TOWN OF EDISTO BEACH
SEWER SYSTEM MODELING & CIP

WILLIAM H. BINGHAM, PE – PRINCIPAL

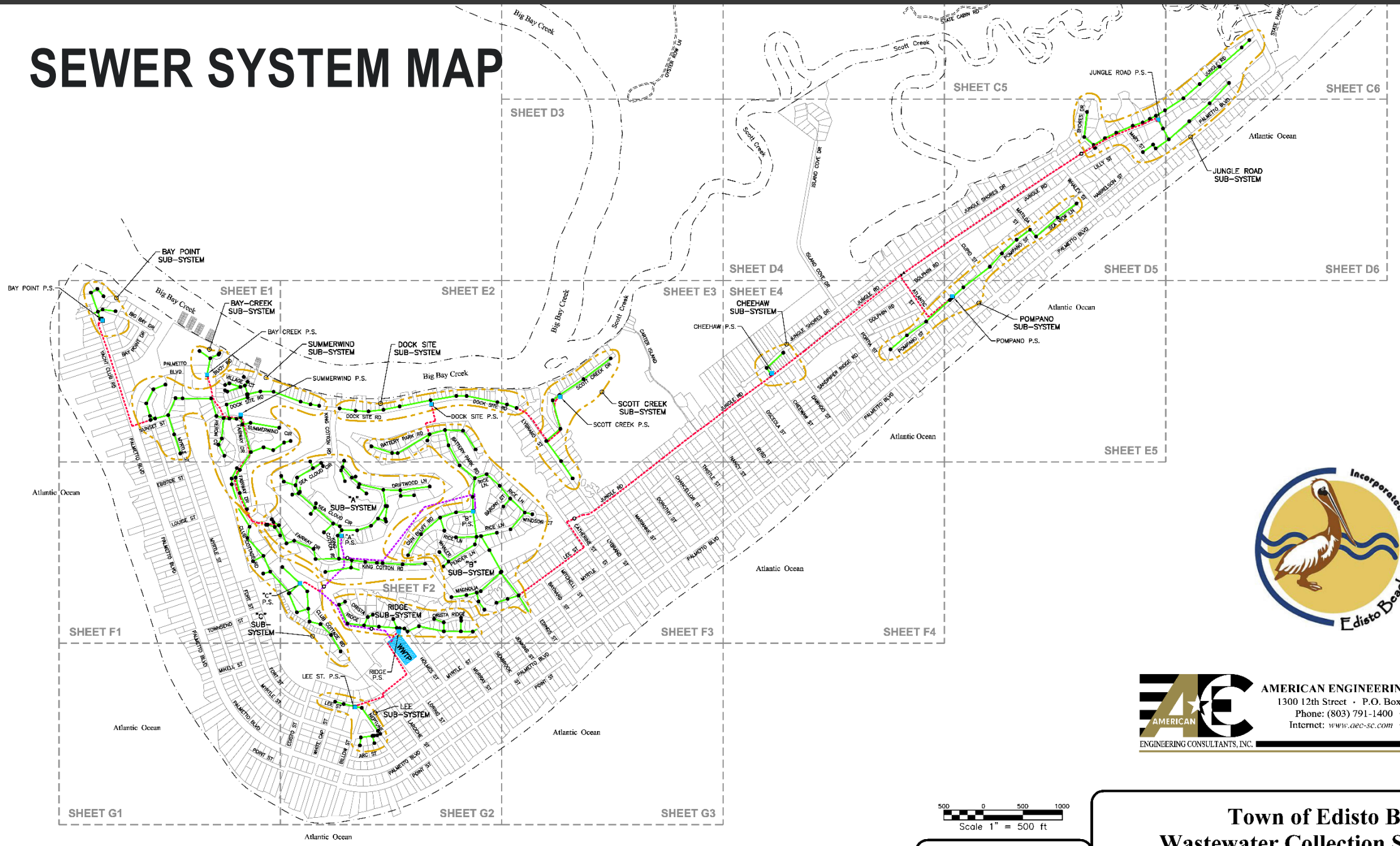
APRIL 8, 2021

INTRODUCTION

The Town of Edisto Beach commissioned AEC to evaluate the Town's existing sewer system capacity and identify system needs. The project includes:

- Field Investigations & Condition Assessment
  - Pump Station Monitoring and Inspections of 13 Stations
- Hydraulic Modeling / Capacity Analysis
  - Development of Hydraulic Model of Entire Sewer System and Calibration to Reflect Actual Peaking Factors
  - Evaluation of Existing System Capacity and Identification of Areas With Restraints
- Capital Improvements Program
  - Identify List of Critical Areas and Recommendations to Address
  - Prioritize Needed Improvements
  - Provide Cost Estimate for Recommendations

SEWER SYSTEM MAP



Incorporated 1970
Edisto Beach SC

AMERICAN ENGINEERING CONSULTANTS, INC.
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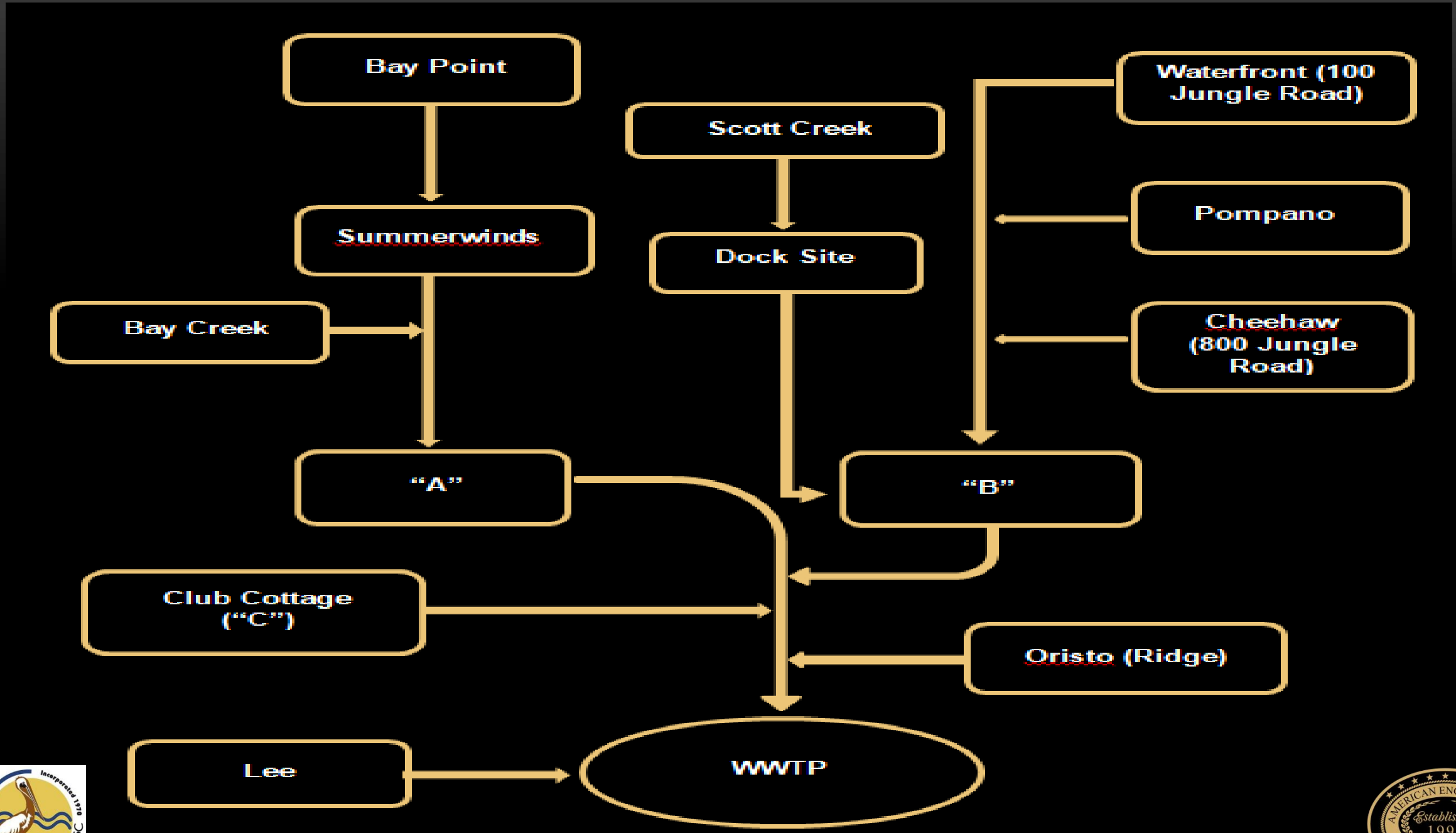
500 0 500 1000
Scale 1" = 500 ft

OCTOBER 2019

Town of Edisto Beach
Wastewater Collection System Map



SEWER SUB-SYSTEMS

EXISTING CAPACITY AVAILABLE

Critical Areas Include Pump Station A and Pump Station B, which are currently **over capacity** and receive waste from **approximately 87% of the Town's Current Customers**

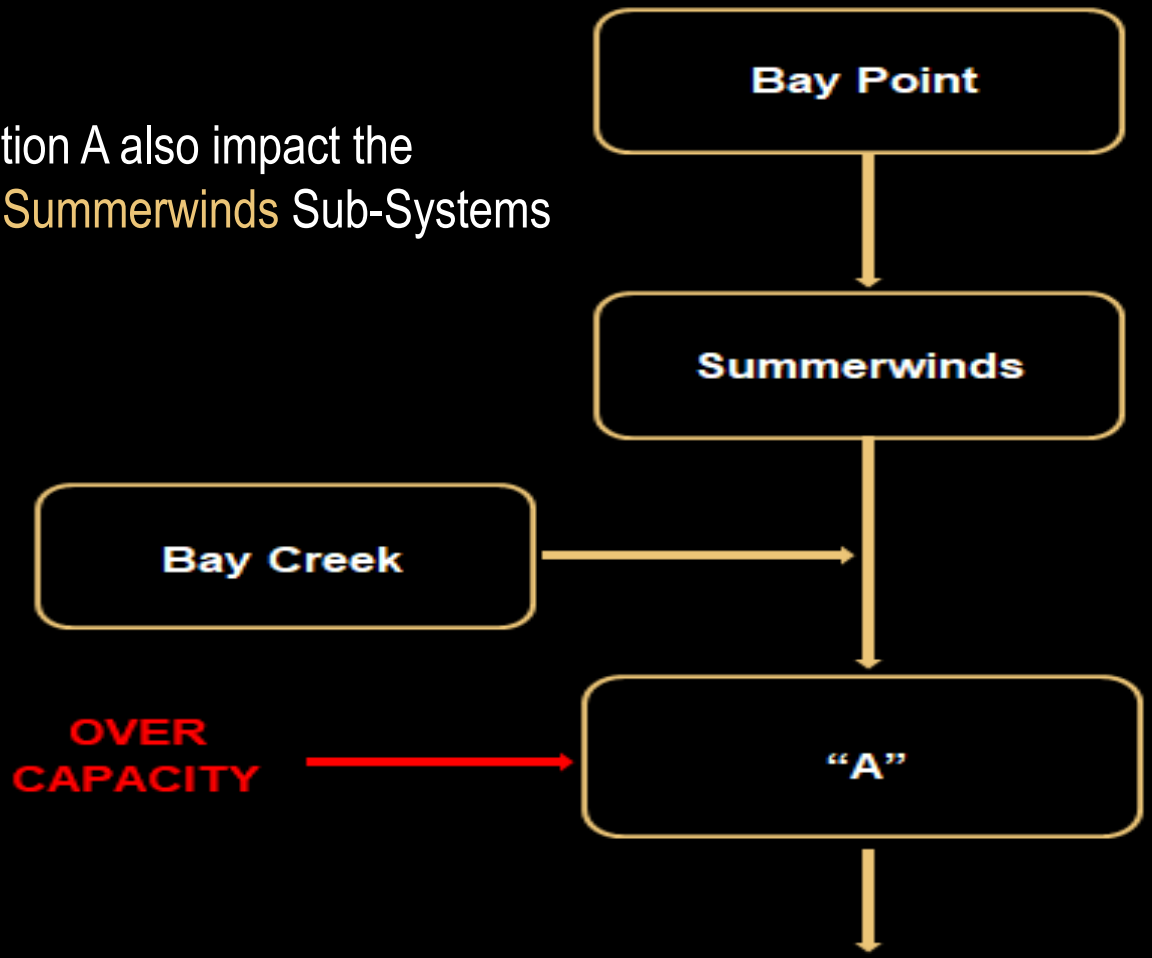
Sub-System Number	Sub-System	Source of REUs	Current Committed REUs	Average Flow (gpd)	Average flow (gpm)	Current Peak Flow (gpm)	Current Pump Capacity Without Influence From Others (gpm)	Current Pump Capacity With Influence (gpm)	Current Maximum REUs without Influence	Current Maximum REUs with Influence	Available REUs	Adjusted Pump Rate Based on Modifications (gpm)	Maximum REUs After Modification	REUs Available After Modification	REUs Based on Limiting Factor
13	Bay Creek	Gravity Lines of Bay Creek	79.89												
		Additional Bay Creek	0												
		Total	79.89	23967	17	41.6	137	19	263.04	36.48	-43.41	41.609375	79.89	0	0
12	Bay Point	Gravity Lines of Bay Point	43.21												
		Additional Bay Point	0												
		Total	43.21	12963	9	22.5	144	144	276.48	276.48	233.27	144.00	276.48	233.27	71.28
11	Summerwinds	Bay Point	43.21												
		Gravity Lines of Summerwinds	175.9												
		Additional Summerwinds	0												
		Total	219.11	65733	46	114.1	182	166	349.44	318.72	99.61	166.0	318.72	99.61	71.28
10	"A"	Bay Point	43.21												
		Summerwinds	175.9												
		Bay Creek	79.89												
		Gravity Lines of "A"	244.12												
		Additional "A"	0												
		Total	543.12	162936	113	282.9	293	141	562.56	270.72	-272.4	320	614.4	71.28	71.28
8	Pompano	Gravity Lines of Pompano	55												
		Additional Pompano	0				107	0							
		Total	55	16500	11	28.6	177	108	339.84	207.36	152.36	108	207.36	152.36	69.403
7	Waterfront (100 Jungle Road)	Gravity Lines of Waterfront (100 Jungle Road)	60.727												
		Additional Waterfront (100 Jungle Road)	0				107	56							
		Total	60.727	18218.1	13	31.6	149	103	286.08	197.76	137.033	103	197.76	137.033	69.403
9	Cheehaw (800 Jungle Road)	Pompano	55												
		Waterfront (100 Jungle Road)	60.727												
		Gravity Lines of Cheehaw (800 Jungle Road)	17												
		Additional Cheehaw (800 Jungle Road)	0				151	99							
		Total	132.727	39818.1	28	69.1	151	151	289.92	289.92	157.193	151	289.92	157.193	69.403
6	Scotts Creek	Gravity Line of Scotts Creek	21												
		Additional Scotts Creek	0												
		Total	21	6300	4	10.9	132	132	253.44	253.44	232.44	132.00	253.44	232.44	69.403
5	Dock Site	Scotts Creek	21												
		Gravity Line of Dock Site	34.87												
		Additional Dock Site	0												
		Total	55.87	16761	12	29.1	206	206	395.52	395.52	339.65	206.00	395.52	339.65	69.403
4	"B"	Waterfront (100 Jungle Road)	60.727												
		Pompano	55												
		Cheehaw (800 Jungle Road)	17												
		Scotts Creek	21												
		Dock Site	34.87												
		Gravity Lines of "B"	126												
		Additional "B"	0												
		Total	314.597	94379.1	66	163.9	210	86	403.2	165.12	-149.477	200	384	69.403	69.403
3	Club Cottage ("C")	Gravity Lines of Club Cottage ("C")	57.853												
		Additional Club Cottage ("C")	0												
		Total	57.853	17355.9	12	30.1	246	179	472.32	343.68	285.827	72	138.24	80.387	80.387
2	Oristo (Ridge)	Gravity Lines of Oristo (Ridge)	63.5												
		Additional Oristo (Ridge)	0												
		Total	63.5	19050	13	33.1	169	169	324.48	324.48	260.98	169.00	324.48	260.98	260.98
1	Lee	Gravity Lines of Lee	25.633												
		Additional Lee	0												
		Total	25.633	7689.9	5	13.4	105.00	105	201.6	201.6	175.967	105.00	201.6	175.967	175.967
	Total REUS		1004.703	301410.9		753527.25									
				-48589.1		523.2828125		680				866.00			

CRITICAL AREAS:

PUMP STATIONS A & B

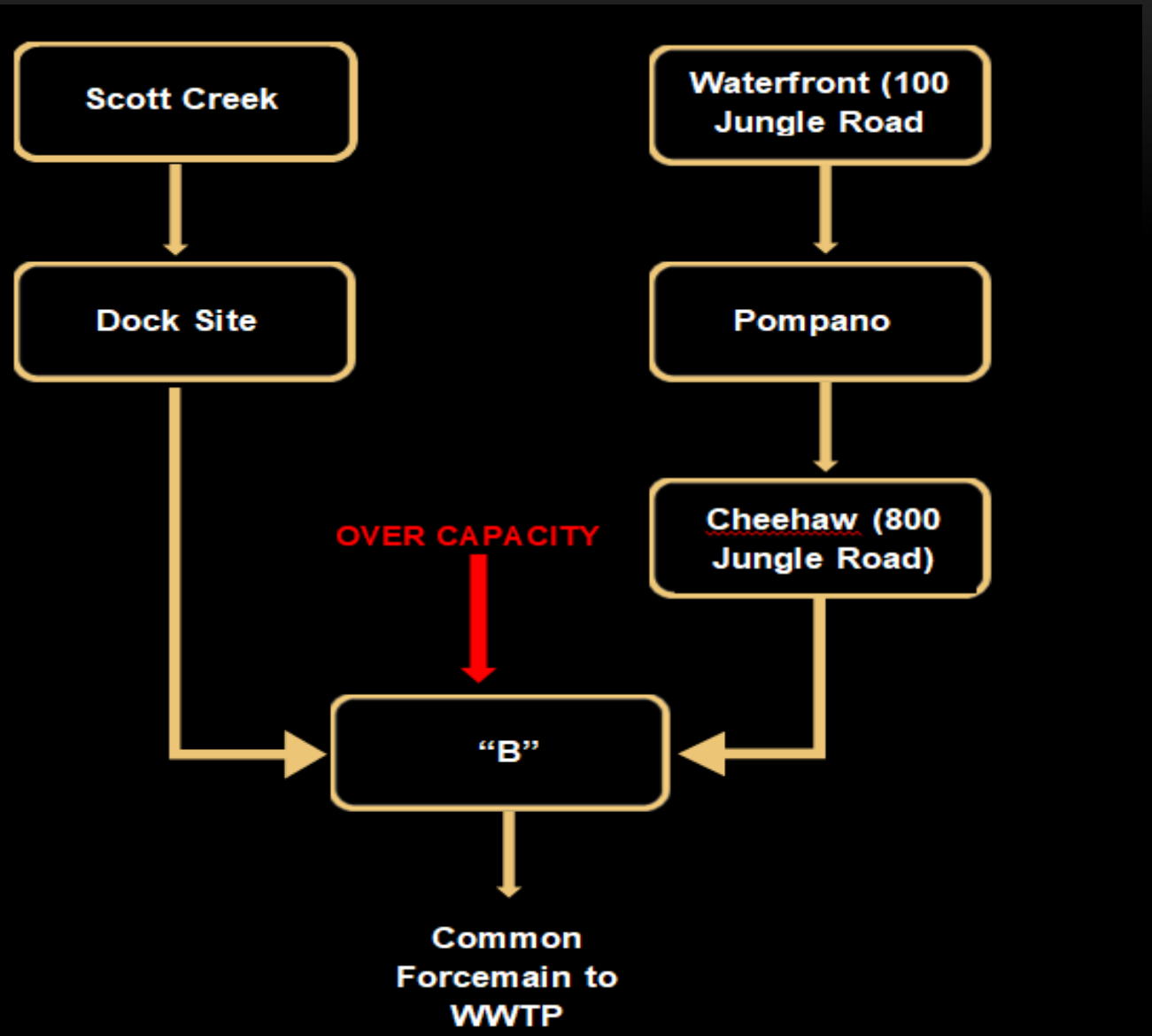
SUB-SYSTEM A

* The capacity and pumping capabilities of Pump Station A also impact the capacity and pumping of Bay Point, Bay Creek, and Summerwinds Sub-Systems



SUB-SYSTEM B

* The capacity and pumping capabilities of Pump Station B also impact the capacity and pumping of Scott Creek, Dock Site, Waterfront, Pompano, and Cheehaw Sub-Systems



DISCUSSION OF VIABLE OPTIONS FOR INCREASING CAPACITY FOR PUMP STATIONS A & B

ALTERNATIVE #1

INSTALL NEW 8-INCH FORCEMAIN FROM PUMP STATIONS A & B TO WWTP

(NO PUMP STATION UPGRADES)

MAJOR COMPONENTS OF ALTERNATIVE #1

- Install approximately 4,650 LF of new 8-inch forcemain from Pump Station A and Pump Station B to WWTP
- Easements from golf course and HOA required
- Will require substantial disruption of residents' yards, and golf course fairways.
- Longer construction time due to obstacles that will be encountered through private property
- Expectation of residential complaints from the construction
- No upgrades to pump stations, PS A pumps are aging and will need replacement in the near future.
- Results in approximately 70 REUs each added to Pump Station A & Pump Station B and approximately 80 REUs added to Pump Station C above current connections

TOTAL PROJECT COST: $975,000.00

ALTERNATIVE #2

UPGRADE PUMP STATIONS A, B & C

MAJOR COMPONENTS OF ALTERNATIVE #2

- Upgrade Pump Stations A & B with larger pumps (keep centrifugal type pumps)
- Upgrade Pump Station C with larger pumps (keep submersible type pumps)
- New VFDs and Controls at all three pump stations
- No new forcemain to be installed – no easements or construction outside of pump station required
- Shorter construction duration
- Results in approximately 200 REUs added at each pump station (A, B, & C) above current connections

TOTAL PROJECT COST: $1,322,000.00

ALTERNATIVE #3
PHASED APPROACH

I. UPGRADE PUMP STATIONS A & B ONLY

II. ADD NEW FORCEMAIN FROM A/B/C COMBINED LOCATION

MAJOR COMPONENTS OF ALTERNATIVE #3

PHASE I:

- Upgrade Pump Stations A & B with larger pumps (keep centrifugal type pumps)
- New VFDs and Controls at both pump stations
- No new forcemain to be installed – no easements or construction outside of pump station required – Short Construction Duration
- Results in approximately 70 REUs each added to Pump Station A & Pump Station B and approximately 80 REUs added to Pump Station C over the number of current connections– Can be allocated between A, B & C if the distribution needs to be different

PHASE II:

- Install approximately 1,340 LF of new 6-inch forcemain from A/B/C combined location to WWTP
- Easement from golf course required
- Results in approximately 200 REUs each added to each pump station (A, B, & C) above current connections

PHASE I PROJECT COST:	**$ 860,000.00**
PHASE II PROJECT COST:	**$ 275,000.00**
TOTAL PROJECT COST:	**$ 1,135,000.00**

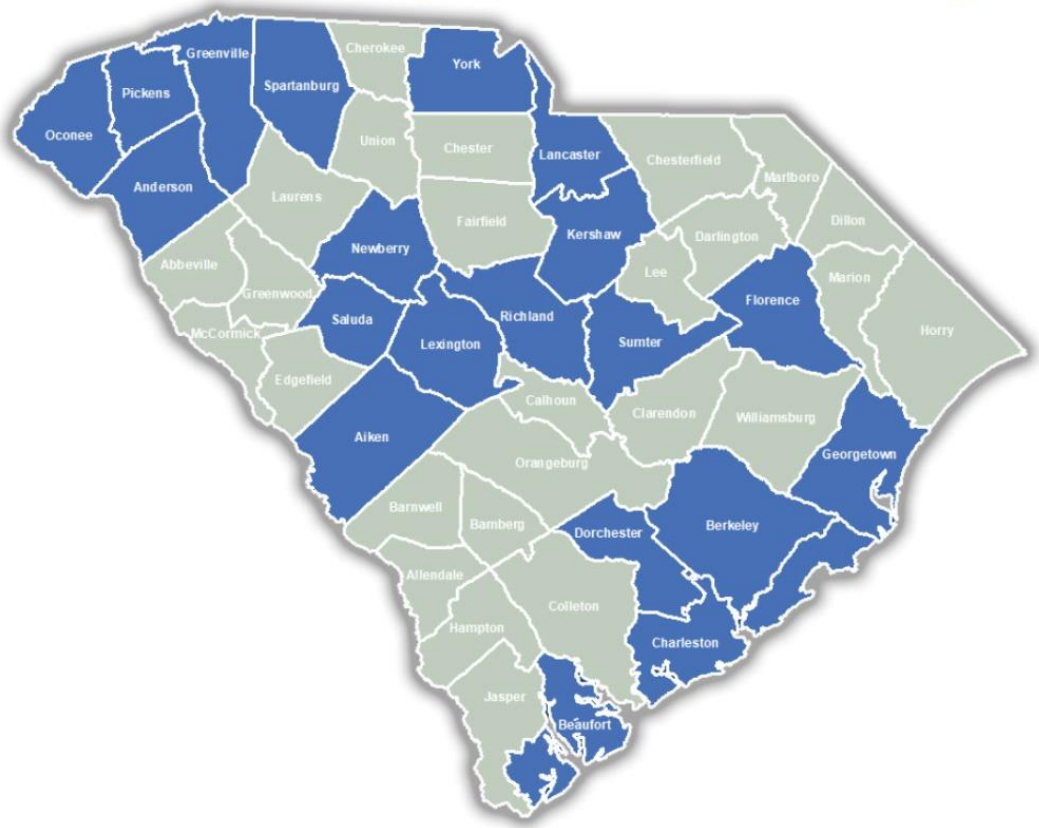
RECOMMENDATION

The primary considerations in making a recommendation to address issues with Pump Station A and Pump Station B being over capacity were 1) project cost, 2) provisions to address existing capacity problems and future capacity, and 3) complexity and timeframe of construction. It is AEC's recommendation that Alternative #3 provides the best options and flexibility for the Town. Phase I of Alternative #3 will address immediate needs of the system. Phase II will provide for additional capacity. Phase II is not required immediately and can be pursued when the Town needs the additional capacity.

ALTERNATIVE #3 PHASE I (now) **COST: $860,000.00**	**ALTERNATIVE #3 PHASE II (later):** **COST: $275,000.00**

FINANCIAL ASSISTANCE OPTION

Match Requirement By County



25% of Construction Costs

No Match Requirement

All applicants pay for non-construction costs

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ADDITIONAL OBSERVATIONS

- Bay Point:
  - Low flow
- Bay Creek / Summerwinds:
  - Common forcemain influences pumping capacities
  - Controls need replacing at Summerwinds
- Cheehaw / Pompano / Waterfront:
  - Common forcemain influences pumping capacities
- Overall Capacity:
  - WWTP / SCDHEC REU

QUESTIONS OR COMMENTS

American Engineering Consultants, Inc.

Greatly Appreciates Your Business!