ATTN: JOHN SIMMONS
5231 BUSINESS DRIVE
NEWPORT, NC 28570

Phone #: (252) 241-4646

Fax #: (252) 728-0793

Responsible Person's Email:
john.simmons@carteretcountync.gov

LABORATORY ID#: 37715 [ ] SAMPLE UNSATISFACTORY [ ] RESAMPLE REQUESTED

CONTAM CODE	CONTAMINANT	METHOD CODE	REQUIRED REPORTING LIMIT (R.R.L.)	NOT DETECTED ABOVE R.R.L. (X)	QUANTIFIED RESULTS	ALLOWABLE LIMITS
1022	Copper	200.8	0.050 mg/l		1.562 mg/l	1.300 mg/l
1030	Lead	200.8	0.003 mg/l		0.004 mg/l	0.015 mg/l

	DATE:	TIME:
ANALYSES BEGUN:	08/18/21	04:46 PM
ANALYSES COMPLETED:	08/27/21	02:12 PM

Laboratory Log #: 8018-081721-110P Certified By: MAO

COMMENTS:

Environment 1, Incorporated

114 OAKMONT DRIVE
GREENVILLE, N.C. 27858

PHONE (252) 756-6208
FAX (252) 756-0633

DISTRIBUTION LEAD AND COPPER ANALYSIS

WATER SYSTEM ID#: 04-16-197 COUNTY: CARTERET

Name of Water System: NORTH RIVER

Sample Type: [X] Routine Distribution (Compliance) [ ] Non-compliance

Sample Site Type: [ ] Tier 1 [ ] Tier 2 [X] Tier 3 [ ] Other

Location Code: 130 Tap Location: 217 SHELL LANDING RD-LEFT

Street Address: 217 SHELL LANDING RD City: BEAUFORT

Check if sample site is owned or controlled by water system. [X]

Check if sample site is a daycare or a K-12 school. [ ]

Facility ID No. (Distribution): D01

Sample Point: LCR

Collected By: HOMEOWNER

Collection Date	Collection Time X
08/17/21	09:20 AM

Mail Results to (water system representative):

NORTH RIVER
ATTN: JOHN SIMMONS
5231 BUSINESS DRIVE
NEWPORT, NC 28570

Phone #: (252) 241-4646

Fax #: (252) 728-0793

Responsible Person's Email:
john.simmons@carteretcountync.gov

LABORATORY ID#: 37715 [ ] SAMPLE UNSATISFACTORY [ ] RESAMPLE REQUESTED

CONTAM CODE	CONTAMINANT	METHOD CODE	REQUIRED REPORTING LIMIT (R.R.L.)	NOT DETECTED ABOVE R.R.L. (X)	QUANTIFIED RESULTS	ALLOWABLE LIMITS
1022	Copper	200.8	0.050 mg/l		1.645 mg/l	1.300 mg/l
1030	Lead	200.8	0.003 mg/l	X	mg/l	0.015 mg/l

	DATE:	TIME:
ANALYSES BEGUN:	08/18/21	04:47 PM
ANALYSES COMPLETED:	08/27/21	02:12 PM

Laboratory Log #: 8018-081721-130P Certified By: MAO

COMMENTS:

Environment 1, Incorporated

114 OAKMONT DRIVE
GREENVILLE, N.C. 27858

PHONE (252) 756-6208
FAX (252) 756-0633

DISTRIBUTION LEAD AND COPPER ANALYSIS

WATER SYSTEM ID#: 04-16-197 COUNTY: CARTERET

Name of Water System: NORTH RIVER

Sample Type: [X] Routine Distribution (Compliance) [ ] Non-compliance

Sample Site Type: [X] Tier 1 [ ] Tier 2 [ ] Tier 3 [ ] Other

Location Code: 260 Tap Location: 214 RUDOLPH DR-LEFT

Street Address: 214 RUDOLPH DR City: BEAUFORT

Check if sample site is owned or controlled by water system. [ ]

Check if sample site is a daycare or a K-12 school. [ ]

Facility ID No. (Distribution): D01

Sample Point: LCR

Collected By: GENE RIGGS

Collection Date	Collection Time X
08/17/21	08:00 AM

Mail Results to (water system representative):

NORTH RIVER
ATTN: JOHN SIMMONS
5231 BUSINESS DRIVE
NEWPORT, NC 28570

Phone #: (252) 241-4646

Fax #: (252) 728-0793

Responsible Person's Email:
john.simmons@carteretcountync.gov

LABORATORY ID#: 37715 [ ] SAMPLE UNSATISFACTORY [ ] RESAMPLE REQUESTED

CONTAM CODE	CONTAMINANT	METHOD CODE	REQUIRED REPORTING LIMIT (R.R.L.)	NOT DETECTED ABOVE R.R.L. (X)	QUANTIFIED RESULTS	ALLOWABLE LIMITS
1022	Copper	200.8	0.050 mg/l		1.440 mg/l	1.300 mg/l
1030	Lead	200.8	0.003 mg/l	X	mg/l	0.015 mg/l

	DATE:	TIME:
ANALYSES BEGUN:	08/18/21	04:54 PM
ANALYSES COMPLETED:	08/30/21	11:49 AM

Laboratory Log #: 8018-081721-260P Certified By: MAO

COMMENTS:

Environment 1, Incorporated

114 OAKMONT DRIVE
GREENVILLE, N.C. 27858

PHONE (252) 756-6208
FAX (252) 756-0633

VOLATILE ORGANIC CHEMICALS ANALYSIS (VOC's)

WATER SYSTEM ID#: 04-16-197 COUNTY: CARTERET

Name of Water System: NORTH RIVER

Sample Type: (X) Entry Point ( ) Special/Non-compliance

Location Where Collected: WELL #1 & #2

Facility ID No.: WT1

Sample Point: E01

Collected By: JOHN SIMMONS JR

Collection Date	Collection Time
05/03/21	08:15 AM

Mail Results to (water system representative):

NORTH RIVER
ATTN: JOHN SIMMONS
5231 BUSINESS DRIVE
NEWPORT,NC 28570

Phone #: (252) 241-4646

Fax #: (252) 728-0793

Responsible Person's Email:
john.simmons@carteretcountync.gov

LABORATORY ID#: 3 7 7 1 5 ( ) SAMPLE UNSATISFACTORY ( ) RESAMPLE REQUESTED

CONTAM CODE	CONTAMINANT	METHOD CODE	REQUIRED REPORTING LIMIT (R.R.L.)	NOT DETECTED ABOVE R.R.L. (X)	QUANTIFIED RESULTS	ALLOWABLE LIMITS
2378	1,2,4-Trichlorobenzene	502.2	0.0005 mg/l	X	mg/l	0.07 mg/l
2380	Cis-1,2-Dichloroethylene	502.2	0.0005 mg/l	X	mg/l	0.07 mg/l
2955	Xylenes (Total)	502.2	0.0005 mg/l	X	mg/l	10.00 mg/l
2964	Dichloromethane	502.2	0.0005 mg/l	X	mg/l	0.005 mg/l
2968	o-Dichlorobenzene	502.2	0.0005 mg/l	X	mg/l	0.600 mg/l
2969	p-Dichlorobenzene	502.2	0.0005 mg/l	X	mg/l	0.075 mg/l
2976	Vinyl Chloride	502.2	0.0005 mg/l	X	mg/l	0.002 mg/l
2977	1,1-Dichloroethylene	502.2	0.0005 mg/l	X	mg/l	0.007 mg/l
2979	Trans-1,2-Dichloroethylene	502.2	0.0005 mg/l	X	mg/l	0.100 mg/l
2980	1,2-Dichloroethane	502.2	0.0005 mg/l	X	mg/l	0.005 mg/l
2981	1,1,1-Trichloroethane	502.2	0.0005 mg/l	X	mg/l	0.200 mg/l
2982	Carbon Tetrachloride	502.2	0.0005 mg/l	X	mg/l	0.005 mg/l
2983	1,2-Dichloropropane	502.2	0.0005 mg/l	X	mg/l	0.005 mg/l
2984	Trichloroethylene	502.2	0.0005 mg/l	X	mg/l	0.005 mg/l
2985	1,1,2-Trichloroethane	502.2	0.0005 mg/l	X	mg/l	0.005 mg/l
2987	Tetrachloroethylene	502.2	0.0005 mg/l	X	mg/l	0.005 mg/l
2989	Chlorobenzene	502.2	0.0005 mg/l	X	mg/l	0.100 mg/l
2990	Benzene	502.2	0.0005 mg/l	X	mg/l	0.005 mg/l
2991	Toluene	502.2	0.0005 mg/l	X	mg/l	1.000 mg/l
2992	Ethylbenzene	502.2	0.0005 mg/l	X	mg/l	0.700 mg/l
2996	Styrene	502.2	0.0005 mg/l	X	mg/l	0.100 mg/l

	DATE:	TIME:
ANALYSES BEGUN:	05/03/21	03:48 PM
ANALYSES COMPLETED:	05/13/21	10:24 AM

Laboratory Log #: 8018-050321-E01V Certified By: MAO

COMMENTS:

Environment 1, Incorporated
4 OAKMONT DRIVE
GREENVILLE, N.C. 27858
PHONE (252) 756-6208
FAX (252) 756-0633

INORGANIC CHEMICAL ANALYSIS

WATER SYSTEM ID#: 04-16-197 COUNTY: CARTERET

Name of Water System: NORTH RIVER

Sample Type: (X) Entry Point ( ) Special/Non-compliance

Location Where Collected: WELL #1 & #2

Facility ID No.: WT1

Location Code: E01

Collected By: DANIEL BATCHELOR

Collection Date	Collection Time
09/04/18	07:05 AM

Mail Results to (water system representative):

NORTH RIVER
ATTN: JOHN SIMMONS
5231 BUSINESS DRIVE
NEWPORT,NC 28570

Phone #: (252) 241-4646

Fax #: (252) 728-0793

Responsible Person's Email:
john.simmons@carteretcountync.gov

LABORATORY ID#: 37715 ( ) SAMPLE UNSATISFACTORY ( ) RESAMPLE REQUESTED

CONTAM CODE	CONTAMINANT	METHOD CODE	REQUIRED REPORTING LIMIT (R.R.L.)	NOT DETECTED ABOVE R.R.L. (X)	QUANTIFIED RESULTS	ALLOWABLE LIMITS
1005	Arsenic	200.8	0.005 mg/l	X	mg/l	0.010 mg/l
1010	Barium	200.8	0.400 mg/l	X	mg/l	2.000 mg/l
1015	Cadmium	200.8	0.001 mg/l	X	mg/l	0.005 mg/l
1020	Chromium	200.8	0.020 mg/l	X	mg/l	0.100 mg/l
1024	Cyanide	4500CN-E	0.050 mg/l	X	mg/l	0.200 mg/l
1025	Fluoride	4500F-C	0.100 mg/l		0.23 mg/l	4.000 mg/l
1028	Iron	200.7	0.060 mg/l	X	mg/l	0.300 mg/l
1032	Manganese	200.8	0.010 mg/l	X	mg/l	0.050 mg/l
1035	Mercury	200.8	0.0004 mg/l	X	mg/l	0.002 mg/l
1036	Nickel	200.8	0.100 mg/l	X	mg/l	N/A
1045	Selenium	200.8	0.010 mg/l	X	mg/l	0.050 mg/l
1052	Sodium	3111B	1.000 mg/l		116.100 mg/l	N/A
1055	Sulfate	4500SO4-E	15.000 mg/l	X	mg/l	250.0 mg/l
1074	Antimony	200.8	0.003 mg/l	X	mg/l	0.006 mg/l
1075	Beryllium	200.8	0.002 mg/l	X	mg/l	0.004 mg/l
1085	Thallium	200.8	0.001 mg/l	X	mg/l	0.002 mg/l
1925	pH	4500H-B	N/A		7.3 pH	6.50– 8.50

	DATE:	TIME:
ANALYSES BEGUN:	09/04/18	03:11 PM
ANALYSES COMPLETED:	10/10/18	09:18 AM

Laboratory Log #: 8018-090418-E01I Certified By: MAO

COMMENTS:

Environment 1, Incorporated

114 OAKMONT DRIVE
GREENVILLE, N.C. 27858

PHONE (252) 756-6208
FAX (252) 756-0633

PESTICIDES AND SYNTHETIC ORGANIC CHEMICALS ANAYLSIS (SOC's)

WATER SYSTEM ID#: 04-16-197 COUNTY: CARTERET

Name of Water System: NORTH RIVER

Sample Type: (X) Entry Point ( ) Special/Non-compliance

Location Where Collected: WELL #1 & #2

Facility ID No.: WT1

Sample Point: E01

Collected By: DANIEL BATCHELOR

Collection Date	Collection Time
03/01/21	07:50 AM

Mail Results to (water system representative):

NORTH RIVER
ATTN: JOHN SIMMONS
5231 BUSINESS DRIVE
NEWPORT,NC 28570

Phone #: (252) 241-4646

Fax #: (252) 728-0793

Responsible Person's Email:
john.simmons@carteretcountync.gov

LABORATORY ID#: 3 7 7 1 5 ( ) SAMPLE UNSATISFACTORY ( ) RESAMPLE REQUESTED

CONTAM CODE	CONTAMINANT	METHOD CODE	REQUIRED REPORTING LIMIT (R.R.L.)	NOT DETECTED ABOVE R.R.L. (X)	QUANTIFIED RESULTS *	ALLOWABLE LIMITS
2005	Endrin	525.2	0.00001 mg/l	X	mg/l	0.002
2010	BHC-Gamma	525.2	0.00002 mg/l	X	mg/l	0.0002
2015	Methoxychlor	525.2	0.0001 mg/l	X	mg/l	0.04
2020	Toxaphene	525.2	0.001 mg/l	X	mg/l	0.003
2031	Dalapon	515.4	0.001 mg/l	X	mg/l	0.20
2035	Di(2-ethylhexyl)adipate	525.2	0.0006 mg/l	X	mg/l	0.40
2036	Oxamyl(vydate)	531.1	0.002 mg/l	X	mg/l	0.20
2037	Simazine	525.2	0.00007 mg/l	X	mg/l	0.004
2040	Picloram	515.4	0.0001 mg/l	X	mg/l	0.500
2041	Dinoseb	515.4	0.0002 mg/l	X	mg/l	0.007
2042	Hexachlorocyclopentadiene	525.2	0.0001 mg/l	X	mg/l	0.050
2046	Carbofuran	531.1	0.0009 mg/l	X	mg/l	0.040
2050	Atrazine	525.2	0.0001 mg/l	X	mg/l	0.003
2051	Alachlor	525.2	0.0002 mg/l	X	mg/l	0.002
2065	Heptachlor	525.2	0.00004 mg/l	X	mg/l	0.0004

* Note: If result exceeds allowable limit, the laboratory must fax analytical results to the State within 48 hours.

Environment 1, Incorporated

114 OAKMONT DRIVE
GREENVILLE, N.C. 27858

PHONE (252) 756-6208
FAX (252) 756-0633

PESTICIDES AND SYNTHETIC ORGANIC CHEMICALS ANAYLSIS (SOC's)

(continued)

WATER SYSTEM ID#: 04-16-197

Name of Water System: NORTH RIVER

Facility ID No.: WT1

Sample Point: E01

Collection Date	Collection Time
03/01/21	07:50 AM

LABORATORY ID#: 3 7 7 1 5

CONTAM CODE	CONTAMINANT	METHOD CODE	REQUIRED REPORTING LIMIT (R.R.L.)	NOT DETECTED ABOVE R.R.L. (X)	QUANTIFIED RESULTS *	ALLOWABLE LIMITS
2067	Heptachlor Epoxide	525.2	0.00002 mg/l	X	mg/l	0.0002
2105	2,4-D	515.4	0.0001 mg/l	X	mg/l	0.07
2110	2,4,5-TP (Silvex)	515.4	0.0002 mg/l	X	mg/l	0.05
2274	Hexachlorobenzene	525.2	0.0001 mg/l	X	mg/l	0.001
2039	Di(2-ethylhexyl)phthalate	525.2	0.00132 mg/l	X	mg/l	0.006
2306	Benzo(a)pyrene	525.2	0.00002 mg/l	X	mg/l	0.0002
2326	Pentachlorophenol	515.4	0.00004 mg/l	X	mg/l	0.001
2383	PCB's (as decachlorobiphenyl)	525.2	0.0001** mg/l	X	mg/l	0.0005
2931	DBCP	504.1	0.00002 mg/l	X	mg/l	0.0002
2946	Ethylene Dibromide (EDB)	504.1	0.00001 mg/l	X	mg/l	0.00005
2959	Chlordane	525.2	0.0002 mg/l	X	mg/l	0.002

* Note: If result exceeds allowable limit, the laboratory must fax analytical results to the State within 48 hours.
** Note: R.R.L. (mg/L) for PCB screening are as follows: Aroclor 1016 – 0.00008, Aroclor 1221 – 0.02, Aroclor 1232 – 0.0005, Aroclor 1242 – 0.0003, Aroclor 1248 & 1254 – 0.0001, Aroclor 1260 – 0.0002

	DATE:	TIME:
ANALYSES BEGUN:	03/01/21	04:11 PM
ANALYSES COMPLETED:	03/29/21	11:38 AM

Laboratory Log #: 8018-030121-E01S

Certified By: MAO

COMMENTS:

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **15-01015** **Received:** 12/15/2015 **Project Type:** TANK REHABILITATION ONLY

Water System No.: **NC0416197** **County:** CARTERET

Water System Name: NORTH RIVER/MILL CREEK WATER SERVICE DIS

Description: 534 LAUREL ROAD - BEAUFORT

Contacts

Applicant Name: W. Russell Overman, County Manager **Engineer Name:**

Reviewer Name: Bhatta, Shashi

Events

Event	Event Date	Comments
final approval	04/21/2016	TLK
engineer's certification	04/21/2016	30647
project approval	12/15/2015	RO/SMB

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **09-00533R1** **Received:** 6/13/2011 **Project Type:** STORAGE SYSTEM
Water System No.: **NC0416197** **County:** CARTERET
Water System Name: NORTH RIVER/MILL CREEK WATER SERVICE DIS
Description: TANK 3/BOOSTER PUMP STATIONS 2&3 CARTERET COUNTY NC

Contacts

Applicant Name: John Langdon **Engineer Name:**
Reviewer Name: Chohan, Siraj (former employee, contact shashi.bhatta@ncdenr.gov)

Events

Event	Event Date	Comments
applicant's certification	09/10/2012	
engineer's certification	09/10/2012	7469 OK PER SMC
final approval	09/10/2012	TLK PER SMC
applicant's certification	08/27/2012	
partial final approval	08/27/2012	TLK PER SMC - FINAL DISINFECTION OF ET3 REMAINING
partial engineer's certification	08/27/2012	7469 OK PER SMC - FINAL DISINFECTION OF ET3 REMAINING
project approval	01/03/2012	SHOP DRAWINGS FOR THE 200.000-GALLON ELEVATED TANK RECEIVED.
approval mailed	07/20/2011	
authorization to construct	07/13/2011	SMC
tentative approval	07/12/2011	

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **11-00571** **Received:** 6/6/2011 **Project Type:** DISTRIBUTION REPLACEMENT

Water System No.: **NC0416197** **County:** CARTERET

Water System Name: NORTH RIVER/MILL CREEK WATER SERVICE DIS

Description: CARTERET CO. - US HWY 70 UTILITIES RELOCATION (R-3307)

Contacts

Applicant Name: Dee Meshaw, Asst. County Manager **Engineer Name:**

Reviewer Name: Chohan, Siraj (former employee, contact shashi.bhatta@ncdenr.gov)

Events

Event	Event Date	Comments
final approval	06/12/2013	TLK PER SMC
engineer's certification	06/12/2013	33439 OK PER SMC
authorization to construct expiration reminder	06/04/2013	
applicant's certification	05/23/2012	
partial engineer's certification	05/23/2012	33439 OK PER SMC - APPROXIMATELY 2000 LF OF 8-INCH WATERLINE ALONGSIDE US 70 EAST
partial final approval	05/23/2012	TLK PER SMC - APPROXIMATELY 2000 LF OF 8-INCH WATERLINE ALONGSIDE US 70 EAST
approval mailed	07/20/2011	
authorization to construct	07/11/2011	SMC
project approval	07/08/2011	
Comment Sent	07/07/2011	
Comment Sent	07/05/2011	ADDITIONAL INFORMATION NEEDED.

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **10-00988** **Received:** 10/8/2010 **Project Type:** TANK REHABILITATION ONLY

Water System No.: **NC0416197** **County:** CARTERET

Water System Name: NORTH RIVER/MILL CREEK WATER SERVICE DIS

Description: 534 LAUREL ROAD, BEAUFORT NC

Contacts

Applicant Name: Tony Cahoon, Public Works Director **Engineer Name:**

Reviewer Name: Chohan, Siraj (former employee, contact shashi.bhatta@ncdenr.gov)

Events

Event	Event Date	Comments
final approval	03/18/2011	TLK PER WIRO
engineer's certification	03/15/2011	PER WIRO
project approval	10/11/2010	

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **09-01554** **Received:** 12/2/2009 **Project Type:** GROUNDWATER SYSTEM
Water System No.: **NC0416197** **County:** CARTERET
Water System Name: NORTH RIVER/MILL CREEK WATER SERVICE DIS
Description: CARTERET COUNTY - LAUREL RD WTP RENOVATIONS

Contacts

Applicant Name: John Langdon, County Manager **Engineer Name:**
Reviewer Name: Chohan, Siraj (former employee, contact shashi.bhatta@ncdenr.gov)

Events

Event	Event Date	Comments
final approval	11/01/2010	SMC
applicant's certification	10/29/2010	
engineer's certification	10/29/2010	16359
approval mailed	01/08/2010	
authorization to construct	12/18/2009	SMC
project approval	12/17/2009	

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **09-00361** **Received:** 3/10/2009 **Project Type:** STORAGE SYSTEM
Water System No.: **NC0416197** **County:** CARTERET
Water System Name: NORTH RIVER/MILL CREEK WATER SERVICE DIS
Description: ELEVATED TANK NO. 2 & BOOSTER PUMP STATION NO. 1 (CONTRACT 11 & 12)

Contacts

Applicant Name: John Langdon **Engineer Name:**
Reviewer Name: Chohan, Siraj (former employee, contact shashi.bhatta@ncdenr.gov)

Events

Event	Event Date	Comments
approval mailed	04/12/2011	
final approval	03/30/2011	TLK PER SMC
project approval	03/29/2011	ET SHOP DRAWGS AND PUMPS PERFORMANCE CURVES RECEIVED.
engineer's certification	03/29/2011	7469 OK PER SMC (CERT DATED 3/22/2011)
applicant's certification	03/25/2011	
authorization to construct expiration reminder	01/26/2011	
authorization to construct extension	01/26/2011	
construction started	07/01/2010	PER FORM FROM WJ ZAIST DATED 2/1/2011
approval mailed	03/26/2009	
authorization to construct	03/25/2009	SMC
tentative approval	03/25/2009	SHOP DRAWINGS & BP PERFORMANCE CURVES REQUIRED FOR AP.

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **09-00361** **Received:** 3/10/2009 **Project Type:** STORAGE SYSTEM
Water System No.: **NC0416197** **County:** CARTERET
Water System Name: NORTH RIVER/MILL CREEK WATER SERVICE DIS
Description: ELEVATED TANK NO. 2 & BOOSTER PUMP STATION NO. 1 (CONTRACT 11 & 12)

Contacts

Applicant Name: John Langdon **Engineer Name:**
Reviewer Name: Chohan, Siraj (former employee, contact shashi.bhatta@ncdenr.gov)

Events

Event	Event Date	Comments
approval mailed	04/12/2011	
final approval	03/30/2011	TLK PER SMC
project approval	03/29/2011	ET SHOP DRAWGS AND PUMPS PERFORMANCE CURVES RECEIVED.
engineer's certification	03/29/2011	7469 OK PER SMC (CERT DATED 3/22/2011)
applicant's certification	03/25/2011	
authorization to construct expiration reminder	01/26/2011	
authorization to construct extension	01/26/2011	
construction started	07/01/2010	PER FORM FROM WJ ZAIST DATED 2/1/2011
approval mailed	03/26/2009	
authorization to construct	03/25/2009	SMC
tentative approval	03/25/2009	SHOP DRAWINGS & BP PERFORMANCE CURVES REQUIRED FOR AP.

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **07-02067** **Received:** 11/16/2007 **Project Type:** DISTRIBUTION EXTENSION

Water System No.: **NC0416197** **County:** CARTERET

Water System Name: NORTH RIVER/MILL CREEK WATER SERVICE DIS

Description: CHADWICK SHORES PLANTATION (LOTS 1-62) CONTRACT 9

Contacts

Applicant Name: John Langdon **Engineer Name:**

Reviewer Name: Chen,Tony (former employee, contact shashi.bhatta@ncdenr.gov)

Events

Event	Event Date	Comments
applicant's certification	11/19/2008	
final approval	11/19/2008	TLK
engineer's certification	11/14/2008	7469
approval mailed	11/30/2007	
authorization to construct	11/28/2007	TCC BY SEP
project approval	11/27/2007	

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **07-00193** **Received:** 2/5/2007 **Project Type:** DISTRIBUTION EXTENSION
Water System No.: **NC0416197** **County:** CARTERET
Water System Name: NORTH RIVER/MILL CREEK WATER SERVICE DIS
Description: TRACEY GROVE S/D, SECTION 2

Contacts

Applicant Name: John Langdon **Engineer Name:**
Reviewer Name: Chen,Tony (former employee, contact shashi.bhatta@ncdenr.gov)

Events

Event	Event Date	Comments
project terminated	03/07/2017	Per form from john simmons dated 2/22/17
on hold	12/03/2010	PER FORM FROM WILLIAM ZAIST DATED 12/3/2010
authorization to construct expiration reminder	11/29/2010	
authorization to construct extension	11/29/2010	
authorization to construct extension	01/05/2009	PER FORM FROM TONY CAHOON DATED 1/5/2009
authorization to construct expiration reminder	12/29/2008	
construction started	02/19/2007	PER FORM FROM WILLIAM ZAIST DATED 12/3/2010
approval mailed	02/15/2007	
authorization to construct	02/13/2007	TCC BY DB
project approval	02/12/2007	

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **06-02153** **Received:** 12/14/2006 **Project Type:** DISTRIBUTION EXTENSION
Water System No.: **NC0416197** **County:** CARTERET
Water System Name: NORTH RIVER/MILL CREEK WATER SERVICE DIS
Description: TRACY GROVE S/D, SECTION 1

Contacts

Applicant Name: John Langdon **Engineer Name:**
Reviewer Name: Chen,Tony (former employee, contact shashi.bhatta@ncdenr.gov)

Events

Event	Event Date	Comments
applicant's certification	06/19/2017	
final approval	06/19/2017	tlk
engineer's certification	06/02/2017	7469; still need applicant certification
authorization to construct extension	03/13/2017	Per form from John Simmons/Frank Lews dated 3/13/17
on hold	12/03/2010	PER FORM FROM WILLIAM ZAIST DATED 12/3/2010
authorization to construct expiration reminder	10/28/2010	
authorization to construct extension	10/28/2010	
authorization to construct extension	12/08/2008	PER FORM FROM TONY CAHOON DATED 12/8/2008
authorization to construct expiration reminder	11/24/2008	
construction started	01/22/2007	PER FORM FROM WILLIAM ZAIST DATED 12/3/2010
approval mailed	01/08/2007	
authorization to construct	01/04/2007	TCC BY SEP
project approval	01/03/2007	

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **06-01567** **Received:** 9/1/2006 **Project Type:** DISTRIBUTION EXTENSION

Water System No.: **NC0416197** **County:** CARTERET

Water System Name: NORTH RIVER/MILL CREEK WATER SERVICE DIS

Description: JOANS HAVEN DRIVE LOTS CON-5

Contacts

Applicant Name: John Lan Gdon **Engineer Name:**

Reviewer Name: Chen,Tony (former employee, contact shashi.bhatta@ncdenr.gov)

Events

Event	Event Date	Comments
applicant's certification	11/22/2006	
final approval	11/22/2006	
engineer's certification	11/22/2006	
approval mailed	09/20/2006	
authorization to construct	09/19/2006	TCC BY DB
project approval	09/13/2006	

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **06-01023** **Received:** 6/12/2006 **Project Type:** DISTRIBUTION EXTENSION
Water System No.: **NC0416197** **County:** CARTERET
Water System Name: NORTH RIVER/MILL CREEK WATER SERVICE DIS
Description: MILL LANDING S/D, CONTRACT 6

Contacts

Applicant Name: John Langdon **Engineer Name:**
Reviewer Name: Chen,Tony (former employee, contact shashi.bhatta@ncdenr.gov)

Events

Event	Event Date	Comments
applicant's certification	06/14/2007	
final approval	06/14/2007	
engineer's certification	06/14/2007	
approval mailed	06/26/2006	
project approval	06/22/2006	
authorization to construct	06/22/2006	TCC BY DB

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **06-01021** **Received:** 6/12/2006 **Project Type:** DISTRIBUTION EXTENSION

Water System No.: **NC0416197** **County:** CARTERET

Water System Name: NORTH RIVER/MILL CREEK WATER SERVICE DIS

Description: BRIDGEWATER @ WARE CRJ S/D NO5

Contacts

Applicant Name: John Langdon **Engineer Name:**

Reviewer Name: Chen,Tony (former employee, contact shashi.bhatta@ncdenr.gov)

Events

Event	Event Date	Comments
applicant's certification	10/10/2006	
final approval	10/10/2006	
engineer's certification	10/10/2006	
approval mailed	06/26/2006	
authorization to construct	06/23/2006	TCC BY SEP
project approval	06/22/2006	

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **05-01539** **Received:** 9/12/2005 **Project Type:** TANK REHABILITATION ONLY
Water System No.: **NC0416197** **County:** CARTERET
Water System Name: NORTH RIVER/MILL CREEK WATER SERVICE DIS
Description: CARTERET COUNTY ELEVATED TANK

Contacts

Applicant Name: John Langdon **Engineer Name:** Zzz Migration
Reviewer Name: Chen,Tony (former employee, contact shashi.bhatta@ncdenr.gov)

Events

Event	Event Date	Comments
final approval	01/05/2006	TCC
engineer's certification	01/04/2006	
project approval	09/12/2005	R.O. APP. 9/9/05

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **05-00938** **Received:** 6/1/2005 **Project Type:** DISTRIBUTION EXTENSION
Water System No.: **NC0416197** **County:** CARTERET
Water System Name: NORTH RIVER/MILL CREEK WATER SERVICE DIS
Description: CARTERET CO./CONTRACT #43

Contacts

Applicant Name: John Langdon **Engineer Name:** Zzz Migration
Reviewer Name: Chen,Tony (former employee, contact shashi.bhatta@ncdenr.gov)

Events

Event	Event Date	Comments
applicant's certification	02/20/2006	
final approval	02/20/2006	OU
partial engineer's certification	02/20/2006	CHANGE ORDER 1
applicant's certification	12/15/2005	TCC
partial final approval	12/15/2005	TCC
partial engineer's certification	12/08/2005	
authorization to construct	11/23/2005	TCC, WSMP# 02-01787
approval mailed	06/22/2005	
project approval	06/14/2005	

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **03-01288** **Received:** 8/18/2003 **Project Type:** DISTRIBUTION EXTENSION
Water System No.: **NC0416197** **County:** CARTERET
Water System Name: NORTH RIVER/MILL CREEK WATER SERVICE DIS
Description: CARTERET CO. #43/PH 2 DEH 0906

Contacts

Applicant Name: Mary Ann Hinshaw **Engineer Name:**
Reviewer Name: Ou, Henri (former employee, contact shashi.bhatta@ncdenr.gov)

Events

Event	Event Date	Comments
applicant's certification	07/27/2005	
partial engineer's certification	07/27/2005	FINAL
final approval	07/27/2005	OU
partial final approval	05/24/2005	OU
applicant's certification	05/24/2005	
partial engineer's certification	05/24/2005	SR 1675,1723,1676,1673,..
partial engineer's certification	05/19/2005	SR 1230, 1231
applicant's certification	05/19/2005	
partial final approval	05/19/2005	OU
partial final approval	05/05/2005	OU
partial engineer's certification	05/05/2005	SR 1246,1416,1460,1946...
applicant's certification	05/05/2005	
partial engineer's certification	04/20/2005	SR1169,1631,1644,1165,101
applicant's certification	04/20/2005	
partial final approval	04/20/2005	OU
approval mailed	09/18/2003	
authorization to construct	09/12/2003	OU
project approval	09/12/2003	WSMP 02-01787

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **03-00031** **Received:** 12/23/2002 **Project Type:** DISTRIBUTION EXTENSION

Water System No.: **NC0416197** **County:** CARTERET

Water System Name: NORTH RIVER/MILL CREEK WATER SERVICE DIS

Description: EASTMAN CREEK S/D LOTS 1-90

Contacts

Applicant Name: Doug Brady, Chairman **Engineer Name:**

Reviewer Name: Ou, Henri (former employee, contact shashi.bhatta@ncdenr.gov)

Events

Event	Event Date	Comments
final approval	05/05/2004	OU
engineer's certification	05/05/2004	
applicant's certification	04/29/2004	
approval mailed	01/16/2003	
project approval	01/10/2003	WSMP 02-01788
authorization to construct	01/10/2003	OU

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **02-01787** **Received:** 11/5/2002 **Project Type:** WATER SYSTEM MANAGEMENT PLAN
Water System No.: **NC0416197** **County:** CARTERET
Water System Name: NORTH RIVER/MILL CREEK WATER SERVICE DIS
Description: CARTERET COUNTY WATER

Contacts

Applicant Name: John Whitehurst **Engineer Name:** Zzz Migration
Reviewer Name: O'Daniel, Sandy (former employee, contact shashi.bhatta@ncdenr.gov)

Events

Event	Event Date	Comments
WSMP deemed complete	11/26/2002	STEA

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **02-01776** **Received:** 11/4/2002 **Project Type:** DISTRIBUTION EXTENSION

Water System No.: **NC0416197** **County:** CARTERET

Water System Name: NORTH RIVER/MILL CREEK WATER SERVICE DIS

Description: INDIAN SHORES S/D

Contacts

Applicant Name: John Whitehurst, County Mgr. **Engineer Name:**

Reviewer Name: Ou, Henri (former employee, contact shashi.bhatta@ncdenr.gov)

Events

Event	Event Date	Comments
applicant's certification	05/27/2003	
final approval	05/27/2003	HSO BY JHD
engineer's certification	05/13/2003	
approval mailed	12/18/2002	
project approval	11/27/2002	
authorization to construct	11/27/2002	OU

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **00-01424** **Received:** 6/12/2000 **Project Type:** WATER SYSTEM MANAGEMENT PLAN

Water System No.: **NC0416197** **County:** CARTERET

Water System Name: NORTH RIVER/MILL CREEK WATER SERVICE DIS

Description: COUNTY OF CARTERET

Contacts

Applicant Name: Bob Murphy **Engineer Name:** Zzz Migration

Reviewer Name: O'Daniel, Sandy (former employee, contact shashi.bhatta@ncdenr.gov)

Events

Event	Event Date	Comments
WSMP deemed complete	06/12/2000	SHORT FORM

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **00-01400** **Received:** 6/2/2000 **Project Type:** DISTRIBUTION EXTENSION
Water System No.: **NC0416197** **County:** CARTERET
Water System Name: NORTH RIVER/MILL CREEK WATER SERVICE DIS
Description: CARTERET CO. WTR. SYS 40,41,42

Contacts

Applicant Name: Robert Murphy **Engineer Name:**
Reviewer Name: Ou, Henri (former employee, contact shashi.bhatta@ncdenr.gov)

Events

Event	Event Date	Comments
engineer's certification	06/17/2003	WTP PORTION
final approval	06/17/2003	OU
applicant's certification	05/29/2003	
partial final approval	05/29/2003	OU
partial engineer's certification	05/12/2003	EXCEPT WTP PORTION
approval mailed	07/24/2000	
authorization to construct	07/07/2000	OU
project approval	07/07/2000	
reminder letter	06/12/2000	

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **00-01068** **Received:** 5/3/2000 **Project Type:** DISTRIBUTION EXTENSION

Water System No.: **NC0416197** **County:** CARTERET

Water System Name: NORTH RIVER/MILL CREEK WATER SERVICE DIS

Description: WHITEWATER S/D

Contacts

Applicant Name: Robert Murphey, County Manager **Engineer Name:**

Reviewer Name: Ou, Henri (former employee, contact shashi.bhatta@ncdenr.gov)

Events

Event	Event Date	Comments
applicant's certification	05/06/2004	
final approval	05/06/2004	OU
engineer's certification	04/28/2004	
approval mailed	07/06/2000	
authorization to construct	07/03/2000	OU
project approval	07/03/2000	
reminder letter	05/04/2000	

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **00-00690** **Received:** 3/23/2000 **Project Type:** WATER SYSTEM MANAGEMENT PLAN

Water System No.: **NC0416197** **County:** CARTERET

Water System Name: NORTH RIVER/MILL CREEK WATER SERVICE DIS

Description: N. RIVER & MERRIMON WTR SYSTEM

Contacts

Applicant Name: Robert Murphy **Engineer Name:** Zzz Migration

Reviewer Name: O'Daniel, Sandy (former employee, contact shashi.bhatta@ncdenr.gov)

Events

Event	Event Date	Comments
WSMP deemed complete	03/23/2000	SHORT FORM

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **16-00890** **Received:** 10/18/2016 **Project Type:** TANK REHABILITATION ONLY
Water System No.: **NC0416198** **County:** CARTERET
Water System Name: MERRIMON WATER SYSTEM
Description: 105 JONAQUINS CREEK RD MERRIMON NC

Contacts

Applicant Name: Mr. Russell Overman **Engineer Name:**
Reviewer Name: Bhatta, Shashi

Events

Event	Event Date	Comments
engineer's certification	03/02/2017	eng cert 30647
final approval	03/02/2017	tlk
project approval	10/18/2016	TLK PER SMB

Water Resources
ENVIRONMENTAL QUALITY

Project Detail

Serial No: **02-01788** **Received:** 11/5/2002 **Project Type:** WATER SYSTEM MANAGEMENT PLAN

Water System No.: **NC0416198** **County:** CARTERET

Water System Name: MERRIMON WATER SYSTEM

Description: CARTERET COUNTY WATER SYSTEM

Contacts

Applicant Name: John Whitehurst **Engineer Name:** Zzz Migration

Reviewer Name: O'Daniel, Sandy (former employee, contact shashi.bhatta@ncdenr.gov)

Events

Event	Event Date	Comments
WSMP deemed complete	11/26/2002	STEA

Central Coastal Plain Capacity Use Area Permit Data for North River Mill Creek Water Service District

Permit holder	North River Mill Creek Water Service District	Application Received	12/12/2016
Permit number	CU1109	Application Complete	12/16/2016
Permit status	Active	Application Public Notice	01/06/2017
County	Carteret	Draft Permit Public Notice	01/06/2017
Type of Use	Public Supply	Issue Date	02/01/2017
Cretaceous Water Bank	No	Expiration Date	03/31/2022
Bank Start Date		Date First Issued	04/02/2007
Withdrawals Not Subject to .0503 Reductions	676,800	Aquifer: Tch	No. of Wells: 2
Permitted Maximum Daily Ground Water Withdrawal (in GPD):			

Abbreviation	Aquifer
S	Surficial
Tu	Upper Tertiary
Ty	Yorktown
Tch	Castle Hayne
Tb	Beaufort
Kpd	Peedee
Kbc	Black Creek
Kucf	Upper Cape Fear
Klcf	Lower Cape Fear
Br	Basement Rock

North Carolina Aquifer Information

Ground Water Management Branch web site

This permittee has filed a Local Water Supply Plan. Click here to review their plan. Access this permit holder's withdrawal data formatted for Local Water Supply Planning for all wells and individual wells.
Access any Local Water Supply Plan here.

Water Withdrawal Statistics for North River Mill Creek Water Service District (CU1109)
Wells Not Subject to .0503 Reductions

Calendar Year	Type	Year Total (gallons)	Average Day (gallons/day)	Maximum Day (gallons/day)	# of Days
1990	Well	1,834,800	35,285	164,000	52
1991	Well	493,700	5,143	10,300	96
1992	Well	510,700	5,376	13,300	95
1995	Well	8,099,000	85,253	212,000	95
1996	Well	9,637,000	90,915	303,000	106
1997	Well	10,330,000	99,327	236,000	104
1998	Well	8,532,000	95,865	216,000	89
1999	Well	8,870,000	101,954	491,000	87
2000	Well	9,695,000	118,232	586,000	82
2001	Well	10,160,000	109,247	287,000	93
2002	Well	14,468,000	88,761	266,000	163
2003	Well	28,460,000	90,927	350,000	313
2004	Well	28,413,511	80,720	283,000	352
2005	Well	44,188,000	124,825	463,000	354
2006	Well	56,982,000	156,115	364,000	365
2007	Well	87,744,700	240,396	423,000	365
2008	Well	101,496,000	277,311	527,000	366
2009	Well	98,019,200	268,546	452,000	365
2010	Well	89,307,000	245,349	431,000	364
2011	Well	108,657,000	297,690	528,000	365
2012	Well	107,779,000	294,478	476,000	366
2013	Well	90,326,000	247,468	411,000	365
2014	Well	82,965,000	227,301	527,000	365
2015	Well	84,334,000	231,052	446,000	365
2016	Well	83,372,000	264,673	506,000	315
2017	Well	102,591,000	281,071	424,000	365
2018	Well	74,516,000	231,416	434,000	322
2019	Well	87,050,000	238,493	373,000	365
2020	Well	85,378,000	235,851	412,000	362
2021	Well	87,118,000	238,679	372,000	365

North River Mill Creek Water Service District (CU1109) Well Information

Row #	Source	Land Surface Elevation (feet)	Diameter (inches)	Pump Capacity (gallons per minute)	Pump Intake Depth (feet)	Top Screen Depth (feet)	Bottom Screen Depth (feet)	Well Depth (feet)	Aquifer Top Depth (feet)	Aquifer (s)	Type	.0503 Reduction Well?	Status	.0503 Zone	Production or Monitoring Well (P or M)	Geo Logs	Well Cons Form (GW1)	Pump Diagram
1	1	3.00	10	480	86	369	408	418	1	Tch	Well	no	Existing	0	P	no	sketch	yes
2	2	8.00	10	460	86	375	395	405	1	Tch	Well	no	Existing	0	P	no	sketch	yes

pump intake below top of screen; pump intake below top of screen and top of aquifer; pump intake below top of aquifer

WELL SITE EVALUATION FORM
CALCULATED FIXED RADIUS METHOD
ONE FOR EACH WELL

General Information

*1) Well Owner: Carteret County (North River Community) 2) Date Drilled: 10/88

*3) Well Location (St/Rd & Town): NCSR 1163-Laurel Road (Well No. 1)

*4) Water supplied to: North River Community (Public)

5) Source Aquifer (if known): Castle Hayne

6) Well Depth: 418 ft.

7) Diameter: 10 in.

8) Depth Cased: 396 ft.

9) Open Hole/Screen from 396 to 408 ft.

Information from the Well Acceptance Test

10) Date: 10/88

11) Length: 24 hours

12) Pumping Rate: 135 gpm

13) Depth to Static Water Level: 11.7 ft.

14) Pumping Level: 171 ft.

15) Drawdown: 7 ft.

Well Operation

*16) Pumping Rate: 135 gpm

*17) Pump Period: 67 min/day

Well Location

*18) Latitude: 34° 48´ 56"

*19) Longitude: 76° 38´ 44"

20) A 1 : 24,000 scale 7.5 minute topographic map showing the well location must also be submitted.

* Minimum data required for Wellhead Protection Area delineation. Additional information will improve the accuracy of the delineation.

WHPA

Recharge Rate	:	200,000 GPD
Area	:	0.49 sq. miles
Radius	:	2,950 ft.

WELL SITE EVALUATION FORM
CALCULATED FIXED RADIUS METHOD
ONE FOR EACH WELL

General Information

*1) Well Owner: Carteret County (North River Community) 2) Date Drilled: 12/88
*3) Well Location (St/Rd & Town): NCSR 1300-Merrimon Road (Well No. 2)
*4) Water supplied to: North River Community (Public)
5) Source Aquifer (if known): Castle Hayne
6) Well Depth: 405 ft.
7) Diameter: 10 in.
8) Depth Cased: 375 ft.
9) Open Hole/Screen from 375 to 395 ft.

Information from the Well Acceptance Test

10) Date: 12/88
11) Length: 24 hours
12) Pumping Rate: 135 gpm
13) Depth to Static Water Level: 17.5 ft.
14) Pumping Level: 22.6 ft.
15) Drawdown: 10.7 ft.

Well Operation

*16) Pumping Rate: 135 gpm
*17) Pump Period: 52 min/day

Well Location

*18) Latitude: 34° 48´ 40"
*19) Longitude: 76° 38´ 12"
20) A 1 : 24,000 scale 7.5 minute topographic map showing the well location must also be submitted.

* Minimum data required for Wellhead Protection Area delineation. Additional information will improve the accuracy of the delineation.

WHPA

Recharge Rate : 200,000 GPD
Area : 0.49 sq. miles
Radius : 2,950 ft.

STEP TWO
DELINEATING THE PROTECTION AREA

Wellhead protection areas were defined based upon a maximum well yield (as identified for original acceptance test) and recharge rate of classified soil. The state approved calculated fixed radius method was used.

All wells have been located on a 1:24,000 USGS map (extracts included in specific well summaries) and on tax maps with radii and potential contaminant sources identified.

The following table summarizes information on each well:

WELL	GPM	RECHARGE RATE	AREA (SQ MILE)	RADIUS	LONGITUDE	LATITUDE
1	135	200,000 GPD	0.49 0.97	2,950' ✓	76° 38' 44"	34° 48' 56"
2	135	200,000 GPD	0.49 0.97	2,950' ✓	76° 38' 12"	34° 48' 40"

All longitude and latitude determinations were made from actual field surveys of existing wells.

The "Calculated Fixed Radius" method was used to delineate the radius around each well.

Thanks for your intensive efforts today putting this info together for me to answer Lana's questions…..very much appreciated

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1. When was the county water system created**? Initially in the late 1980's**

   Phase I ? (**Expansion) completed mid-2003**,

   Phase II? (**Expansion) completed mid-2005**

2. Number of users and where does the system extend (service area)? **Now roughly a total 1400 customers paying…….but only ~950 actually consuming water. 450 paying minimums now from Phase 2 expansion signups will not have to pay after Sep 2010……..further deficit potential of ~$100K if not offset by new consuming customers.**

General service areas:

- **Merrimon system -- Silver Dollar road (only)**
- **North river system plus expansions**

Hwy 70 from Beaufort limits to North River bridge area
Laurel Road
Mill Creek
All of Old Winberry Road, and from Intersection of Old Winberry Road @ Mill Creek road
Hwy 101 from Beaufort to Craven County line
Hardesty Loop Road
All of Hardesty Farm road area.
Steel Tank road to Jarretts Bay industrial park.
Deerfield subdivision
Eastman Creek subdivision (Beaufort water/sewer system buys county water.
Bridgewater and Mill Landing subdivisions

3. To the best of your knowledge, why was it created?

- **Perceived need in the beginning for Merrimon and North River areas during the 80's.**
- **Economic development interest in late 90's**
- **Perceived customer interest/support for 2003 and 2005 expansions**

4. To the best of your knowledge, how much money has gone in to creating the system? **Nearly $8M** How much of this was in the form of grants **~$5M** , and how much was local funding? ~$3M For the grant money, what were the primary sources? **NC bond money and grants**

5. From what you can determine, was there much of a public outcry to create the system? Was there a particular event or series of events that led to the creation of the water system?

Merrimon and North River clearly wanted county water systems in the 80's…….and got them.

1999 expansion to serve industrial area near Steel Tank road was collaborative economic development effort by County (water) and Beaufort (sewer)

Not clear indication of public demand for expansions completed in 2003 and 2005…although well contaminations after hurricanes was a public health concern expressed by the Health Director.
Seems to me that various BOC's since 1999 were led to believe that there would be enough consumer participation to make system expansions viable with revenues balancing expenditures after a few years…..which has not yet materialized There were indications of public interest and signups for 2003 and 2005 expansions which were consistent with expectations raised by a consultant engineer contractor…..but actual usage never materialized.

==========

Here are results for intensive collaborative efforts by Jeanette, Dee, Cindy Mintz and Jack Veit sorting through historical records earlier today…..very sketchy and most probably very incomplete to a great extent past 10 years ago…largely because the County contracted with Beaufort to do water treatments and line maintenance prior to 2003. All expenses and billings were handled by the Town and the County paid the bills. Minutes in 1980's and 90's were very general with little detail. Accountability and documentation by County staff has been upgraded considerably since.

A county-wide water and sewer study was presented to the BOC on July 23, 1986. It's more than 160 pages long and I haven't studied it closely but it does not seem to examine water quality or any particular requirements for county-wide public water/sewer……just technical engineering and other cost factors discussed then, including numbers of homes and businesses as potential customers.
It includes 12 separate area studies.

- Stella planning area
- Cape Carteret planning area
- Gales Creek/Broad Creek planning area
- Newport planning area
- Morehead City planning area
- Beaufort planning area
- **North River/Harlowe** planning area
- **Merrimon**/South River planning area
- Otway/Atlantic planning area
- Harkers Island planning area
- Cedar Island planning area

This study was apparently the genesis of developing our current limited scope/scale of county operated water systems…….2 separate water systems: the Merrimon system and the North River system. They are not connected now and there has never been any discussion about connecting them.

#1. There has been a very small system serving the Merrimon community since ~1970. It was a community venture prior to 1986. At that time it was described by a study as a highly substandard system operating under no formal control (i.e. private contributions solicited door-to-door to fiancé repairs and other expenses). There was only an existing well with substandard lines and fittings and not chlorinated as required by the state. The state had ordered it to be properly upgraded….or abandoned. Apparently required improvements were completed later to include

adding a tower and chlorinating the water. At some point in the late 80's the County may have signed a contract with Beaufort for the town to operate this water system (chlorinated treatment and maintenance) for the County….although other minutes indicate that might not have been done until later in the 90's which doesn't make sense to me entirely. I don't find evidence that there have been any substantial service upgrades or expansions since. There are only 36 current customer accounts.

Current service area – Silver Dollar Road, Merrimon

#2. The North River system originally constructed for operations beginning in 1989 [although I can't find documents indicating who operated it before an initial contract with Beaufort in 1993 . I see reference to 206 original customer accounts. It consisted of two wells, a water tower and ~5 miles of water lines primarily serving the North River community and some customers along Laurel Road…… In 1993 there was a short 4000' extension of the main line to serve ECHS

Current dialogue is generally focused on the North River system as it has evolved. Consultant engineer reports refer to 4 phases

- Phase 1 was original construction completed in 1989 (~200 initial user accounts) providing only basic chlorination treatment and maintenance under contract by Beaufort prior to 2003.

- Phase 2 was a very minor expansion completed in 1999 adding slightly more than a mile of new lines to an industrial area near Steel Tank Road. Vague references indicate adding ~15 customers….presumably mostly commercial.

  Note: we only had ~250 total customer accounts for both Merrimon and North River systems before the next expansion phase was put into operation

- Phase 3 [**now more commonly referred to as Phase 1 of a major expansion of the North River system**] added ~20 miles of water lines extending east of Core Creek into the Mill Creek and Harlowe communities…..including construction of a water treatment plant that had not previously existed. When the water treatment plant was added, the county assumed all operational control using county employees.

  Note: 395 signed up for Phase 1 subsidized taps but only 175 actually hooked up for water usage. The others only paid for minimum usage and most quit paying after 2 years.

- Phase 4 [**now more commonly referred to as Phase 2 of a major expansion of the North River system**] was completed in 2005 adding ~23 miles of new lines, mostly lines extending back to Beaufort's town limits along highways 70 and 101.

  Note: 895 signed up for subsidized taps but only 440 actually hooked up for water usage. 455 are only paying for minimum usage and won't have to pay that after 5 years.

  Current service areas

- Hwy 70 from Beaufort limits to North River bridge area
- Laurel Road
- Mill Creek
- All of Old Winberry Road, and from Intersection of Old Winberry Road @ Mill Creek road
- Hwy 101 from Beaufort to Craven County line
- Hardesty Loop Road
- All of Hardesty Farm road area.
- Steel Tank road to Jarretts Bay industrial park.

- Deerfield subdivision
- Eastman Creek subdivision (Beaufort water/sewer system buys county water.
- Bridgewater and Mill Landing subdivisions

Merrimon and North River clearly wanted county water systems…….and got them

1999 expansion to serve industrial area near Steel Tank road was collaborative effort by County (water) and Beaufort (sewer)

Not indication of public demand for expansions completed in 2003 and 2005…although well contaminations after hurricanes was a public health concern expressed by the Health Director.

Most of what you may be looking for in terms of justifications for major expansions completed in 2003 and 2005 may be available as on-line records of BOC minutes between 1999-2003.

For instance, BOC discussion of 2-15-1999 is interesting…….setting the public hearing on 3-1-1999 for expanding lines to the Mill Creek-Harlowe communities. Discussion of public support on 2-15-99 was based upon single community meeting where 60 of 75 attending said they would be interested…..**but no one spoke at the 3-1-99 public hearing either for or against**.

UPDATE -- Jeanette has ID'd the following BOC (key words = water system) discussions of possible interest to you (printed for Gam pickup)

- 3-2-81 request by Merrimon for repairs assistance
- 8-3-81 request by Merrimon for repairs assistance
- 4-18-83 discussion of water/sewer for Merrimon & North River communities
- 5-2-83 public hearing for water serving Merrimon & North River communities
- 3-28-84 discussion of Merrimon water system survival
- 4-16-84 public hearing for CDBG application for Merrimon & North River communities
- 9-17-84 resolution creating a Utilities Task Force to determine needs for public water/sewer facilities
- 3-4-85 Merrimon problems discussion
- 3-25-85 CDBG public hearing
- 2-3-86 Preliminary water/sewer study report
- **7-23-86 Study Report presentation**
- 11-3-86 CDBG Project Ordinance (skimpy, no details)
- 12-8-86 Order to issue water bonds
- 12-18-86 resolution calling for a special bond referendum
- 8-3-87 discussion of proposed water system wells
- 9-8-87 administration discussion of water systems projects
- 12-7-87 well sites discussion
- 2-1-88 completion date extensions for water systems construction
- 11-7-88 completion date extensions for water systems construction
- 5-1-89 public hearing to consider proposed water ordinance for NR and Merrimon water systems
- 7-10-89 feasibility study for operations of NR and Merrimon water systems
- 2-4-91 discussion about Beaufort testing these county water systems
- 2-3-92 discussion about Beaufort operating these county water systems
- 3-9-92 discussion about Beaufort operating these county water systems
- 5-17-93 discussion of contract with Beaufort
- 11-1-93 discussion of Beaufort operating water systems
- 12-6-93 water systems budget amendment
- 7-11-94 Beaufort contract renewal

- 11-7-94 adding ECHS to the water system
- 6-5-95 Beaufort contract renewal
- 6-24-96 budget appropriations
- 7-1-96 renewal of Beaufort contract
- 8-5-96 water tank management and maintenance
- 4-7-97 amendment to operating fees to Beaufort
- 4-20-98 Water/sewer line extension agreement with Beaufort
- 2-15-99 request for Mill Creek/Harlowe water system
- 3-1-99 Public hearing prior to BOC approval for 2003 expansion…..no public comments
- 3-15-99 Establishing Reserve fund for public water system
- 4-12-99 application for Mill creek water system
- 9-13-99 discussions of possible hookups with Beaufort and Craven County.
- 12-13-99 Craven County agreement approved
- 3-13-00 resolution approving local water supply plans; sewer bond approval
- 9-18-00 **discussion of Phase 1 and 2 improvement projects
- 12-4-00 approval of project ordinance $3.6M
- 1-22-01 land acquisition for MC/Harlowe water project
- 2-19-01 discussion of serving Jarrett Bay application
- 4-23-01 Mill Creek water system update
- 10-8-01 update on 2000 clean water project
- 11-5-01 Phase 1 improvement project advertised
- 12-17-01 resolution to construct improvements
- 5-6-02 resolution requesting 105 increase in clean water loan
- 6-3-02 estimated water system revenues and appropriations
- 8-5-02 report of construction on schedule
- 9-9-02 rules and regulations for county water system
- 10-7-02 pipes in the ground report
- 12-16-02 update on HWY 101 water project, change orders, loan application, project ordinance amendment, budget amendment increase
- 2-17-03 update on HWY 101 water project
- 3-17-03 approval of utilities positions.
- 4-7-03 billings and collections software plus budget amendment
- 5-5-03 water system update
- 6-16-03 water system budget numbers
- 7-14-03 Mill Creek water system in operation
- 10-20-03 Phase 1 close out and Phase 2 construction documents
- 12-8-03 Environmental Assessment of Phase 2 water improvements projects
- 3-15-04 Approval of Phase 2 budget ordinance, award of construction contract, and engineering services during construction
- 6-7-04 water systems update
- 6-22-04 water fund budget figures
- 7-12-04 Phase 2 early signup
- 9-13-04 Utility commission discussion and fire hydrants for Phase 2 discussion
- 11-16-04 PHASE 2 is 1/3 complete
- 11-23-04 Public Utilities Advisory Board and By-Laws established
- 3-7-05 Budget amendment
- 4-4-05 possible connection with Beaufort
- 5-2305 water system maintenance technician budget discussion
- 6-23-05 water system budget figures
- 8-8-05 state approval of Phase 2 lines to operate
- 9-12-05 Phase 2 change order and budget amendment
- 4-17-06 water services engineering services proposal
- 5-6-06 water system deficit discussion

- 5-23-06 discussion of expanding water system customer base
- 6-28-06 water fund budget figures
- 7-17-06 extension of water system to Bridgewater and Mill Landing subdivisions
- 9-11-06 change order for developers to connect to water system
- 1-22-07 Tracy Grove subdivision added
- 2-19-07 Tracey Grove change order
- 6-21-07 Water fund budget figures
- 11-19-07 Water shortage response plan
- 2-9-08 Strategic Planning retreat (water system upgrades discussion)

==========COSTS==========

Phase	Cost	Source of Funds
1- Merrimon upgrades and initial North River: (Community Development Block Grant)	$1.34M	100% CDBG
2- expansion to Steel Tower Road	$74 K	100% CDBG funding
3- [Phase I major expansion)	~3.59M	$3M state grants
+ **$.590M county debt**		
Phase II (Additional Lines)	~$2.9M	$2.8M county debt

plus about $100K sales tax refunds and some water tap revenues

Total developmental costs were $7.904M …..total local debt incurred was ~$2.9M

Essentially we have an $8M infrastructure which we only paid $3M for. That doesn't sound so bad until realizing that we are operating in deficit ever since the first major expansion in 2003.

The County didn't set up our water operations as separate fund until FY-2002/03. Prior to then all revenues and expenditures were in/out of the general fund but our management opinion was that prior to Phase 3 expansion into Mill Creek and Harlowe. (major expansion Phase 1), our pre-2000 operations of the North River water system was basically breaking even.

That changed in a big way when Phase 3 and 4 were added more commonly referred to as major expansion phases 1 in 2003 and 2 in 2005.

FY 2003 (02/03) deficit was **($84,923)**

FY 2004 (03/04) deficit was **($217,969)**

FY 2005 (04/05) deficit was **($151,240)**

FY 2006 (05/06) deficit was **($180,587)**

FY 2007 (06/07) deficit was **($200,952)**

FY 2008 (07/08) deficit was **($360,848)** …….. artificially high figure because it included compilation of earlier write-offs of uncollectable bills

FY 2009 (08/09) deficit is projected to be approximately **($210K)**

FY-2011 (10/11) projected deficit could exceed $300K

The fundamental problem we face is that while there may have been a substantial expectation of public demand and intent to use our water along system expansion

areas……it has not played out that way. While we are experiencing steady 8% growth, that does not offset the number of signups for 2003 and 2005 expansions which never hooked up to our system to consume water.

The County greatly subsidized initial hook up costs (at great expense) to encourage people to sign up. Many took advantage of subsidized taps ……2003 signups paid (2005 signups still paying) minimum monthly fees, but they are not consuming water.

The Phase 3 (commonly referred to as Phase 1) expansion required customers to pay 2 years of minimum monthly water charges if they did not hook up. 395 signed on but only 175 hooked up. 220 customers who didn't …….stopped paying any minimum usage fees in 2005 when their 2 year contracts expired.

For Phase 4 (commonly referred to as Phase 2) expansion, the minimum usage billing period was extended to 5 years. Again, 895 signed up to take advantage of subsidized fees but only 440 have actually hooked up to use water. 455 minimum monthly billing contract obligations will expire in 2010. If they don't actually hook up and use our water, we stand to lose an additional $90-100K in billing revenues then….putting our annual deficit figure over $300K.

FEASIBILITY STUDY FOR WATER SYSTEM MERGER

Carteret County, NC

December 2019

DAA Project Number: 18080125-010204

Draper Aden Associates
Engineering • Surveying • Environmental Services

3RD PARTY REVIEW

This Report has been subjected to technical and quality reviews by:

Andy Dastidar		12/5/2019
Name:	Signature	Date
Project Engineer		

Aziz Ahmed		12/5/2019
Name:	Signature	Date
Project Manager		

C. Tyrus Clayton, Jr		12/5/2019
Name:	Signature	Date
Quality Reviewer		

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EXECUTIVE SUMMARY

Carteret County (the County) retained Draper Aden Associates (DAA) to evaluate the feasibility of a "merger" of the County's water systems with Town of Beaufort's (the Town) water system. The proposed "merger" would entail the Town of Beaufort taking over the ownership and operation of the County's water systems.

The following tasks were performed:

1. Evaluated the County's water systems assets and maintenance programs.
2. Developed estimated present value of the County's water systems.
3. Reviewed current staffing and potential impacts on the Town's water system staffing, if the merger were to occur.
4. Reviewed the County's water rates, revenues, operating expenses and debt service.
5. Analyzed the projected fiscal impact on the Town of Beaufort water system, if the merger occurs.
6. Developed recommendations for a win-win merger condition for both the Town and the County.

Major findings from the study include:

1. County's water infrastructure is well documented and in good condition.
2. Estimated present value of the County's water system is approximately $12.3 million.
3. County's current water rate ($55.10 / 5,000 gallons) is less than the Town's out of town water rate ($58.79 / 5,000 gallons).
4. County has outstanding water debt of $2,066,128 (principal only) which will be retired in Fiscal Year 2051-2052.
5. The operating expenses of the County's water system have exceeded revenues in recent years and the deficits have been subsidized by the tax revenues generated from the Special Water Tax District. FY 2019 is the first year where projected expenses will be lower than the revenue. The County believes that FY 2019 will be the new normal as the water system is in good condition now, and the County does not have any need for large capital investment in the foreseeable future.
6. Currently, the County has three (3) water staff and the Town has four (4) water staff. The merged system will need services of a full-time and part time County staff in addition to the four (4) Town staff. There will be a $165,000 savings in staff compensation. These excess funds can be used for system upgrades or capital expenditures.

DAA's findings show that a merger will be beneficial for both the County and the Town, but to make it workable for the Town, DAA made some recommendations.

Recommendations:

1. The County transfers the water systems to the Town at a cost of $1.
2. The County continues to pay off the current debt service ($245,800 / per year) for next 11 years to retire the debt earlier and remove or modify the water tax district after debt retirement.
3. Based on the current tax rate, the County will have excess fund (difference between water district tax revenue and debt service fee, $177,000 per year) after merger until the debt is retired. County will work in good faith with the Town utilizing these funds for upgrades and expansions to the system during the 11-years debt pay-down period. County may also continue to participate in extensions and upgrades beyond the 11 years, for specific county needs within the existing water district boundaries.
4. The Town will maintain the water rates for the special water district at a rate that is less than the County water rates at the merger date and can increase or decrease the rates in future by the same percentage change as the in-Town water rates.

Benefits for the Town:

1. Acquisition of $12.3 million worth of infrastructure without any financial investment.
2. Expansion of Town's water system and customer base.
3. County's financial support for at least 11 years to address special capital and maintenance issues in the system previously owned by the County.
4. Potential opportunity for annexation.

The advantages of this potential merger outweigh the few economic and financial limitations. Prior to merger of these water systems, the County and Town will need to address all legal and financial aspects of the merger, which will require good-faith negotiations from both entities.

-- End of Section --

1.0 INTRODUCTION

Carteret County and the Town of Beaufort are interested in "merging" the water systems of the two entities – with the Town taking over ownership and operation of the County's water system.

1.1 Objectives

The objective of this feasibility study is to determine the value of Carteret County's water systems, understand the staffing needs to operate and maintain the County's systems, evaluate the financial condition of the County's water department, identify the potential impact of the proposed merger on the utilities, and develop recommendations to make the merger beneficial for the Town and the County. The findings and recommendations are documented in this DRAFT report for further discussions with the County and the Town staff. This report will be updated based on the discussions between the County and the Town to be facilitated by DAA.

1.2 Report Organization

This report is organized as outlined below:

- Chapter 2.0 (Carteret County Water System Assessment) describes the County's water system including land, physical assets, maintenance programs, and near-term capital improvement program.
- Chapter 3.0 (Estimated Current Value of Carteret County's Water System) describes the monetary value of the assets and how the values were calculated.
- Chapter 4.0 (Organization of Carteret County Water Department) describes the current staffing structure and responsibilities.
- Chapter 5.0 (Revenues and Expenses of Carteret County Water System) describes the water rates, debt service and current financial conditions.
- Chapter 6.0 (Feasibility of Merger) describes the Town of Beaufort system, advantages to the Town in taking over the Carteret County System, and recommendations to make the merger beneficial to both the County and the Town.
- Chapter 7.0 (Conclusion) describes the outcome of this feasibility study.

-- End of Section --

2.0 CARTERET COUNTY WATER SYSTEM ASSESSMENT

2.1 System Overview

Carteret County (the County) relies on two groundwater wells for water supply. Water from the first well is treated at the Laurel Road Water Treatment Plant before it is pumped to three (3) elevated storage tanks for distribution within the community. These storage tanks are located with water lines extending to the Craven County line along NC Highway 101 and into the Mill Creek area. There are also water lines extending from the Beaufort Town limits along Highway 70 to East Carteret High School and along Merrimon Road to Laurel Road. The system serves approximately 1,206 customers.

The County also owns and operates a small water system about 20 miles north of Laurel Rd and Merrimon Rd intersection. This small system known as Merrimon Water System (MWS), serves approximately 25 – 30 customers. MWS receives water from the Jonaquins Creek well that consists of a well and an above-ground storage tank.

A map showing Carteret County's water system (including its water district boundary) is shown in Figure 1 of Appendix A. The MWS is shown at the inset of Figure 1 and in Figure 2 of Appendix A.

MWS system is an integral part of the County's water system and should be included in any potential water system merger or transfer discussions. Legalities of such a merger / transfer will be agreed upon and processed by participating agencies prior to acceptance and completion of the merger process.

2.2 Special Water Tax District

The Board of Commissioners of Carteret County established the Special Water Tax District (SWTD) in 2010. Within this district, there is a special tax assessed to taxpayers for water supply and distribution services. The tax rate in the special water district has been 5.5 cents since 2012. In addition, sales tax revenues in the SWTD are used to support the water operations. Table 1 provides the revenue and expenditures for the SWTD for FY2018, FY2019 and FY2020.

Table 1. Revenue and Expenses for the Special Water Tax District

	FY 2018 (Actual) $	FY 2019 (Amended Budget) $	FY2020 (Budget) $
Expenditure Category			
Fees	1,240	3,000	3,000
Transfer to Water Fund	433,600	400,000	420,000
Total	434,840	403,000	423,000
Revenue Sources			
Ad Valorem Taxes	299,136	292,000	292,000
Sales Tax	96,329	95,000	100,000
Interest	1,505	1,000	6,000
Appropriated Fund Balances	0	15,000	25,000
Total	**396,969**	**403,000**	**423,000**

2.3 Water System Assets

The County water system assets include water mains, valves, water meters, fire hydrants, tanks, booster pump stations, a Supervisory Control and Data Acquisition (SCADA) system and land parcels. These assets are listed in Table 2.

Table 2. Water System Assets of Carteret County

Items	Quantity	Description
Water Plant	1	
Land	8 Parcels	16.49 acres
Pump Stations/Pump Houses	3	Booster Pumps 1, 2, and 3
Water Tanks	4	3 elevated tanks and one ground tank
Valves	599	
Water Meters	1,206	
Fire Hydrants	175	
Water Lines	5 miles	2 inches
	0.25 miles	4 inches

Items	Quantity	Description
	29.6 miles	6 inches
	20.4 miles	8 inches
	0.6 miles	10 inches
SCADA System	1	Management of elevated water tanks and Jonaquins Creek well house

2.3.1 Storage Tanks

Details for the three elevated storage tanks are provided in Table 3.

Table 3. Elevated Water Tanks

Types of Tanks	Capacity (gallons)	Manufacturer	Design Type	Year Constructed
Taylor Farm Road Tank	200,000	Caldwell	Torus Bottom	2012
Laurel Road Tank	200,000	Phoenix	Double Ellipsoidal	1988
Mayflower Drive Tank	200,000	Phoenix	Torus Bottom	2012

2.3.2 Pump Stations

The County has three booster pump stations. Details of these pump stations are shown in Table 4. Booster Pump 2 provides water at the emergency connection between the Town of Beaufort and the County.

Table 4. Pump Stations

Types of Pump	Cat No/Model Number	Manufacturer	Horsepower (HP)	Design Type (RPM)	Installation Date
Booster Pump #1	R5P 3D/H317	Emerson Motor Co.	5	1170	2012*
Booster Pump #2	EM3774T	Baldor Electric Co.	10	1760	2012
Booster Pump #3	EM3770T	Baldor Electric Co.	7.5	1770	2012

*Estimated, actual date of installation is not available.

2.3.3 Land

The total acreage utilized by the County's water system is approximately 16.49 acres. Table 5 summarizes the properties, the street address and the acreage.

Table 5. Carteret County Water System Property

Property	Address	Total Acres
Laurel Road Aerial Tank	524 Laurel Road	2.04
Laurel Road Treatment Plant	526 Laurel Road	8.12
Jonaquins Creek Water House	150 Jonaquins Creek Road	0.82
Taylor Farm Elevated Tank	209 Taylor Farm Road	1.01
Booster Pump Station #1	142 Shell Landing Road	0.47
Booster Pump Station #2	1109 Hwy 101	0.60
Booster Pump Station #3	3510 Hwy 101	2.56
Mayflower Drive Elevated Tank	104 Mayflower Drive	0.87
Total		**16.49**

2.4 Asset Maintenance

2.4.1 Pipeline Maintenance

The County's Public Works Department (PWD) performs system maintenance including, but limited to, the following:

- Detection and repair of leaks in the pipe lines
- Maintenance of booster pumps and other associated components of the water distribution system
- Maintenance and replacement of water meters, valves and fire hydrants
- Water service installations and / or inspections

2.4.2 Tank Maintenance

Southern Corrosion Inc (SCI) has an existing water tank management addendum to contract with the County until year 2030. Per contract, the tanks will be inspected every year and will be washed-out at five (5) year intervals. The tank interior will be recoated at fifteen (15) year intervals, and the exterior will be recoated at five (5) year intervals. The next wash-out is scheduled for year eight (8) of the service

(year 2023), repainting of the tank exterior is scheduled for year twelve (12) of the service (year 2027) repainting of tank interior is scheduled for year twelve (12) of the service (2027).

The contract does not include the complete abrasive blasting of tank exterior nor the pressure washing of tank exterior as a stand-alone apart from a surface preparation for painting.

SCI provides the following services to the County in accordance with the tank's maintenance program:

- Emergency services (tank leaks, tank failures, etc.)
- Scheduled cleaning/washout of tanks interiors
- Inspection of interior and exterior surfaces of tanks
- Application of protective coatings
- Maintenance, upkeep and long-term maintenance needs

Table 6 below indicates the scheduled maintenance activities that have taken place under this contract for the last four years. Based on the 2018 inspection results as shown in Table 6, all three tanks are in good condition without any serious deficiencies that require immediate attention.

2.5 Carteret County Water System Capital Improvement Plan

In 2013, the County completed a $3.51 million water system improvement project. Since 2013, there has been little need for significant capital projects; there were no capital projects scheduled in FY2019 and the FY2020 budget does not include any. The County continues to fund "pay as you go" capital projects, as needed. Recent capital investments include:

- Fiscal Year 2011: WTP Telemetry Base Upgrade, Addition of 10-inch Color MMI, Replace Tank Level Meter/Digital DSP-MMI, Use Existing Probe Relays-Raw Well Control, and Replace Remotes /Upgrade Phone Line and Radio. Total cost for upgrade was $27,998.
- Fiscal Year 2016: BPS Flow Meter and RTU Repair. Total cost for repair was $4,697.
- Fiscal Year 2017: Discharge Pump Station SCADA TIE-IN. Total cost for this implementation was $3,309.
- Fiscal Year 2018: Softener and filter refurbishment. The total cost was $121,446

Overall, the water system is in good condition and the County is not expecting any major capital investment in the near future.

Table 6. Tank Maintenance Report (2015-2018)

Tank	Year Constructed	Year-2015	Year-2016	Year-2017	Year-2018
Taylor Farm Road Tank	2012	The tank, its components, and coating systems are in good condition. The interior coating system deficiencies ranged between 0% and 10%, whereas, the exterior coating deficiencies ranged between 0%-2%. Some of the exterior deficiencies included; Pin Point Rust, and Irregular Surface Deterioration. No visual deficiencies were observed pertaining to internal coating system. The safety inspection yielded satisfactory and compliant results pertaining to structural integrity of exterior, storage, safety, and other associated components	The tank, its components, and coating systems are in good condition. The interior coating system is free of any premature failure and provides adequate protection to the structure. The upper portions of the leg ladder, sway rods, and shell wall ladder are showing signs of premature coating failure causing surface corrosion. Repair and scheduled maintenance maybe required	There was no maintenance required during this time. The coating in the exterior and interior are in excellent condition	No deficiencies or touchups were noted, and the overall visual appearance of the water tank is satisfactory
Laurel Road Tank	1988	The tank, its components, and coating systems are in good condition. The interior coating system deficiencies ranged between 0% and 10%, whereas, the exterior coating deficiencies ranged between 0%-2%. Some of the exterior deficiencies included; Irregular Surface Deterioration, Mildew, Peeling Multiple Coats, and Undercutting. Deficiencies pertaining to internal coating system included Pin Point Rust, and Irregular Surface	There were no deficiencies or touch ups noted and the overall visual appearance of the water tank (internal and external) is satisfactory. The obstruction light on tank roof was repaired	Both exterior and interior protective coating seems to be in excellent condition. The interior and exterior coating systems are free of any serious deficiencies and provides adequate protection to the structure.	The water tank, its components, and coating systems are in good condition. The interior and exterior coating systems are free of any serious deficiencies and provides adequate protection to the structure.

		Deterioration. The safety inspection yielded satisfactory and compliant results pertaining to structural integrity of exterior, safety, and other associated components. The side wall coating of the storage exterior needs to be monitored as per the report.			
Mayflower Drive Tank	2010	The tank, its components, and coating systems are in good condition. The interior coating system deficiencies ranged between 0% and 10%, whereas, the exterior coating deficiencies ranged between 0%-2%. Some of the exterior deficiencies included; Pin Point Rust, Irregular Surface Deterioration, etc. No visual deficiencies were observed pertaining to internal coating system. The safety inspection yielded satisfactory and compliant results pertaining to structural integrity of exterior, storage, safety, and other associated components	The tank, its components, and coating systems are in good condition. The interior coating system is free of any premature failure and provides adequate protection to the structure. On the exterior, such as the ladder and sway/spider rods, are showing signs of premature failure and surface corrosion. Repair and a scheduled maintenance may be required.	Exterior deficiencies included Mildew, Fading, Chalking, Irregular Surface Deterioration, Undercutting, Peeling Paint to Substrate. Adhesion failures and surface corrosion present on 20% of the surfaces. 10% Adhesion failures and surface corrosion observed on the rods and struts. And close to 2% adhesion failure and surface corrosion observed on the catwalk and handrails. The interior protective coating system seems to be in excellent condition	Structural wise, the tank is in good condition, but a planned renovation needs to be scheduled by the County Officials. A weathered and weakened coating system is nearing the end of its protective cycle

-- End of Section --

3.0 ESTIMATED CURRENT VALUE OF THE CARTERET COUNTY WATER SYSTEM

3.1 Theory of Asset Valuation

DAA estimated the value of the County's water system using an asset evaluation approach as described below.

Book Value (BV) approach was used in estimating the value of the fixed assets. The BV approach uses equation (1) to estimate the present worth of an asset as stated below:

Present BV of Asset ($) = Historical Cost ($) – ((Accumulated Depreciation ($) + Current Depreciation ($)) *(1)*

Traditionally, straight line depreciation (SLD) technique is used to estimate depreciated value of water system assets. Historical cost represents the cost of the assets on the day of acquisition. DAA was able to locate financial records pertaining to purchase prices on some of these assets from the County's finance department.

Accumulated depreciation is calculated using equation (2), and incorporates useful life of the water distribution system component:

Accumulated depreciation ($) = (Net Amount to be depreciated/Total useful life in months) x ((Fiscal year beginning date-date of acquisition)/30.4167)) *(2)*

The value of 30.4167 is used for converting days to months.

Depreciation value ($) for each asset for the current year is estimated using the following equation:

Current Depreciation ($) = Net amount to be depreciated ($) / Total useful life (months) *(3)*

The equation (3) may be modified if the depreciation amount ($) in equation (3) exceeds the difference of net amount to be depreciated and accumulated depreciation. The revised equation for Current Depreciation is stated below:

Depreciation Current Year ($) = Net Amount to be depreciated ($) - Accumulated depreciation ($) *(4)*

The Net amount to be depreciated ($) is calculated using the equation (5)

Net Amount to be depreciated ($) = Historical Cost ($) – Salvage Value ($) *(5)*

For purpose of estimation, the salvage value of each system component was assumed at zero dollar ($0). With this assumption, the net amount to be depreciated was equaled to the historical cost of the asset.

3.2 Estimated Value of the County's Water Systems

The County provided detailed asset data and historical costs for the pump stations and the water tanks. Book Value (BV) of these assets was calculated and is documented in Table 7. Historical cost data for other assets such as fire hydrants, the water treatment plant, water mains, and the SCADA system installed at Booster Pump 1 were not available, but the County provided financial data that detailed the present book value of the assets as listed in Table 8. Adding the total book values listed in the Tables 7 and 8, the net worth of the water system assets owned by the County was calculated to be approximately $12,335,392.

Table 7. Estimated Book Value of Carteret County Water System

Assets	Date of Acquisition	Design Life (yrs)	Historical Cost ($)	Total Useful life (months)	Net Amount to Be Depreciated ($)	Accumulated Depreciation ($)	Current Depreciation ($)	Total Depreciation ($)	Present Book value of Asset ($)
Booster Pump 1	2012	50	174,284	600	174,284	19,462	3,486	22,947	151,337
Booster Pump 2	2012	50	253,111	600	253,111	28,264	5,062	33,326	219,785
Booster Pump 3	2012	50	253,111	600	253,111	28,264	5,062	33,326	219,785
		Subtotal	**680,507**				**Subtotal**	**89,600**	**590,907**
Water Tank 1	1988	50	619,263	600	619,263	366,397	12,385	378,783	240,480
Water Tank 2	2012	50	689,091	600	689,091	76,949	13,782	90,730	598,361
Water Tank 3	2012	50	765,262	600	765,262	85,454	15,305	100,759	664,502
		Subtotal	**2,073,616**				**Subtotal**	**570,272**	**1,503,344**
		Total	**2,754,123**				**Total**	**659,872**	**2,094,250**

See Section 3.1 for the equations used in BV calculations

Table 8. Present Book Value of Carteret County Water System

System No	Description	Present Book value of Asset ($)
SCADA		
Booster Pump House1	SCADA System*	**280,000**
Land		
Laurel Road Aerial Tank	Land Property	25,428
Laurel Road Treatment Plant	Land Property	57,220
Jonaquins Creek Water House	Land Property	26,097
Aerial Tank	Land Property	130,312
Booster Pump Station-1	Land Property	40,578
Booster Pump Station-2	Land Property	35,312
Booster Pump Station-3	Land Property	34,160
Elevated Tank	Land Property	20,615
	Sub Total	**369,722**
Well House	Water withdrawal house*	**200,000**
Jonaquins Creek Well House and Storage	Merrimon Water System*	**400,000**
Fire Hydrants	Fire rescue purposes	**300,000**
Water Treatment Plants	Supply/Distribution*	**1,500,000**
Piping System		
2" PVC	(26,400 ft, $10/ft)	264,000
4" PVC	(1,320 ft, $16/ft)	21,120
6" PVC	(151,588 ft, $24/ft)	3,638,112
6" Ductile	(4,700 ft, $28/ft)	131,600
8 " PVC	(104,477 ft, $28/ft)	2,925,356
8" Ductile	(3,235 ft, $32/ft)	103,520
10" PVC	(3,168 ft, $34/ft)	107,712
	Sub Total	**7,191,420**
	Total ($)	**10,241,142**

*Estimated value

--End of Section --

4.0 ORGANIZATION OF CARTERET COUNTY WATER DEPARTMENT

The County's water system is managed by the Public Works Department (PWD) Director. Water operations are managed by a lead water plant operator and utilities technician who report to the PWD Director. The PWD Directors reports to General Service Director who in turn is managed by the Assistant Manager of the County. The Assistant Manager reports to the County Manager. Billing and collection responsibilities for the systems are provided by the County Finance Office. An organizational chart for the Water Department is shown in Figure 1.

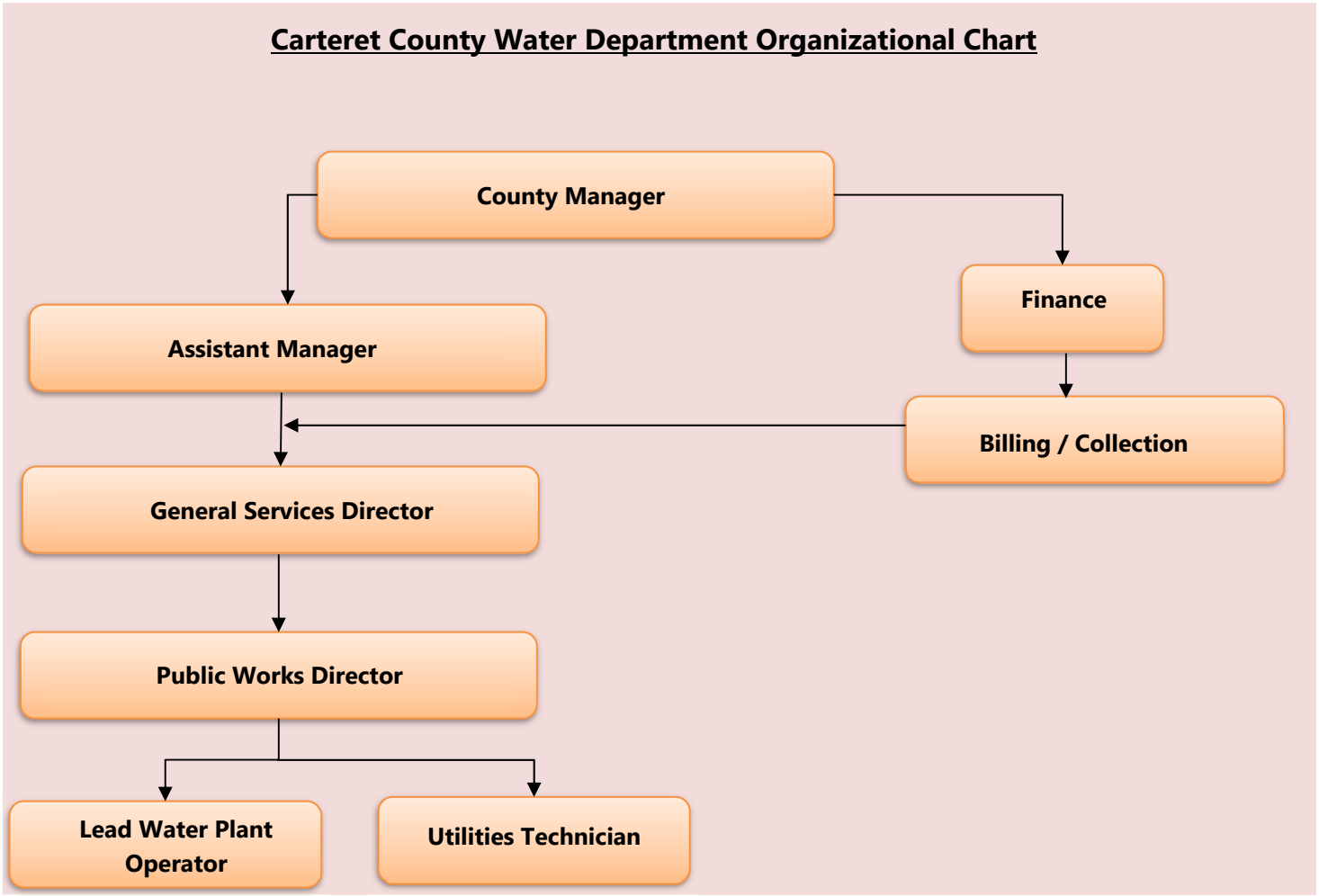


Figure 1. Carteret County Organizational Chart

5.0 REVENUES AND EXPENSES OF CARTERET COUNTY WATER SYSTEM

5.1 Water Rates

Currently, the County charges $55.10 for every 5,000 gallons of water to customers who are billed per measurements recorded on a three-fourth (3/4) inch meter (See the County's Water Rate Sheet in Appendix B). There is a separate water rate structure for customers served by 1, 2, and 4-inch meters. The County has also developed a specific readiness to serve rate for the Merrimon water system customers. For this study, only three-fourth (3/4) inch meter is used to conduct comparative analysis of the water rates for both the County and the Town system.

The Town charges $35.72 for every 5,000 gallons to in-town customers using three fourth (3/4) inch meters (See the Town's Water Rate Schedule in Appendix C). The comparative out-of-town water rate is $58.79.

5.2 Outstanding Debts and Repayment Schedule

Current utility debt for the County is at $2,066,128 with an estimated interest of $619,319 until the loan amount is retired by the year 2052. Table 9 and Figure 2 below show the debt payment schedule for each year. The debt payment amount for each year will significantly lower after FY 2025-26 and the debt amount per year will remain relatively constant until the loans are completely retired.

Table 9. Water Utility Debt Payment Schedule for Carteret County

FY Year	Principal ($)	Interest ($)	Total Utility Debt ($)	Years
FY 19-20	$189,032	$55,202	$244,234	1
FY 20-21	$190,032	$49,835	$239,867	2
FY 21-22	$190,032	$44,442	$234,474	3
FY 22-23	$191,032	$39,047	$230,079	4
FY 23-24	$160,000	$33,626	$193,626	5
FY 24-25	$161,000	$29,989	$190,989	6
FY 25-26	$161,000	$26,322	$187,322	7
FY 26-27	$22,000	$22,660	$44,660	8
FY 27-28	$23,000	$22,055	$45,055	9
FY 28-29	$23,000	$21,423	$44,423	10

FY Year	Principal ($)	Interest ($)	Total Utility Debt ($)	Years
FY 29-30	$24,000	$20,790	$44,790	11
FY 30-31	$25,000	$20,130	$45,130	12
FY 31-32	$25,000	$19,443	$44,443	13
FY 32-33	$26,000	$18,755	$44,755	14
FY 33-34	$27,000	$18,040	$45,040	15
FY 34-35	$27,000	$17,298	$44,298	16
FY 35-36	$28,000	$16,555	$44,555	17
FY 36-37	$29,000	$15,785	$44,785	18
FY 37-38	$30,000	$14,988	$44,988	19
FY 38-39	$31,000	$14,163	$45,163	20
FY 39-40	$31,000	$13,310	$44,310	21
FY 40-41	$32,000	$12,458	$44,458	22
FY 41-42	$33,000	$11,578	$44,578	23
FY 42-43	$34,000	$10,670	$44,670	24
FY 43-44	$35,000	$9,735	$44,735	25
FY 44-45	$36,000	$8,773	$44,773	26
FY 45-46	$37,000	$7,783	$44,783	27
FY 46-47	$38,000	$6,765	$44,765	28
FY 47-48	$39,000	$5,720	$44,720	29
FY 48-49	$40,000	$4,648	$44,648	30
FY 49-50	$42,000	$3,548	$45,548	31
FY 50-51	$43,000	$2,393	$45,393	32
FY 51-52	$44,000	$1,210	$45,210	33
Total	**$2,066,128**	**$619,139**	**$2,685,267**	

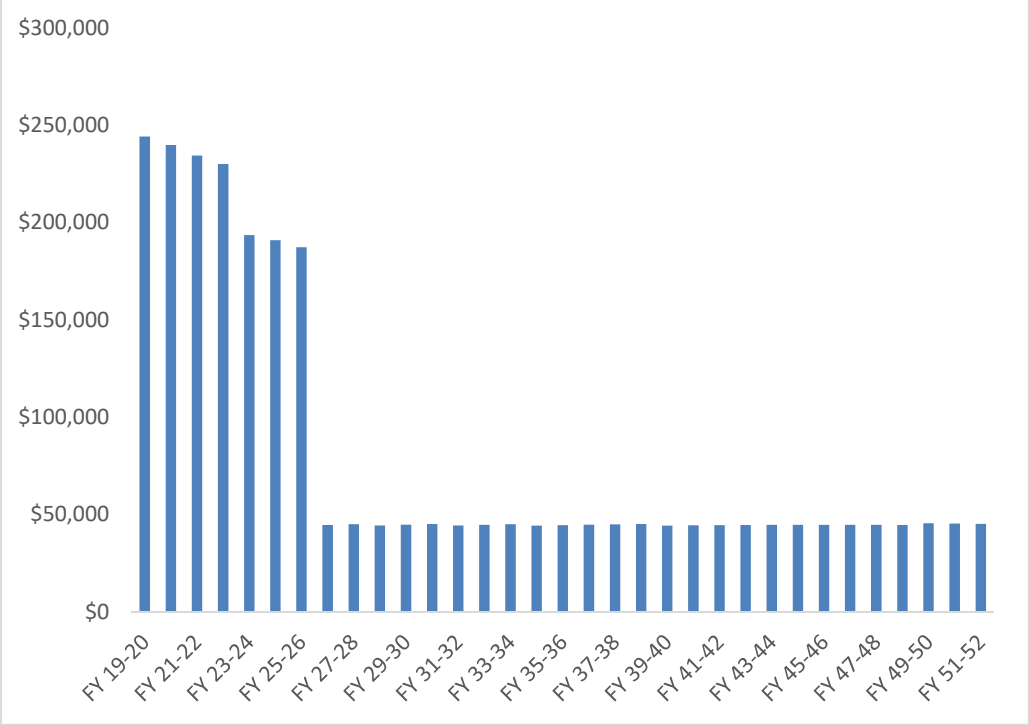


Figure 2. Carteret County Water Utility Debt Payment Schedule

5.3 Revenue and Expenses

5.3.1 Review of Historical Revenue and Expenses

A review of the County's historical water system budget (including the debt services) between FY 2016 and FY 2019 listed in Table 10 shows significant water system operating expenses beyond the revenue earned. This data indicates that the County has been losing money with the water system and needed to subsidize the system with the SWTD funds to keep the system solvent. The deficit margin widened in 2018 considering the additional capital improvement expense for that year. However, for 2019, there was a marginal decline in the water system operating expense which lead to the deficit being similar to that of 2016 and 2017 respectively.

Table 10. Budget for F2016-FY2019

Year	Water System Revenue	Water System Operating Expense	Water System Debt Service Fee	Water System Capital Outlay	Net Income (Deficit)
2016	$576,598	$554,733	$263,589	-	($241,724)
2017	$584,344	$668,215	$259,277	-	($343,148)
2018	$678,879	$828,412	$253,939	$37,898	($441,370)
2019	$711,732	$726,384	$249,600	$25,500	($289,752)
Total	$2,551,553.00	$2,777,744.00	$1,026,405.00	$63,398.00	($1,315,994)

5.3.2 Review of FY 2020 Finances

The projected fiscal budget for the County in the year 2020 is presented in Table 11. Per projected water fund revenue and water fund expenses for FY 2020, there is a net fiscal deficit of $162,990. This deficit may be eliminated by using revenue generated from the SWTD. Using this fund to eliminate the deficit leaves a net balance of $14,130 that may be used for other operational expenses.

Table 11. Projected Fiscal Budget for year 2020

Items Description	Budget
Water Distribution System Value[1]	$12,335,392
Total Utility Debt (including interests)[2]	$2,685,267
Debt Pay Off Period	2051-2052
FY 2020 Debt Service Fee[3]	$245,880
Water Tax District Revenue (FY 2020 Projected)[4]	$423,000
Water Fund Revenue (FY 2020 Budget)[4]	$710,400
Water Fund Expense (FY 2020 Budget)[4]	$873,390
Water Fund Loss[5]	($162,990)
Water Tax District Revenue Balance[6]	$14,130

Notes:

1. See Section 3.2 for reference
2. See Table 9 for reference
3. See Tables 9 for reference. The difference between the monetary value of $245,880 in Table 11 compared to the fiscal value of $244,234 in Table 9 for FY2020 may due to budgetary discretion
4. Projected FY 2020 Budget
5. Water Fund Loss/Deficit is estimated using the equation: Water Fund Revenue ($710,400) - Water Fund Expense ($873,390)
6. Water Tax District Revenue Balance is estimated using the equation: Water Tax District Revenue – (FY20 Debt Service Fee + Water Fund Loss)

5.4 Opportunity to Eliminate Deficit

The expense in 2019 shows significant reduction over the previous years and is expected to be the norm as the County's system does not anticipate significant capital investment in near future.

A moderate projection of 2% yearly increase in both water district tax revenue and water system expense may be adequate to run the system sustainably. Table 12 lists the yearly revenue and expenses from 2020 to 2025 using 2019 as the base year for projection. This projection shows a positive yearly cash flow. Thus, if the water system in its current condition (with a value of $12.3 million) can be separated from the debt services, it would offer an attractive acquisition option for any utility.

Table 12. Fiscal and Projected Budget for FY 2019-FY 2025

Year	Water Tax District Revenue	Water System Expense	Cash Flow
2019	$711,555	$704,255	$7,300
2020	$725,786	$718,340	$7,446
2021	$740,302	$732,707	$7,595
2022	$755,108	$747,361	$7,747
2023	$770,210	$762,308	$7,902
2024	$785,614	$777,554	$8,060
2025	$801,327	$793,106	$8,221

-- End of Section –

6.0 FEASIBILITY OF MERGER

6.1 Water System of Town of Beaufort

The Town of Beaufort provides water and sewer services to its residents through established water rates that covers existing financial debts and other operational costs pertaining to these enterprise funds. The Town purchases water from the County for distribution in Eastman Creek subdivision. Currently the Town provides limited sewer service to approximately 200 customers located within County's SWTD with water purchased from the District at its existing rate. The Town has sewer force mains along NC Highway 70 serving sewer needs to East Carteret High School, also extending along NC Highway 101 serving sewer needs to Eastman's Creek and Jarrets Bay Industrial Park. This existing layout of the sewer force mains provides an opportunity to serve sewer needs within a large area of the County's SWTD which could offer an attractive condition to grow the customer base for the Town's sewer system.

Current water and sewer rate for an out-of- town customer is approximately double the rate of in-town customer. Acquiring the County's water system would increase the Town's customer base by approximately 34% with no cost for infrastructure. The potential opportunity to grow both water and sewer services within the County, at a lower rate will encourage businesses and developers to seriously consider annexation when planning growth within the merged service area.

6.2 Organizational Impact of Merger

Currently, the County's PWD has three personnel who are directly responsible for water operations. The organizational responsibilities of these people have been described in Chapter 3. If a merger is executed, one and possibly two of these employees could be transferred to Town's Public Utilities Department, which now has a total of four (4) full time employees. For the purpose of this report we will calculate the Town's additional personnel needs to support the merger at service provided by a full-time and a part-time employees. The County would transfer the remaining employee to another area of need with their other operations. Based on 2020 budget, salaries for the County's 3 water staff are approximately $330,000, including benefits. The merger could provide an opportunity to save a

minimum of half ($165,000) that expense. With other redundancies within the budgets, this number could very well be higher.

Water billing, collection and customer service support would be completely transferred from the County to the Town. As the Town is already managing its own billing, it is assumed that no additional employee is needed for billing the merged system.

6.3 Key Advantages of Merger for Town of Beaufort

There are several advantages for the Town to acquire the County's water distribution system. Some of the key benefits are listed below:

- The Town will acquire approximately $12.3 million worth of infrastructure from the County.
- The Town will be able to operate the system largely with existing personnel plus 1.5 additional staff and equipment.
- The merged water systems would provide an opportunity not only for system growth but could also spur business and residential growth in the Town's tax base through potential annexations.
- With the merger, a new rate structure may be proposed to attract developers and business that are near the existing sewer force mains to consider annexation to avoid out-of-town rates.

6.4 Recommendation for Carteret County

As shown in Table 9, the water district system has an existing debt of $2,066,128 (principal only) that will be fully retired by the year 2052. This debt poses a liability and concern for the Town if they acquire the County's water distribution system. For a successful merger of the two water distribution systems, the following are recommended measures for the County:

- The County would maintain the SWTD for a minimum of eleven (11) years until FY 2031. The debt service for FY 2020 is $245,800 (adopted by the County Commissioner) which will be paid using the revenue generated from special water district funds. The County should pay this same debt service fee amount for the next eleven (11) years to retire the debt. Once this existing debt is retired, the County may no longer need to maintain this special water tax district and can either eliminate the tax altogether or modify it for future needs within the district for health and safety.
- If the County transfers ownership of its water systems to the Town and agrees to continue pay $245,880 per fiscal year toward the debt, there will be a net balance of $177,120 (Table 11; $423,000-$245,880) every year, in the special water district funds. The County may use

these remaining funds to participate in capital improvement upgrades and replacements of the existing infrastructure transferred to the Town. However, capital improvements directly benefiting the Town would be subject to negotiation.

- The County would maintain the right to request upgrades to the existing system within the SWTD boundaries with mutual understanding that the cost for such an upgrade will be paid by the County for a negotiated number of years. A potential negotiated period may include the next 11 years when the County would continue to collect the SWTD revenue to pay off the debt service. It is also expected that both the Town and the County will work together to accomplish these projects through a fair assessment of capital project benefits to each entity.

6.5 Recommendation for Rate Modification

Existing out-of-town rates (Appendix C) established by the Town are currently seven percent (7%) higher than rates charged by the County (Appendix B). In exchange for the County's commitment to transfer ownership of the system, participate in capital costs for a period of eleven (11) years and retire the existing debt, it is recommended that the Town adopts a readiness to serve charge for the SWTD that is the same as that for the out of town customers but keep the water use rate as that of in town customers, shown in Table 13.

Table 13. Proposed Out of Town Water Rates

Description	Amount ($)
Readiness to Serve Charge[1]	$20.74
Variable Rate for Water[2]	$5.07/1,000 gallons
Cost for 5,000 gallons[3]	$46.09

Notes:
1. Out of Town Readiness to Serve
2. Water Usage rate for in Town customers (Appendix c)
3. Cost =$20.74 + ($5.07*5) = $46.09

This rate is a recommendation only that still keeps the water rate for the current County customers below their present water rate. For this report, only the rate for 3/4 inch meters was considered; the rates for other size meters serving customers within the water district boundary can be set using similar logic.

Accepting this water rate structure in addition to acquiring the County water system infrastructure, would not limit the Town's right to maintain another out-of-town rate for customers outside the County's current water district boundary.

6.6 Financial Advantages for Town

The proposed rate structure (for 3/4-inch meters) shown in Table 13 would save County customers an estimated $9.01 per month compared to the existing county water rate of $55.10 per month. Though the new rate structure would reduce water sales revenues generated from the County customers, the savings in operating expense through reductions in salaries (1.5 persons instead of 3 persons) and other redundant expenses needed for operation would more than compensate for any losses. As described in Section 6.2, the merger would save nearly $165,000 per year in salaries and benefits. Considering that saving, water system revenues and expenses for before and after merger conditions are calculated and shown in Table 14.

Table 14. Comparison of Cash Flow - Before and After Merger

Year	Projected Special Water District Revenue (Before Merger)[1]	Projected Special Water District Revenue (After Merger)[2]	Projected Water System Expense (Before Merger)[1]	Water System Expense (After Merger)[3]
2020	$725,786	$606,757	$718,340	$553,340
2021	$740,302	$618,892	$732,707	$567,707
2022	$755,108	$631,270	$747,361	$582,361
2023	$770,210	$643,896	$762,308	$597,308
2024	$785,614	$656,773	$777,554	$612,554
2025	$801,327	$669,909	$793,106	$628,106
Total	**$4,578,346.51**	**$3,871,471**	**$3,827,121**	**$3,3,541,376**

Notes:
1. From Table 12
2. 83.6% of Revenue (Before Merger); 83.6% is based on Current County rate of $55.1 and proposed rate of $46.09 as calculated in Table 13
3. Expense (Before Merger) minus savings in staff compensation ($165,000)

Projected after-merger revenue and expense show positive cash flow for the County system that would be acquired by the Town. The higher out-of-town rate for the acquired system would encourage

customers and developers to strongly consider the option of annexation. The annexation would lead to lowering of utility rates and eventually increase tax base for the Town.

-- End of Section --

7.0 CONCLUSION

The merger of the two water systems will be beneficial for both the County and the Town. Acceptance of merger conditions would benefit the Town from acquiring $12.3 million of water system assets. This would also lead to expansion of their customer base without the expenditure of major funds for years to come.

Acquiring the County's water system would require periodic upgrades and capital improvement investments, however, the capital associated with such an upgrade is not a concern due to the following reasons:

- Potential for growth in utility revenues and tax base.
- Recommended agreement for County participation in costs for a period of a minimum of eleven (11) years after transfer of the water distribution system for capital improvements to the existing system.
- County participation toward "county specific" upgrades and extensions within the district.

Considering the advantages and disadvantages of this potential merger, DAA recommends transfer of the County's water distribution system to the Town, for the sum of one dollar and other valuable considerations. The acceptance of the merger conditions by the Town will be based on refinement of these conditions and other concessions by both parties. All legal issues regarding such transfer will need to be addressed before the merger of the two water systems can be completed and executed.

-- End of Section --

8.0 REFERENCES

Blank Depreciation Worksheet Developed for City of Dogwood Depreciation Calculation Worksheet-Government Capital Assets.

Laurel Park / Hendersonville Water System Merger Feasibility Study, Town of Laurel Park, North Carolina, June 2017.

Jordan Lake Water Supply Storage Allocation Request, City of Raleigh and Merger Partners, January 13, 2015.

Appendix A

Carteret County Water System Maps

Figure 1

Carteret County's Water System

CWSNC W-354 SUB 398
Carteret Fair Value Determination
Form Application Exhibit

Carteret County Water District Infrastructure

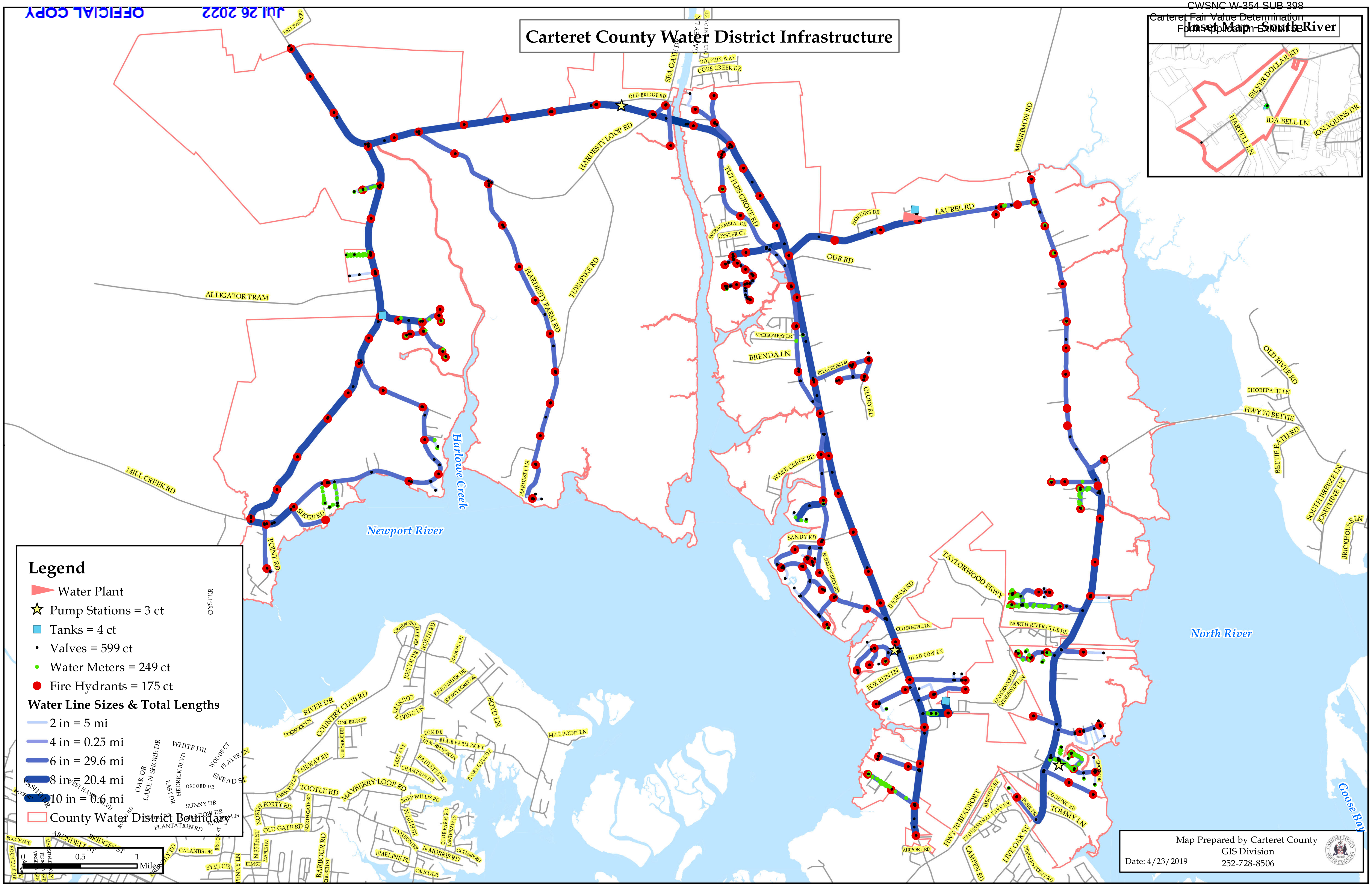
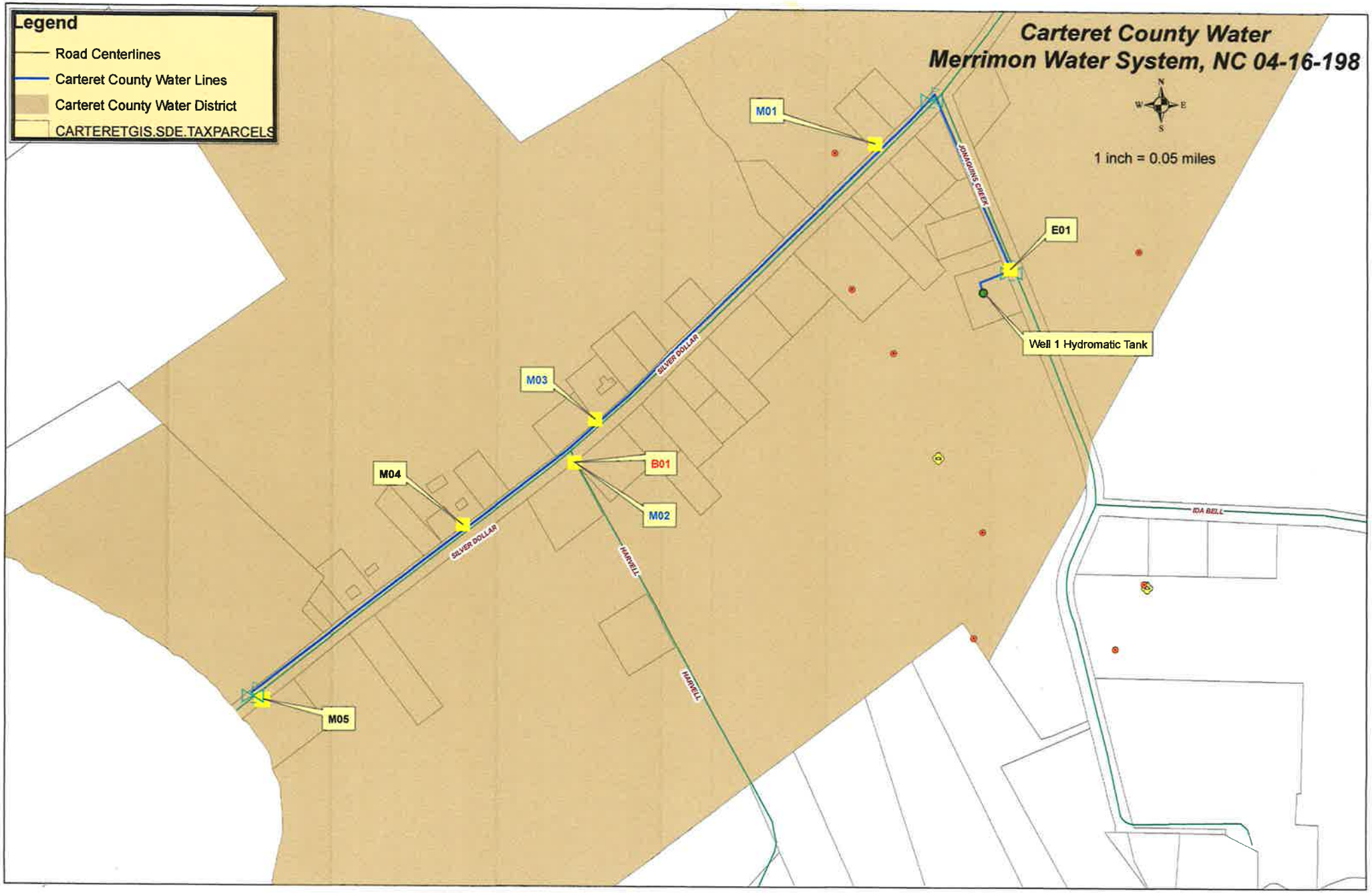

Inset Map - South River
SILVER DOLLAR RD
HARVELL LN
IDA BELL LN
JONAQUINS DR
Legend
Water Plant
Pump Stations = 3 ct
Tanks = 4 ct
Valves = 599 ct
Water Meters = 249 ct
Fire Hydrants = 175 ct
Water Line Sizes & Total Lengths
2 in = 5 mi
4 in = 0.25 mi
6 in = 29.6 mi
8 in = 20.4 mi
10 in = 0.6 mi
County Water District Boundary
0 0.5 1 Miles
Newport River
Harlowe Creek
North River
Goose Bay
MILL CREEK RD
ALLIGATOR TRAM
HARDESTY FARM RD
HARDESTY LN
TURNPIKE RD
HARDESTY LOOP RD
OLD BRIDGE RD
SEA GATE DR
GATEY LN
DOLPHIN WAY
CORE CREEK DR
TUTTLES GROVE RD
INTRACOASTAL DR
OYSTER CT
OUR RD
HOPKINS DR
LAUREL RD
MERRIMON RD
MADISON BAY DR
BRENDA LN
BELL CREEK DR
GLORY RD
WARE CREEK RD
SANDY RD
INGRAM RD
OLD RUSSELL LN
DEAD COW LN
FOX RUN LN
TAYLORWOOD PKWY
NORTH RIVER CLUB DR
HWY 70 BEAUFORT
PROFESSIONAL PARK DR
MEETING ST
LIVE OAK ST
CAMPEN RD
TOMMY LN
GOODING RD
AIRPORT RD
OLD RIVER RD
SHOREPATH LN
HWY 70 BETTIE
BETTIE PATH RD
SOUTH BREEZE LN
JOSEPHINE LN
BRICKHOUSE LN
POINT RD
SHORE RD
RIVER DR
COUNTRY CLUB RD
TOOTLE RD
MAYBERRY LOOP RD
BARBOUR RD
OLD GATE RD
NORTH RD
JOSLYN DR
MASON LN
KINGFISHER DR
BOYD LN
MILL POINT LN
FIRST AVE
CHAMPION DR
PAULETTE RD
SHEP WILLIS RD
EMELINE PL
N MORRIS RD
FAIRWAY RD
OAK DR
LAKE N SHORE DR
WHITE DR
WOODS CT
SNEAD ST
HEDRICK BLVD
OXFORD DR
SUNNY DR
PLANTATION RD
BRIDGES ST
PENNY LN
SYMI CIR
GALANTIS DR
Map Prepared by Carteret County
GIS Division
Date: 4/23/2019
252-728-8506

Figure 2

Merrimon Water System



Appendix B
Carteret County Water Rates

Water Service
Fee Schedule
FY 2018-2019

3/4" Meter
Basic Charge (No Usage) Flat Fee — $27.50 / mo. Covers 1st 1,000 gals.
Volume Charge — $6.90 per 1,000 gals

1" Meter
Basic Charge (No Usage) Flat Fee — $38.00 / mo. Covers 1st 1,000 gals.
Volume Charge — $6.90 per. 1,000 gals

2" Meter
Basic Charge (No Usage) Flat Fee — $110.00 / mo. Covers 1st 15,000 gals.
Volume Charge — $6.90 per 1,000 gals

4" Meter
Basic Charge (No Usage) Flat Fee — $340.00 / mo. Covers 1st 53,000 gals.
Volume Charge — $6.90 per 1,000 gals

Merrimon System (3/4" Meter)
Basic Charge (No Usage) Flat Fee — $16.00 / mo. Covers 1st 1,000 gals.
Volume Charge — $6.90 per 1,000 gals

Town of Beaufort (Eastman's Creek)
Basic Charge (No Usage) Flat Fee — $27.50 / mo. Covers 1st 1,000 gals.
Volume Charge — $6.90 per 1,000 gals

Fire Hydrant Usage

Hookup & Service Charge: $75.00/Monthly
Mobilization to hydrant site and employee on site during tank fill.
$200.00 Deposit
$8.75 per 1,000 gallons.

Hydrant & Hydrant Meter Tampering — $250.00 1st offense
$500.00 2nd offense (and Legal Action)
Damage Fee – Fire Hydrant — $2,500.00

Fire Line – Sprinkler Fee

Size	Monthly fee
2"	$27.50
4"	$32.50
6"	$75.00
8"	$105.00

Tap Fees

Meter Size	Tap Fee**
3/4 "	$1,000.00
1"	$1,150.00
2"	Cost + 10%
4"	Cost + 10 %

**Additional $900.00 Tap Fee for any meter requiring road bore work

Any meter 2 inch or larger will be engineered by Mc David & Associates and County will charge cost of materials and installation, engineering fees and additional 10%.

Security Deposits

Property Owner	$100.00
Renter/Lease holder	$200.00

Damage and Tampering Fees

Tampering Fee - Meters	$100.00
2nd Offense (and Legal Action)	$500.00
Damage Fee – Meters	$135.00
Damage Fee – MXU Remote Unit	$135.00

Other Fees

Non-Sufficient Check Fee	$25.00
Bank Inspections	$30.00
Late Charges	10% of balance
Service Fee*	$30.00

*At the time of reconnection the deposit on account must be equal to the deposit amount required for new accounts as of that date.

*All accounts subject to disconnection that have not been paid by 5:00 pm on the day prior to disconnections will be charged the service fee.

Appendix C
Town of Beaufort Water Rates

Water & Sewer Rates & Fees

All water and sewer taps made outside Town limits are double in-town rates shown above. Water or sewer capacity fees outside Town limits are negotiable but will not exceed 2X rates shown above.

Upgrades in service, i.e., changing from a 3/4" meter to a 1" meter, are subject to a difference in the water tap, water capacity, and sewer capacity fees.

All taps larger than 2" shall be installed at developer's cost in accordance with Town of Beaufort standards and developers shall pay a tap-on fee as shown above.

▶ Tap & System Development Fees

TAP FEES		
SIZE	WATER	SEWER
¾"	$ 700	$ 750
1"	800	750
1 ½"	1,075	750
2"	1,375	750
3"	575	750
4"	625	750
6"	850	750
8"	1,175	750

SYSTEM DEVELOPMENT FEES		
SIZE	WATER	SEWER
¾"	$ 476	$ 5,524
1"	793	6,207
1 ½"	1,585	7,015
2"	2,536	8,064
3"	4,755	10,445
4"	7,925	15,875
6"	15,850	22,550
8"	25,360	26,240

▶ Water & Sewer Usage Rates

WATER USAGE RATES

TYPE	SIZE	IN TOWN	OUTSIDE
BASE	¾"	$ 10.37	$ 20.74
	1"	17.32	37.33
	1 ½"	34.53	82.96
	2"	55.27	147.25
	3"	110.65	333.91
	4"	172.87	NA
	6"	345.63	1,327.36
VARIABLE	1000 gal	5.07	7.61

SEWER USAGE RATES

TYPE	SIZE	IN TOWN	OUTSIDE
BASE	¾"	$ 21.17	$ 42.34
	1"	35.85	70.01
	1 ½"	70.50	140.99
	2"	112.20	225.67
	3"	225.88	451.77
	4"	352.90	705.81
	6"	705.60	1,411.19
VARIABLE	1000 gal	16.80	33.60

▶ Water & Sewer Service Charges

WATER & SEWER SERVICE CHARGES

New Account Service Fee	$20	Waived with bank draft
Application Fee	5	
SECURITY DEPOSITS		
3/4" meter	$75-225,	based on credit score
1" meter	100	
1 1/2" meter	140	
2" meter	275	
Transfer Account	25	
Returned Check Fee	25	
Late Fees	10%	added to late portion
Reconnect Fee - Business Hours	25	
Reconnect Fee - After Hours	75	
After Hours Service Calls	75	
Temporary Connection (for cleaning, renovation inspection, etc.)	25	available for a 2-week period, plus water and sewer usage charges
Fire Hydrant Meters	75	mobilization, on site-employee, and 5,000 gal of water; additional $.01/gal
Irrigation/Dock Meter	700	tap fee
Meter-Only Install	400	no new tap fee
Meter Testing	30	
Meter Tampering	100	

Carteret County, NC
Laurel Road / Merrimon Water Systems

UPDATE TO PRESENT VALUE OF WATER SYSTEM

DRAFT

December 2021

Prepared by:

Draper Aden Associates
Engineering ◆ Surveying ◆ Environmental Services

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DAA PN: 2102326

3RD PARTY REVIEW

This Report has been subjected to technical and quality reviews by:

Ethan Gartin		12/20/2021
Name:	Signature	Date
Project Engineer		

Steven R. Gandy		12/20/2021
Name:	Signature	Date
Project Manager		

C. Tyrus Clayton, Jr		12/20/2021
Name:	Signature	Date
Quality Reviewer		

Background

Carteret County owns and operates two groundwater wells for water supply. The first well is located just East of Sowers Drive on Laurel Road, Beaufort, NC 28516, and the extracted groundwater is treated at the onsite Laurel Road Water Treatment Plant (WTP) before is it pumped to three (3) elevated storage tanks for distribution within the community. The system serves approximately 1,226 customers. The County also owns and operates a small water system known as the Merrimon Water System, approximately 20 miles north of Laurel Rd and Merrimon Rd intersection. The water system consists of the Jonaquins Creek Well and an above-ground water storage tank, and it serves approximately 27 customers. (The attached Appendix A system map further details the layout and location of the system and components.)

Draper Aden performed a water system feasibility study in 2019 to look at a merger with a local municipality which established a monetary value for the County's water system assets, among other conclusions. This document is meant to update that number to a more current value.

Assumptions / Limitations

In order to assess the changes to the value of the water systems owned by Carteret County, the following was assumed:

- Conditions of Carteret County's water system assets stated in the 2019 Feasibility Study have not significantly changed are still an accurate depiction of current conditions.
- Book Value approach was used in estimating the value of fixed assets. Straight Line Depreciation was used to estimate depreciated value of water system assets. For the purpose of estimation, the salvage value of each system component was assumed to be zero dollars ($0).
- The analysis done in 2019 for the projected 2020 fiscal budget is accurate to current financial conditions; an updated analysis for 2020 and 2021 budgets and expenses was not performed.
- To account for inflation since the 2019 feasibility study, several present book values which were estimated in the 2019 report have been increased by approximately 5%.

Results / Conclusions

The water system assets owned by Carteret County have an estimated value of approximately $12.7 million. A detailed breakdown of this value can be found in Tables 1 and 2.

The remainder of the major findings and recommendations reported in the 2019 feasibility study hold true.

Attachments:

Table 1: Estimated Book Value of Carteret County Water System
Table 2: Present Book Value of Carteret County Water System
System MapAppendix A: Figure 1 Carteret County Water System Map

Table 1. Estimated Book Value of Carteret County Water System

Assets	Date of Acquisition	Design Life (yrs)	Historical Cost ($)	Total Useful life (months)	Net Amount to Be Depreciated ($)	Accumulated Depreciation ($)	Current Depreciation ($)	Total Depreciation ($)	Present Book value of Asset ($)
Booster Pump 1	2012	50	174,284	600	174,284	26,433	3,486	29,919	144,365
Booster Pump 2	2012	50	253,111	600	253,111	38,389	5,062	43,451	209,661
Booster Pump 3	2012	50	253,111	600	253,111	38,389	5,062	43,451	209,661
		Subtotal	**680,507**				**Subtotal**	**116,820**	**563,686**
Water Tank 1	1988	50	619,263	600	619,263	391,168	12,385	403,553	215,710
Water Tank 2	2012	50	689,091	600	689,091	104,512	13,782	118,294	570,797
Water Tank 3	2012	50	765,262	600	765,262	116,065	15,305	131,370	633,892
		Subtotal	**2,073,616**				**Subtotal**	**653,217**	**1,420,399**
		Total	**2,754,123**				**Total**	**770,037**	**1,984,085**

Table 2. Present Book Value of Carteret County Water System

System No	Description	Present Book value of Asset ($)
SCADA		
Booster Pump House1	SCADA System*	**294,000**
Land		
Laurel Road Aerial Tank	Land Property	25,428
Laurel Road Treatment Plant	Land Property	57,220
Jonaquins Creek Water House	Land Property	26,097
Aerial Tank	Land Property	130,312
Booster Pump Station-1	Land Property	40,578
Booster Pump Station-2	Land Property	35,312
Booster Pump Station-3	Land Property	34,160
Elevated Tank	Land Property	20,615
	Sub Total	**369,722**
Well House	Water withdrawal house*	**210,000**
Jonaquins Creek Well House and Storage	Merrimon Water System*	**420,000**
Fire Hydrants	Fire rescue purposes	**300,000**
Water Treatment Plants	Supply/Distribution*	**1,575,000**
Piping System		
2" PVC	(26,400 ft, $10/ft)	264,000
4" PVC	(1,320 ft, $16/ft)	21,120
6" PVC	(151,588 ft, $24/ft)	3,638,112
6" Ductile	(4,700 ft, $28/ft)	131,600
8 " PVC	(104,477 ft, $28/ft)	2,925,356
8" Ductile	(3,235 ft, $32/ft)	103,520
10" PVC	(3,168 ft, $34/ft)	107,712
	Sub Total*	**7,550,991**
	Total ($)	**10,719,713**

*Value has been increased by ~5% from the 2019 feasibility study

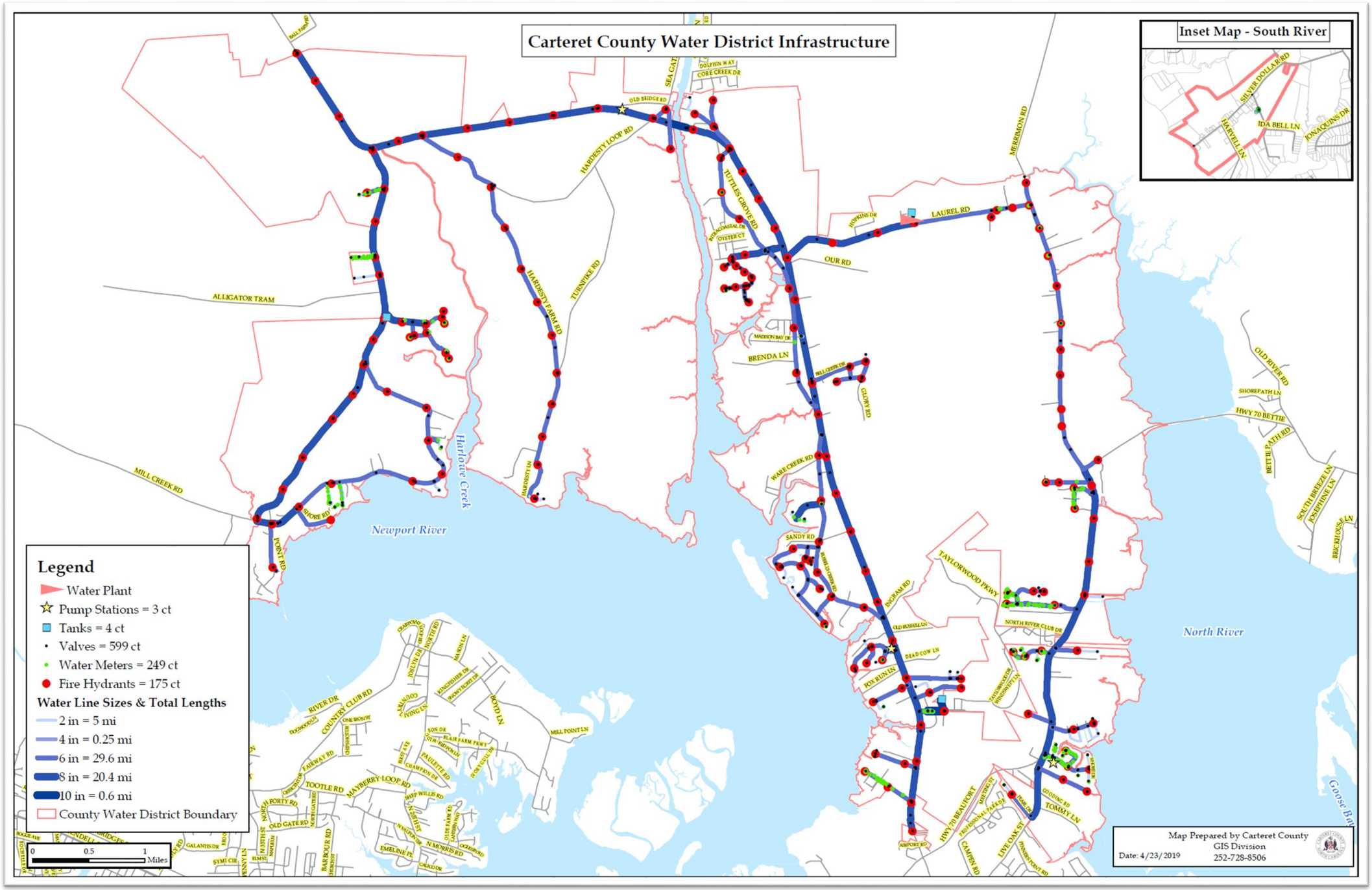

Figure 1 Carteret County Water System Map