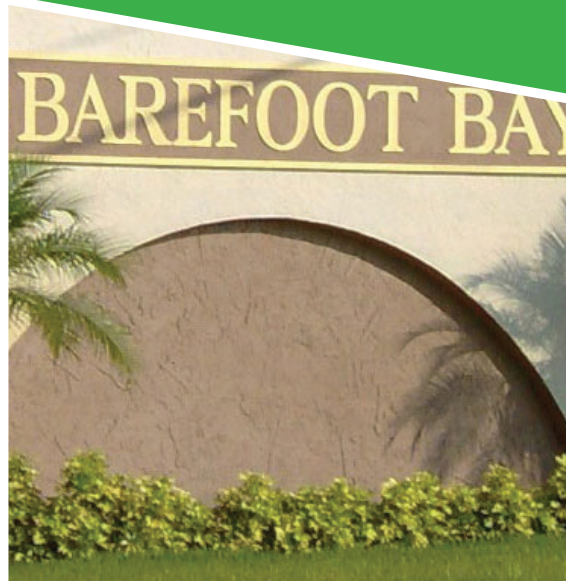




Regional Utility Capital Improvement Projections

REGIONAL UTILITY CAPITAL IMPROVEMENT PROJECTIONS THROUGH YEAR 2040

Prepared For



June 2020

Prepared By



THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

1.0 Background	1
1.1 Project Purpose.....	1
1.2 Expected 20 Year Population Growth Throughout Brevard County	2
2.0 Service Area Boundaries and Populations.....	4
3.0 Existing County Utility Infrastructure and Capacities.....	13
3.1 Existing Water Treatment Infrastructure	13
3.1.1 Water Supply and Treatment Capacity	13
3.1.2 Transmission / Distribution System	13
3.2 Existing WasteWater Infrastructure	15
3.2.1 Collection System	15
3.2.2 Wastewater Treatment Facilities	17
3.2.3 Effluent Disposal.....	18
4.0 Future Water and Wastewater Treatment Demands	18
4.1 Future Water Demand and Treatment Capacity	18
4.2 Future Wastewater Demand and Treatment Capacity	19
5.0 Estimated Future Infrastructure and Cost.....	20
5.1 North Brevard	20
5.1.1 Potable Water System.....	20
5.1.2 Wastewater System	21
5.2 Port St. John	22
5.2.1 Wastewater System	22
5.3 Sykes Creek	23
5.3.1 Wastewater System	23
5.4 South Central	23
5.4.1 Wastewater System	23
5.5 South Beaches.....	24
5.5.1 Wastewater System	24
5.6 Barefoot Bay	25
5.6.1 Potable Water System.....	25
5.6.2 Wastewater System	25

LIST OF TABLES

Table 2-1 Existing and Future Potable Unincorporated Water Service Area Populations	4
Table 2-2 Existing and Future Unincorporated Wastewater Service Area Populations.....	4
Table 3-1 Existing Source Water and CUP Limits.....	13
Table 3-2 Existing Potable Water Mains	14
Table 3-3 Existing Gravity Mains.....	15
Table 3-4 Existing Lift Stations	16
Table 3-5 Existing Force Mains	16
Table 3-6 Existing Wastewater Treatment Facilities	17
Table 3-7 Existing Effluent Disposal.....	18
Table 4-1 Future Water Treatment Capacity Required	19
Table 4-2 Future Wastewater Treatment Capacity Required	19
Table 5-1 North Brevard Proposed Water Improvements	21
Table 5-2 North Brevard Proposed Wastewater Improvements.....	21
Table 5-3 Port St John Proposed Wastewater Improvements	22
Table 5-4 Port Sykes Creek Proposed Wastewater Improvements.....	23
Table 5-5 South Central Proposed Wastewater Improvements.....	24
Table 5-6 South Beaches Proposed Wastewater Improvements	24
Table 5-7 Barefoot Bay Proposed Water Improvements	25
Table 5-8 Barefoot Bay Proposed Wastewater Improvements.....	26

1.0 BACKGROUND

A population analysis prepared by Wade Trim for Brevard County in November 2019 demonstrated that the population will continue to grow through the year 2040. According to the population analysis, the total population of Brevard County (both unincorporated and incorporated areas) is projected to grow from 595,350 to 683,808 from 2020 through 2040, respectively. This corresponds to a County population increase of approximately 13%.

In preparation for the expected growth, the County is conducting long range planning of its water and wastewater utilities to proactively provide direction for future water and wastewater system expansion, and a basis for future rate study.

1.1 PROJECT PURPOSE

The purpose of this project is to provide the County with a high-level evaluation of anticipated capital improvements to their water and wastewater utility to support the anticipated growth through 2040 in its unincorporated areas. Unlike a master plan that bases its results on detailed hydraulic modeling and a comprehensive system evaluation, this report provides a general assessment of treatment facilities and major infrastructure that will possibly be needed in unincorporated Brevard County based on the areas where population growth is expected. This information will then be used to provide a conceptual cost for expansion of treatment and transmission lines; and serve as input for the County in the development of a future rate analysis.

Unincorporated Brevard County consists of six service areas for providing their customers with water and wastewater service. These service areas are:

1. North Brevard
2. Port St. John
3. Sykes Creek
4. South Central
5. South Beaches
6. Barefoot Bay

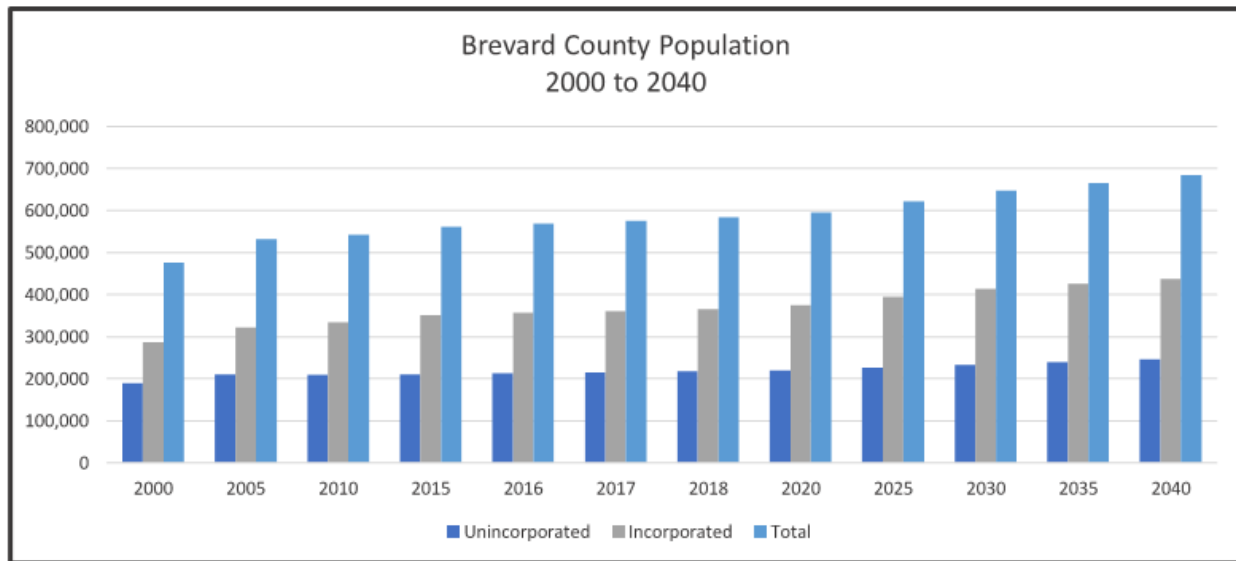
For each service area, this report will

- Approximate the population growth and recommend service area boundary modifications
- Estimate the additional water demands and anticipated wastewater flows
- Identify the capacity at each of the existing water and wastewater treatment facilities
- Recommend expansion of existing treatment facilities or construction of new facilities.
- Estimate length of major water distribution and sanitary sewer collection pipelines.
- Identify need for additional disposal structures such as deep injection wells.

- Provide conceptual cost for recommended improvements

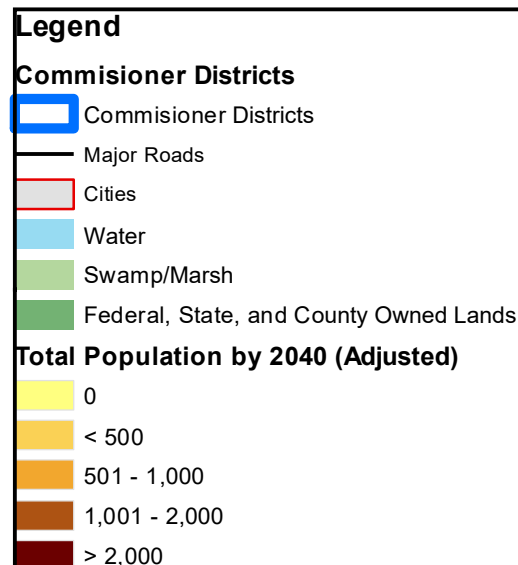
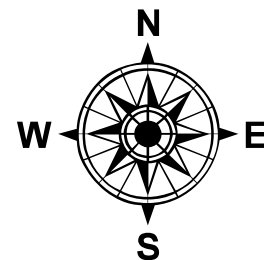
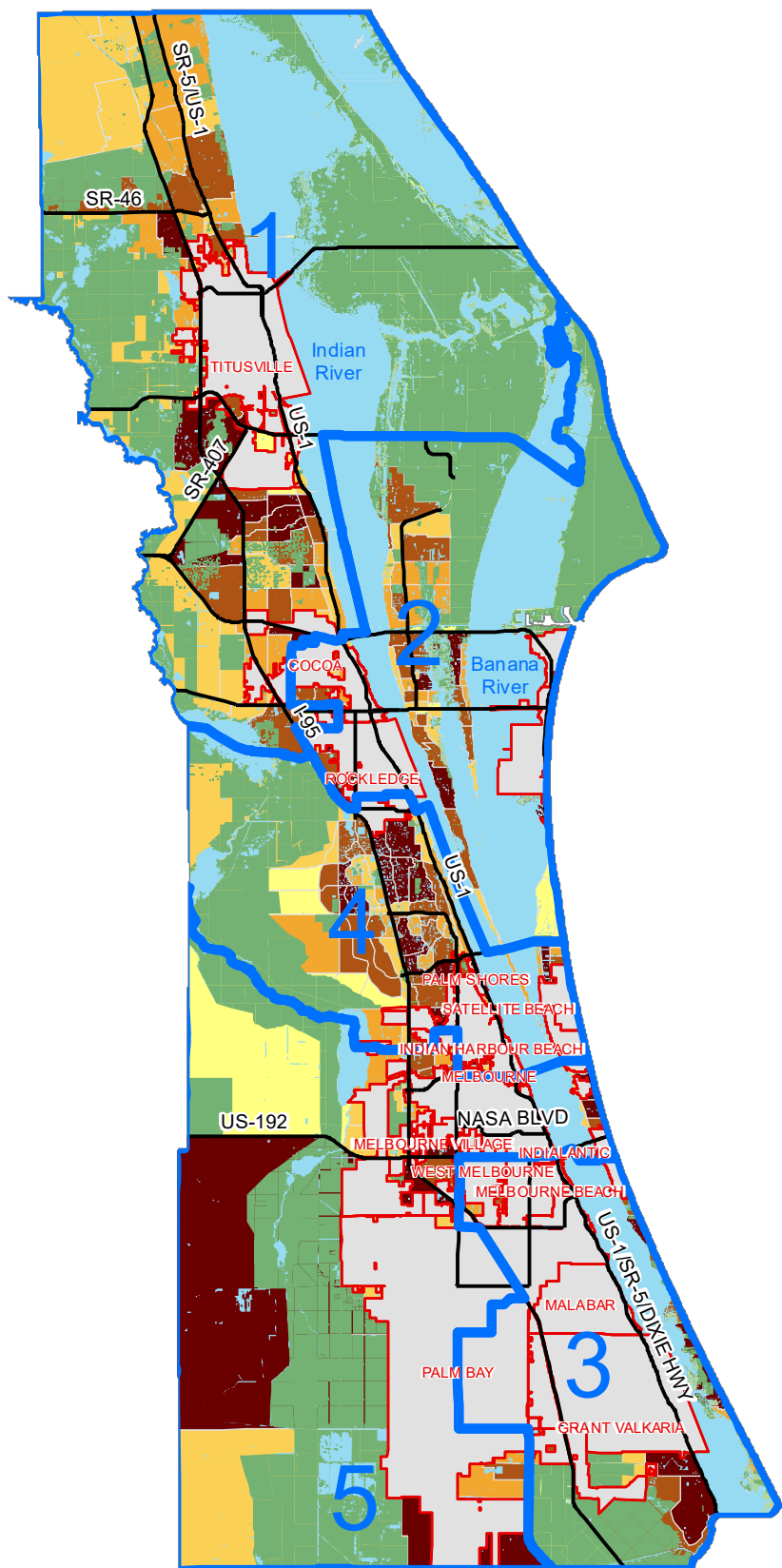
1.2 EXPECTED 20 YEAR POPULATION GROWTH THROUGHOUT BREVARD COUNTY

As was concluded in the population analysis, population growth within Brevard will occur throughout all sections of the County with most of the growth occurring within incorporated areas as shown in Figure 1-1.



Of the countywide population by 2040, approximately 245,865 people are allocated to unincorporated Brevard County and approximately 437,943 people are allocated to the incorporated cities. This equates to 36% and 64% of the countywide population, respectively, with the majority of the population concentrated in cities. From the year 2018 to the year 2040, the County is expected to grow by 13%; whereas the cities are expected to grow by 20%.

Figure 1-2 illustrates the locations where growth is anticipated by 2040 in the County's unincorporated areas. According to the population analysis, in 2040, the highest number of people will be located south and southwest of the City of Titusville, between the cities of Melbourne and Rockledge, and west and south of the City of Palm Bay.



0 2.25 4.5 9 Miles

Brevard County, Florida 2040 Population Analysis



Data Source: Space Coast Transportation Planning Organization (SCTPO), Long-Range Transportation Plan (LRTP) Traffic Analysis Zone (TAZ) countywide data (ZDdata1 files); TAZ data adjusted by share of total countwide population taking into consideration historic growth rates and future linear progression based on population data obtained from the Bureau of Economic & Business Research (BEER) and Shimberg Center for Housing Studies, Florida Housing Data Clearinghouse.



**FIGURE 1-2
Year 2040
Total Population**

2.0 SERVICE AREA BOUNDARIES AND POPULATIONS

With the use of the County's GIS, the existing boundary for each of the County's unincorporated utility service areas was plotted as shown in Figures 2-1 through 2-8. Preliminary Traffic Analysis Zone (TAZ) data obtained from the Space Coast Transportation Planning Organization (TPO) was then used in conjunction with ArcGIS software to allocate the population within the lines of each utility service boundary.

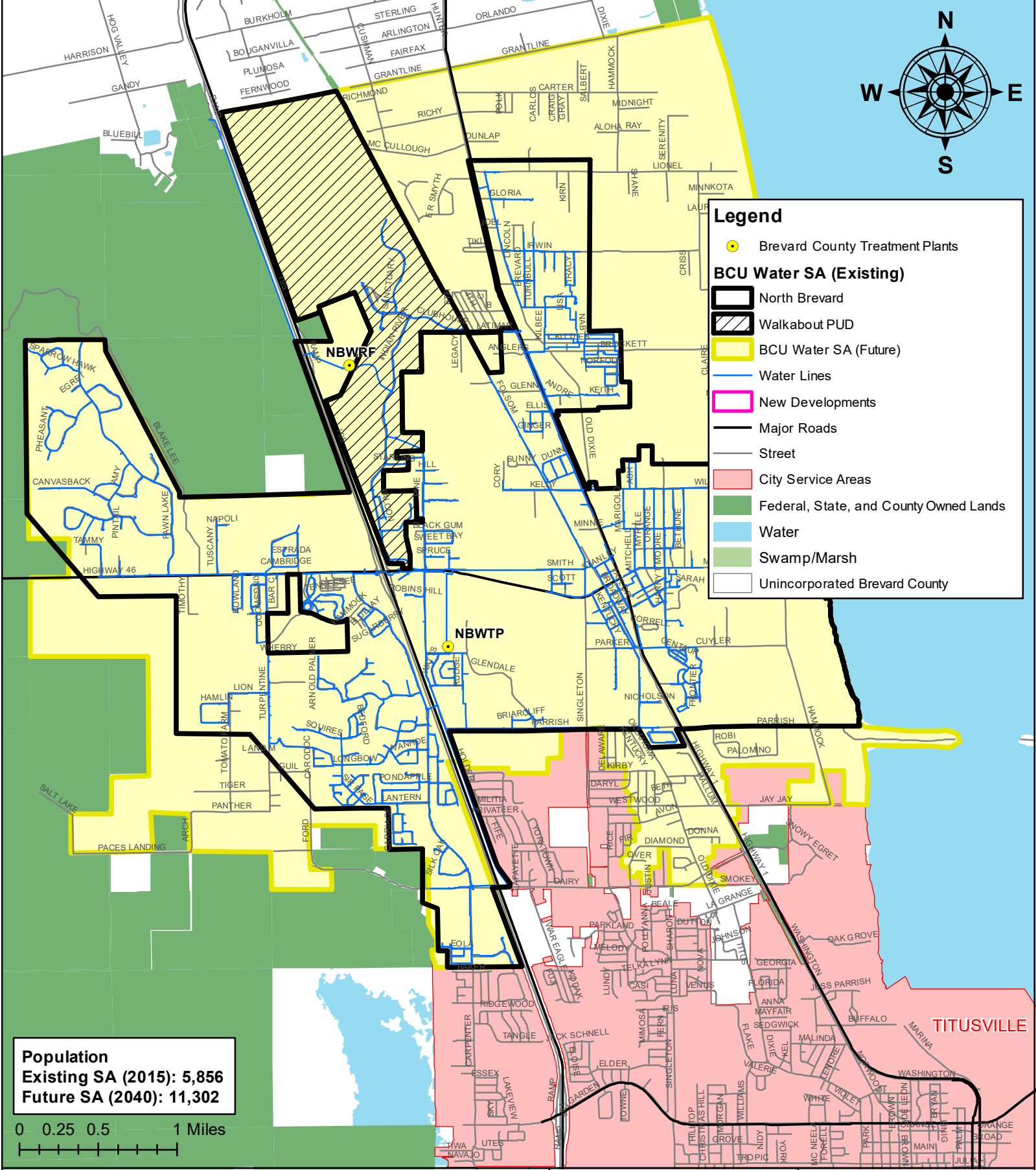
The results of the recent population analysis were then superimposed on the maps to identify new areas of population expansion outside of the existing service boundaries. With this information, future service area boundaries were identified as shown in Figures 2-1 through 2-8. The TAZ data was used to obtain the expected population within the future expanded water and wastewater service areas. The results of this evaluation are presented in Tables 2-1 and 2-2.

Table 2-1 Existing and Future Potable Unincorporated Water Service Area Populations

Service Area	Population within Existing Water Service Area (2015)	Estimated Population within Expanded Service Boundary (2040)	Figure Reference
North Brevard	5,856	11,302	2-1
Barefoot Bay	4,924	10,372	2-2

Table 2-2 Existing and Future Unincorporated Wastewater Service Area Populations

Service Area	Population within Existing Wastewater Service Area (2015)	Estimated Population within Expanded Service Boundary (2040)	Figure Reference
North Brevard	3,866	11,874	2-3
Port St. John	2,173	19,102	2-4
South Central	51,148	82,342	2-5
Barefoot Bay	4,918	10,391	2-6
South Beaches	41,813	46,268	2-7
Sykes Creek	28,417	36,740	2-8



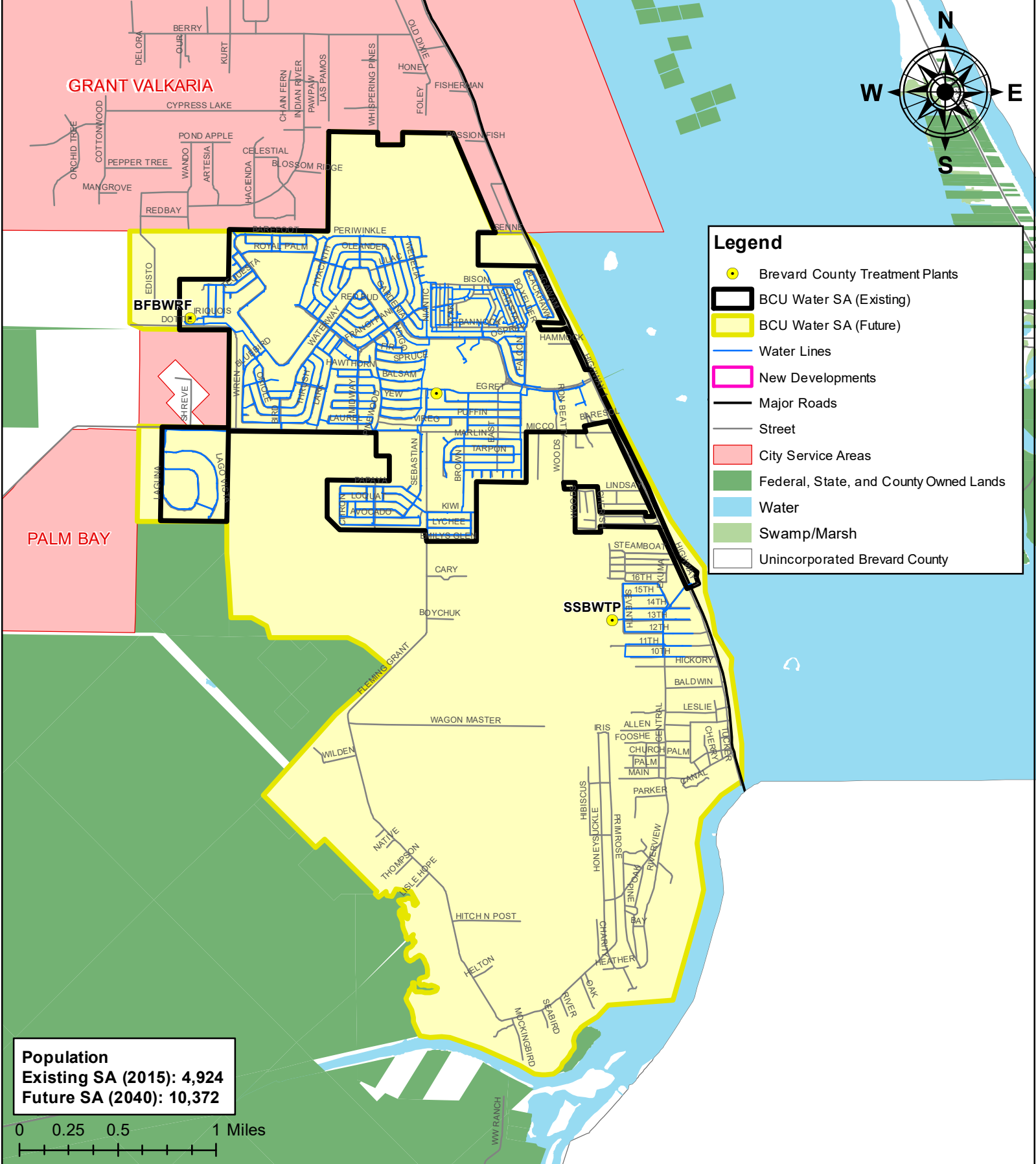
Brevard County, Florida - CIP Projections
Water Service Area: North Brevard



May 27, 2020
 Data Source: Brevard County
 Utility Services Department, 2020.



FIGURE
2-1



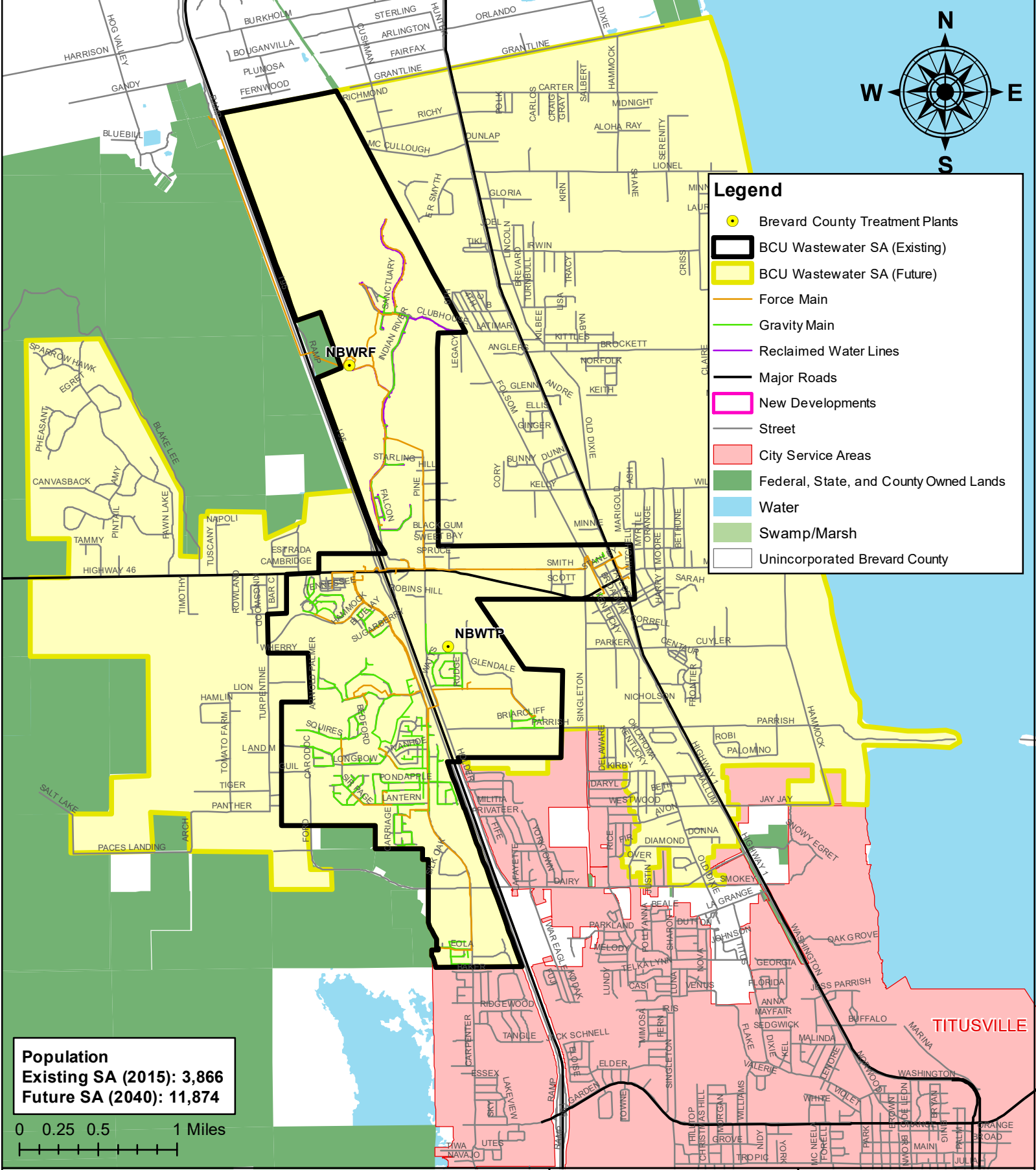
Brevard County, Florida - CIP Projections
Water Service Area: Barefoot Bay



March 27, 2020
 Data Source: Brevard County
 Utility Services Department, 2020.



FIGURE
2-2



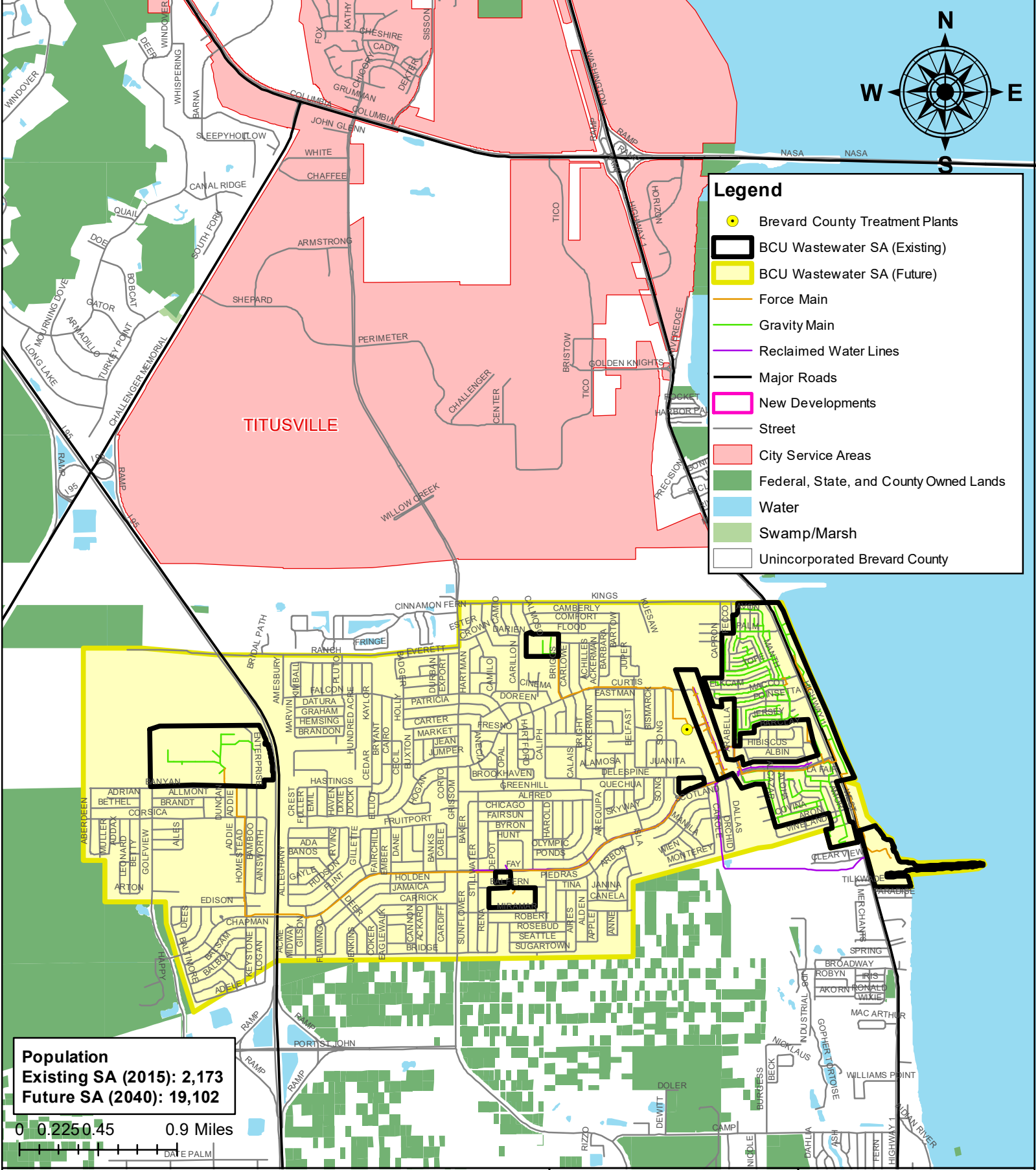
**Brevard County, Florida - CIP Projections
 Wastewater Service Area: North Brevard**



May 27, 2020
 Data Source: Brevard County
 Utility Services Department, 2020.



**FIGURE
 2-3**



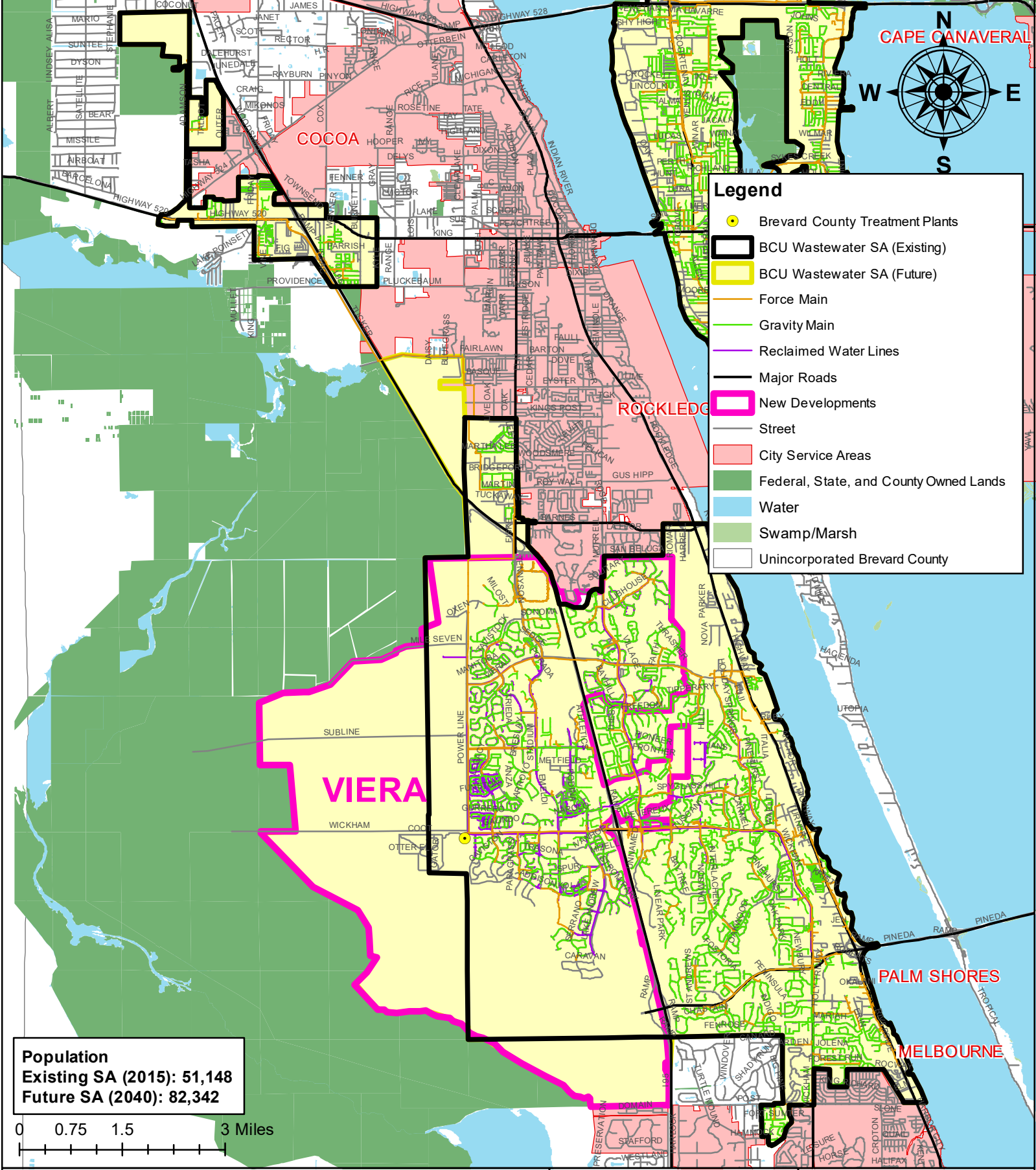
**Brevard County, Florida - CIP Projections
Wastewater Service Area: Port St. John**



Data Source: Brevard County
Utility Services Department,
2020.



**FIGURE
2-4**



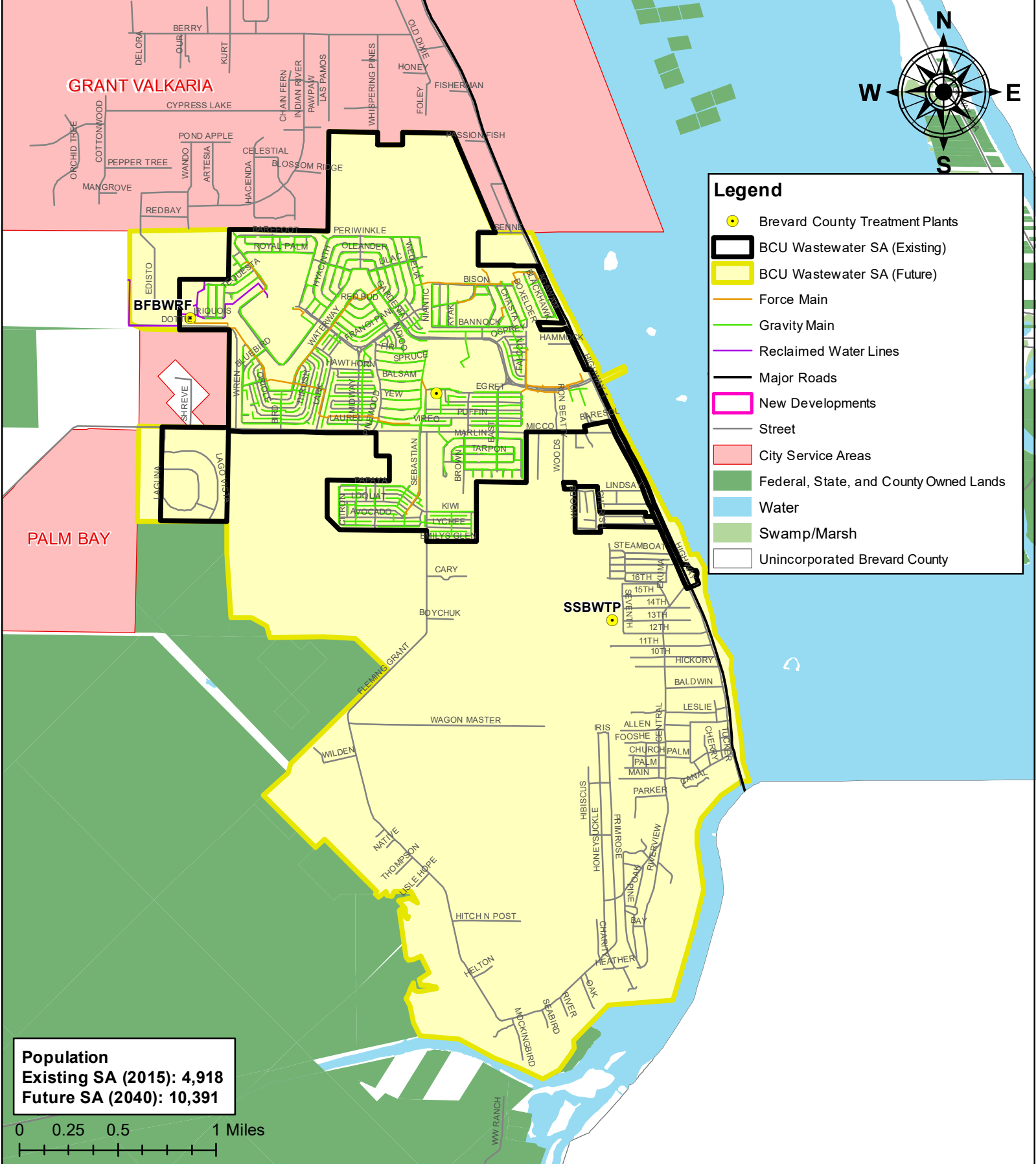
**Brevard County, Florida - CIP Projections
 Wastewater Service Area: South Central**



May 27, 2020
 Data Source: Brevard County
 Utility Services Department, 2020.



**FIGURE
 2-5**



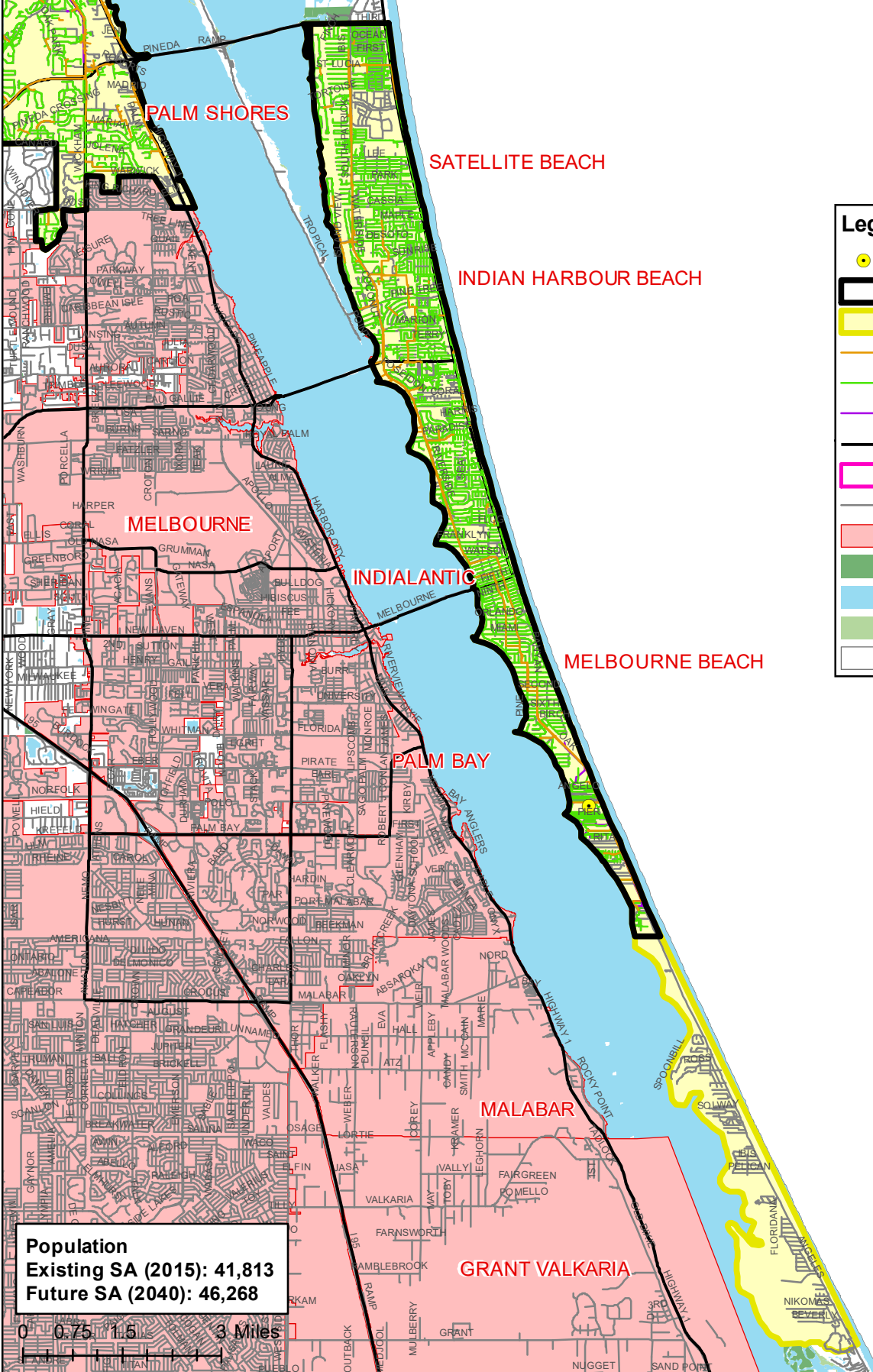
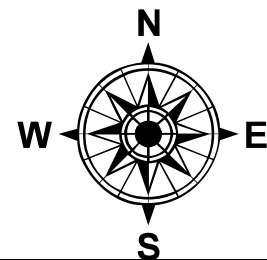
**Brevard County, Florida - CIP Projections
 Wastewater Service Area: Barefoot Bay**



May 27, 2020
 Data Source: Brevard County
 Utility Services Department, 2020.



**FIGURE
 2-6**



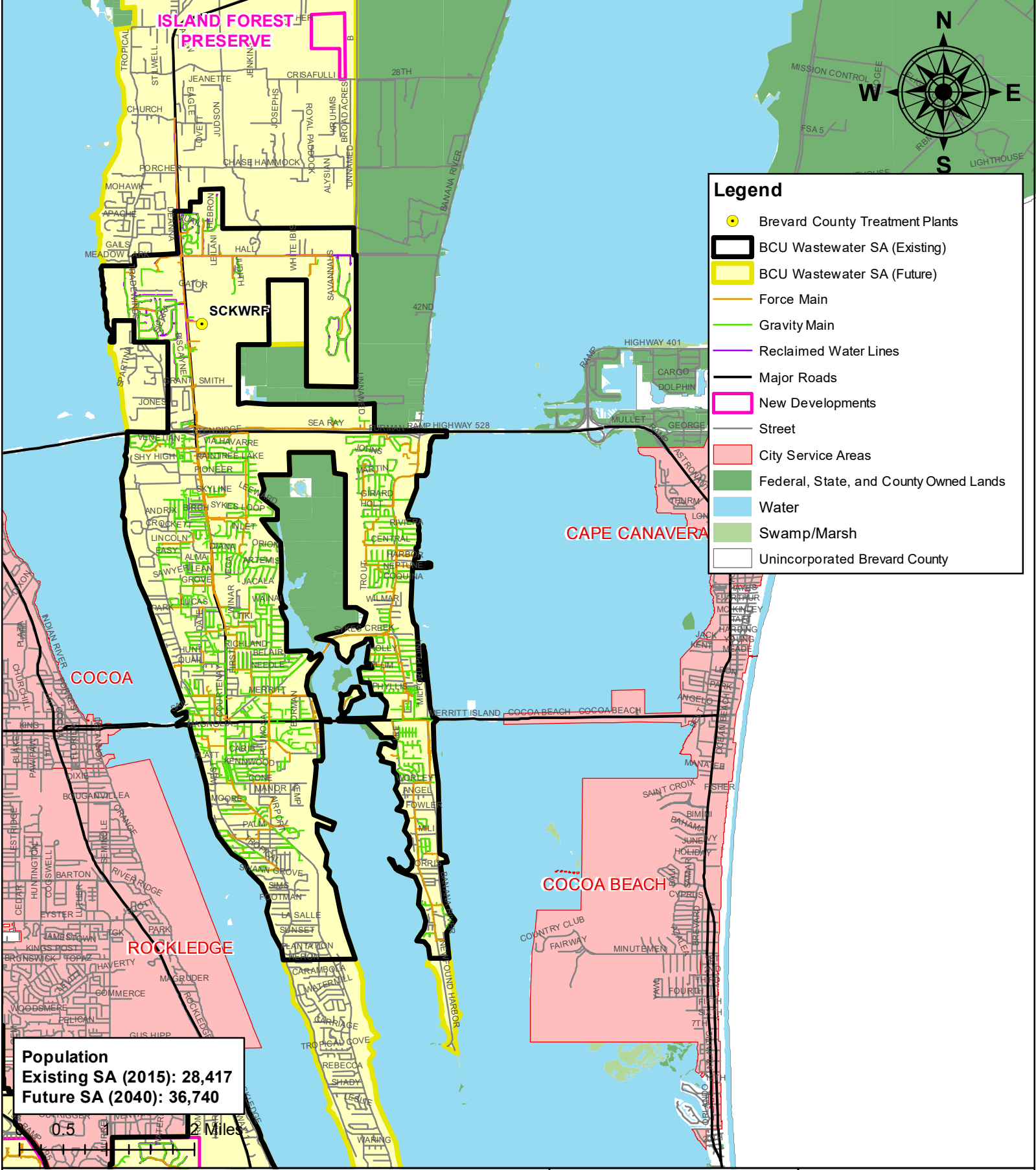
**Brevard County, Florida - CIP Projections
Wastewater Service Area: South Beaches**



**FIGURE
2-7**



Data Source: Brevard County
Utility Services Department,
2020.



Brevard County, Florida - CIP Projections
Wastewater Service Area: Sykes Creek



May 27, 2020
Data Source: Brevard County
Utility Services Department, 2020.



FIGURE
2-8

3.0 EXISTING COUNTY UTILITY INFRASTRUCTURE AND CAPACITIES

3.1 EXISTING WATER TREATMENT INFRASTRUCTURE

3.1.1 Water Supply and Treatment Capacity

Brevard County provides potable drinking water to customers in the North Brevard and Barefoot Bay service areas. Both water treatment facilities obtain their source water from the surficial aquifer via groundwater wells. Treatment at both facilities include lime softening for the removal of calcium and magnesium hardness. Table 3-1 provides the permitted capacity for each facility as authorized by the St. Johns Water Management District via their consumptive use permit (CUP).

Table 3-1 Existing Source Water and CUP Limits			
WTP	CUP Authorization (MGY / MGD)	Water Source	Number of Wells
North Brevard	383.3 / 1.05	Groundwater from surficial aquifer	10 surficial aquifer wells (3 additional wells are proposed)
Barefoot Bay	291.72 / 0.80	Groundwater from surficial aquifer and Upper Floridan aquifers (UFA)	8 surficial aquifer wells and 2 UFA wells (Backup)

3.1.2 Transmission / Distribution System

According to the County's GIS, the existing potable water distribution system for North Brevard and Barefoot Bay consists of approximately 336,000 feet and 237,000 feet of water main, respectively. Additionally, the community of San Sebastian, located adjacent to Barefoot Bay, contains approximately 16,000 feet of water main. San Sebastian is included in this discussion as it will be included as part of the future service area boundary for Barefoot Bay.

Throughout the potable water service areas identified, the existing water mains are composed mostly of PVC pipe. However, according to GIS, there are piping segments of County owned water mains constructed of ductile iron, and HDPE. A summary of existing pipe materials, diameters, and lengths are provided in Table 3-2.

Table 3-2 Existing Potable Water Mains

Service Area	Pipe Material	Pipe Diameter (Inches)	Pipe Length (Feet)
North Brevard	PVC	< 4	17,045
		4	5,234
		6	163,134
		8	74,978
		10	10,480
		12	36,444
		16	3,884
		24	2,703
	DIP	6	1,264
		8	671
		10	8,802
		12	11,208
		24	424
Barefoot Bay	PVC	<4	98,553
		4	3,311
		6	74,561
		8	35,866
		10	23,874
		12	547
	HDPE	6	10
		8	336
		10	465
San Sebastian	PVC	4	3,937
		6	3,514
		8	8,461
	HDPE	8	369

3.2 EXISTING WASTEWATER INFRASTRUCTURE

Brevard County collects and treats wastewater in each of its six wastewater service areas. The following tables identify the existing infrastructure for collection, treatment, and effluent disposal of the County's wastewater flows.

3.2.1 Collection System

Table 3-3 Existing Gravity Mains			
Service Area	Pipe Material	Pipe Diameter (Inches)	Pipe Length (Feet)
North Brevard	PVC	8 to 10	32,967
	DIP	8	31
	VCP	8 to 10	52,457
Port St John	PVC	6 to 12	17,126
	DIP	8	645
	VCP	6 to 10	39,237
South Central	PVC	6 to 30	1,096,688
	DIP	8 to 30	2,143
	VCP	8 to 21	89,394
Barefoot Bay	PCV	6 to 18	48,769
	VCP	6 to 18	59,015
South Beaches	PVC	6 to 28	161,020
	DIP	8 to 24	7,331
	CIP	6 to 10	1,127
	VCP	6 to 30	733,915
Sykes Creek	ACP	10	77
	CIP	8 to 12	910
	DIP	8 to 12	2,088
	PVC	6 to 12	180,975
	VCP	6 to 15	378,126

Table 3-4 Existing Lift Stations

Service Area	Number of Lift Stations
North Brevard	16
Port St John	7
South Central	121
Barefoot Bay	16
South Beaches	55
Sykes Creek	77

Table 3-5 Existing Force Mains

Service Area	Pipe Material	Pipe Diameter (Inches)	Pipe Length (Feet)
North Brevard	CIP	4 to 6	12,104
	DIP	4 to 12	1,545
	HDPE	4 to 8	1,213
	PVC	4 to 14	55,476
Port St John	DIP	4 to 10	910,809
	HDPE	4 to 6	2,316
	PVC	4 to 10	34,643
South Central	ACP	4 to 6	7,964
	DIP	4 to 30	21,324
	HDPE	4 to 10	12,239
	PVC	4 to 30	403,084
Barefoot Bay	ACP	6	12
	PVC	4	3,137
South Beaches	ACP	8	2,744
	CIP	4 to 30	16,432
	DIP	4 to 30	62,421
	HDPE	4 to 20	7,559
	PVC	4 to 24	107,532

Table 3-5 Existing Force Mains

Service Area	Pipe Material	Pipe Diameter (Inches)	Pipe Length (Feet)
Sykes Creek	ACP	4 to 8	17,326
	CIP	6	549
	DIP	4 to 24	34,362
	HDPE	4 to 6	8,755
	PCCP	24	7,638
	PVC	4 to 24	132,180

3.2.2 Wastewater Treatment Facilities

Table 3-6 Existing Wastewater Treatment Facilities

Service Area	Permitted Capacity (MGD, AADF)	Current Influent Flows (MGD, AADF) ²	Remaining Service Capacity (MGD, AADF)
North Brevard	0.99	0.28	0.71
Port St. John	0.50	0.44	0.06
South Central	12.00 ¹	4.40	7.60
Barefoot Bay	0.90	0.79	0.11
South Beaches	8.00	6.63	1.37
Sykes Creek	6.00	3.37	2.63

¹ Recently expanded plant capacity will be permitted to 12 MGD in 2021

² Current influent flow data provided by Brevard County Utilities

3.2.3 Effluent Disposal

Table 3-7 Existing Effluent Disposal	
Service Area	Disposal
North Brevard	Irrigation of golf course and residential irrigation of Indian River Preserve. Discharge to on-site RIBs during wet weather
Port St. John	RIB & Reuse
South Central	Reuse & Wetland
Barefoot Bay	Spray field of community golf course and 320-acre site spray. Infrequent discharge of Sottile Canal. Future plans to irrigate adjacent sod farm.
South Beaches	Reuse & DIW
Sykes Creek	Reuse & DIW

4.0 FUTURE WATER AND WASTEWATER TREATMENT DEMANDS

4.1 FUTURE WATER DEMAND AND TREATMENT CAPACITY

As per Article IV, Division 1, Section 62-602(d)(3) of Brevard County's municipal code, the County's estimation for the potable water demand by one single-family residential dwelling unit is 250 gallons per equivalent unit per day. One single-family residence equals one Equivalent Dwelling Unit (EDU). For the purposes of this evaluation, it is assumed that each EDU contains 1.8 people.

To determine the future daily water demand for the North Brevard and Barefoot Bay service areas, the estimated 2040 population (from Table 2-1) is divided by 1.8 people per household to obtain the number of EDUs. The EDUs are then multiplied by 250 gallons per day to obtain the overall service area water demand. As shown in Table 4-1, the water demands for each service area are provided and compared to the permitted water treatment plant capacity to determine the additional capacity required. For each potable water service area, an additional demand of 0.25 MGD was added to account for increased future fire flow. According to the rightmost column in Table 4-1, the current capacity of the existing water treatment plants would require treatment expansions to encompass the anticipated 2040 water demands.

Table 4-1 Future Water Treatment Capacity Required

Service Area	Estimated 2040 Population	Estimated EDUs	Estimated 2040 Demand (MGD)	Additional Estimate for Fire Flow (MGD)	Current CUP Permit (MGD)	Additional Treatment Capacity Needed (MGD)
North Brevard	11,302	6,279	1.57	0.25	1.05	0.77 *
Barefoot Bay	10,372	5,762	1.44	0.25	0.80	0.89 *

* For conservative budgeting purposes, the additional treatment capacity will be rounded to 1 MGD.

4.2 FUTURE WASTEWATER DEMAND AND TREATMENT CAPACITY

As per Article IV, Division 1, Section 62-602(d)(2) of Brevard County's municipal code, the County's estimation for the volume of sanitary sewer produced by one single-family residential dwelling unit is 200 gallons per day. Multiplying the future EDUs by 200 gallons per day provides the estimated 2040 annual average daily flows for each wastewater service area shown in Table 4-2. A comparison was further made with the current FDEP permitted capacity to determine if any service area required additional future treatment capacity. As shown in Table 4-2, only three service areas require additional treatment capacity based on the 2040 projections.

Table 4-2 Future Wastewater Treatment Capacity Required

Service Area	Estimated 2040 Population	Estimated EDUs	Estimated 2040 Flow (MGD, AADF)	Current Permitted Capacity (MGD, AADF)	Additional Treatment Capacity Required
North Brevard	11,874	6,597	1.32	0.99	0.33 *
Port St. John	19,102	10,612	2.12	0.50	1.62 *
South Central	82,342	45,746	9.15	12	None
Barefoot Bay	10,391	5,773	1.15	0.90	0.25 *
South Beaches	46,268	25,704	5.14	8.00	None
Sykes Creek	36,740	20,411	4.08	6.00	None

* For conservative budgetary purposes, the treatment capacity will be rounded up to the next quarter MGD.

5.0 ESTIMATED FUTURE INFRASTRUCTURE AND COST

The following section describes the water and wastewater infrastructure and conceptual budgetary cost recommended to provide service to customers within the future boundaries of the water and wastewater service areas. Assumptions made in the development of the costs are as follows:

1. All future water mains and force mains will be installed in greenspace areas within existing right of ways. No cost is included for repaving or resurfacing of roadways.
2. Rehabilitation to existing treatment facilities is not included in this evaluation. No due diligence has been conducted as part of this report to determine improvements of existing facilities. Only new treatment expansion is considered for budgetary purposes.
3. The construction cost of all future gravity sanitary sewers and applicable lift stations will be paid by the developer.
4. A contingency amount of 40% has been applied to each estimate as per recommended guidelines by AACE International Recommended Practice No. 17R-97, Cost Estimate Classification System.

5.1 NORTH BREVARD

5.1.1 Potable Water System

As presented in Table 4-1, with the expected growth in the North Brevard water service area, the additional treatment required and addition to the existing consumptive use permit is approximately 1 MGD. To supplement this volume, it is recommended that the County construct two new RO supply wells.

Based on the future service area boundary, the recommended expansion of the North Brevard potable water distribution system is principally within the area east of I-95, south of Grantline Road, and north of E Main Street. The budgetary conceptual cost for construction of the recommended future water improvements are shown in Table 5-1.

Table 5-1 North Brevard Proposed Water Improvements

Description	Quantity	Unit of Measure	Constructed Unit Cost	Cost
6" FM	19,477	FT	\$75	\$1,460,775
8" FM	9,600	FT	\$95	\$912,000
Additional WTP Capacity	1,000,000	Gal	\$6 per gallon	\$6,000,000
RO Wells	2	EA	\$2M	\$4,000,000
Construction Subtotal				\$12,373,000
Design (10% of Construction)				\$1,238,000
CEI (8% of Construction)				\$990,000
Contingency (40%)				\$5,841,000
Project Cost				\$20,442,000

5.1.2 Wastewater System

The cost for additional force mains in the east and southwest areas of North Brevard not currently serviced are provided in Table 5-2. A new force main along Old Dixie Highway would function as a trunk line to deliver sanitary sewer from roads running east off of US-1. The budgetary cost estimate additionally includes the addition of 6 new lift stations to accommodate the expansion of the collection system.

Table 5-2 North Brevard Proposed Wastewater Improvements

Description	Quantity	Unit of Measure	Constructed Unit Cost	Cost
8" FM	61,200	FT	\$95	\$5,816,000
Additional WWTP Capacity	500,000	Gal	\$7	\$3,500,000
New Lift Stations *	6	EA	\$1M	\$6,000,000
Construction Subtotal				\$15,316,000
Design (10% of Construction)				\$1,532,000
CEI (8% of Construction)				\$1,226,000
Contingency (40%)				\$7,230,000
Project Cost				\$25,304,000

* Unit cost includes a conservative assumption for land acquisition.

5.2 PORT ST. JOHN

5.2.1 Wastewater System

Based on the expected growth in population, it is anticipated that the Port St John wastewater service area will require an additional 1.75 MGD of treatment capacity. Since the existing Port St John WWTP is located in the east side of the City, it is recommended that the County consider construction of a new treatment facility in the north western area where future growth is expected. For effluent disposal, it is recommended that the County consider the construction of a deep injection well.

To facilitate the collection system, additional force mains on Curtis Blvd and Gibson Parkway are recommended. In addition, installation of force main on Corsica Blvd (west of I-95) would extend the collection system to the western service area boundary.

The budgetary cost for the proposed wastewater improvements in Port St John are presented in Table 5-3.

Table 5-3 Port St John Proposed Wastewater Improvements				
Description	Quantity	Unit of Measure	Constructed Unit Cost	Cost
6" FM	4,600	FT	\$75	\$345,000
8" FM	20,000	FT	\$95	\$1,901,000
Additional WWTP Capacity	1,750,000	Gal	\$7	\$12,250,000
New Deep Injection Well	1	EA	\$4M	\$4,000,000
Construction Subtotal				\$18,496,000
Design (10% of Construction)				\$1,850,000
CEI (8% of Construction)				\$1,480,000
Contingency (40%)				\$8,731,000
Project Cost				\$30,557,000

5.3 SYKES CREEK

5.3.1 Wastewater System

New force main in the Sykes Creek service area is recommended on the north and south of the existing wastewater service boundary. The force main would be an extension to the existing force main on Courtney Parkway. In addition, new force main is recommended on Chase Hammock Road to collect wastewater from new developments in the Northeast area. The cost for the proposed improvements are shown in Table 5-4.

Table 5-4 Port Sykes Creek Proposed Wastewater Improvements				
Description	Quantity	Unit of Measure	Constructed Unit Cost	Cost
6" FM	16,700	FT	\$75	\$1,253,000
8" FM	20,400	FT	\$95	\$1,938,000
Construction Subtotal				\$3,191,000
Design (10% of Construction)				\$320,000
CEI (8% of Construction)				\$256,000
Contingency (40%)				\$1,507,000
Project Cost				\$5,274,000

5.4 SOUTH CENTRAL

5.4.1 Wastewater System

The South Central service area is the highly built out of all of the County's service areas with future room to expand westward in Viera. The County has proactively expanded the South Central WWTP in preparation for the anticipated future growth in this area. Force main, however, will be required in areas of future development such as the expansion of the Pineda Causeway west of I-95 and an undeveloped area west of Adamson Road in the northwest area. The cost for the proposed force mains is shown in Table 5-5.

Table 5-5 South Central Proposed Wastewater Improvements

Description	Quantity	Unit of Measure	Constructed Unit Cost	Cost
6" FM	4,000	FT	\$75	\$300,000
8" FM	12,000	FT	\$95	\$1,140,000
New Lift Stations *	3	EA	\$1M	\$3,000,000
New Deep Injection Well	1	EA	\$4M	\$4,000,000
Construction Subtotal				\$8,440,000
Design (10% of Construction)				\$844,000
CEI (8% of Construction)				\$676,000
Contingency (40%)				\$3,984,000
Project Cost				\$13,944,000

* Unit cost includes a conservative assumption for land acquisition.

5.5 SOUTH BEACHES

5.5.1 Wastewater System

To provide wastewater collection service to customers on the south end of the South Beaches service area, an extension of the existing 8-inch force main on A1A is recommended. This extension will allow existing residents and new developments to connect to the existing system. Construction of four new sanitary sewer lift stations have been included for expansion of the collection system. The budgetary cost for this improvement is presented in Table 5-6.

Table 5-6 South Beaches Proposed Wastewater Improvements

Description	Quantity	Unit of Measure	Constructed Unit Cost	Cost
8" FM	40,000	FT	\$95	\$3,800,000
New Lift Stations *	4	EA	\$1M	\$4,000,000
Construction Subtotal				\$7,800,000
Design (10% of Construction)				\$780,000
CEI (8% of Construction)				\$624,000
Contingency (40%)				\$3,682,000
Project Cost				\$12,886,000

* Unit cost includes a conservative assumption for land acquisition.

5.6 BAREFOOT BAY

5.6.1 Potable Water System

Improvements to the Barefoot Bay potable water service area include the addition of a new 1 MGD water treatment RO facility and two RO water supply wells. In addition, the improvements include the installation of 8-inch PVC water mains to service the San Sebastian area with potable water. Installation of the water mains is proposed on Micco Rd, Fleming Grant Rd, and Wagon Master Trail to provide connection for future developments. The cost for this project is shown in Table 5-7.

Table 5-7 Barefoot Bay Proposed Water Improvements				
Description	Quantity	Unit of Measure	Constructed Unit Cost	Cost
8" WM	28,300	FT	\$95	\$2,689,000
Additional WTP Capacity	1,000,000	Gal	\$6	\$6,000,000
New RO Wells	2	EA	\$2M	\$4,000,000
Construction Subtotal				\$12,689,000
Design (10% of Construction)				\$1,269,000
CEI (8% of Construction)				\$1,016,000
Contingency (40%)				\$5,990,000
Project Cost				\$20,964,000

5.6.2 Wastewater System

Wastewater service for San Sebastian would be treated at the existing Barefoot Bay WWTP which would require an additional treatment capacity of 0.5 MGD based on the expected population in 2040. It is recommended that the County consider the addition of 8" force mains along Fleming Grant Road, Riverview Drive, and Central Avenue for connections to future developments in addition to three new sanitary sewer lift stations. The cost for the addition of the proposed force mains is presented in Table 5-8.

Table 5-8 Barefoot Bay Proposed Wastewater Improvements

Description	Quantity	Unit of Measure	Constructed Unit Cost	Cost
8" FM	27,500	FT	\$95	\$2,613,000
Additional WTP Capacity	500,000	Gal	\$7	\$3,500,000
New Lift Stations *	3	EA	\$1M	\$3,000,000
Construction Subtotal				\$9,113,000
Design (10% of Construction)				\$912,000
CEI (8% of Construction)				\$730,000
Contingency (40%)				\$4,302,000
Project Cost				\$15,057,000

* Unit cost includes a conservative assumption for land acquisition.



3790 Dixie Highway NE, Suite D
Palm Bay, FL 32905
321.728.3389
www.wadetrim.com

Palm Bay • Miami • Tampa