



# Agenda Report

2725 Judge Fran Jamieson  
Way  
Viera, FL 32940

## Consent

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F.7.

7/23/2024

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### Subject:

Brevard County Wastewater Treatment Plan and an Onsite Sewage Treatment and Disposal System (OSTDS) Remediation Plan per Florida Statute 403.067(7)(a)9 - Clean Waterways Act

### Fiscal Impact:

The Brevard County Wastewater Treatment Plan and an Onsite Sewage Treatment and Disposal System (OSTDS) Remediation Plan has no fiscal impact, however it identifies an unfunded cost of \$335,000,000 to meet the mandates of the 2023 Environmental Protection Act (HB 1379).

### Dept/Office:

Utility Services / Natural Resources

### Requested Action:

It is requested the Board of County Commissioners approve the Brevard County Wastewater Treatment Plan and an Onsite Sewage Treatment and Disposal System (OSTDS) Remediation Plan (see attachment) to be submit to the Florida Department of Environmental Protection for compliance with Florida Statute 403.067(7)(a)9 - Clean Waterways Act.

### Summary Explanation and Background:

On June 2023, the Florida Department of Environmental Protection (FDEP) issued a Final Order on the Clean Waterways Act (Senate Bill 712 2020) which outlines requirements under Florida Statute Subparagraph 403.067(7)(a)9 specifying that local governments within a Basin Management Action Plan (BMAP) must develop a wastewater treatment plan and an onsite sewage treatment and disposal system (OSTDS) remediation plan if the wastewater treatment facilities or onsite sewage treatment and disposal systems have been identified as contributors of at least 20 percent of point source, or non-point source, nutrient (nitrogen and phosphorus) pollution. Draft plans were required to be submitted to FDEP no later than February 1, 2024 for review. Final plans addressing any FDEP comments on the drafts are due August 1, 2024.

Within Brevard County there are three BMAP areas identified in the Final Order:

- Banana River Lagoon
- North Indian River Lagoon
- Central Indian River Lagoon.

To comply with Florida Statute 403.067(7)(a)9, the County must submit a wastewater treatment plan as well as an onsite sewage treatment and disposal system remediation plan identifying projects to reduce nutrient loadings in these areas. These plans have been drafted and are incorporated into the Draft Clean Waterways Compliance BMAP Plan.

The treatment plant portion of the plan outlines existing conditions for treatment plants as well as projected conditions including wastewater treatment capacity and treatment projects to reduce the nitrogen and phosphorus in the effluent of the County's six treatment plants. Brevard County owns and operate the following wastewater treatment facilities (WWTF):

- Barefoot Bay Water Reclamation Facility
- South Beaches Wastewater Treatment Facility
- South Central Mainland Wastewater Treatment Facility
- Sykes Creek Regional Wastewater Treatment Facility
- North Regional (Mims) Wastewater Treatment Facility
- Port St John Wastewater Treatment Facility

The OSTDS portion of the plan provides information on existing septic tanks within the BMAP watersheds as well as projected septic system densities and septic tank elimination or enhancement projects to reduce the nitrogen entering the BMAPs through groundwater or runoff. The current Utilities Department Capital Improvement Plan and Natural Resources Management Department Save Our Indian River Lagoon Project Plan meet many of the mandated requirements of this plan.

The attached plan complies with Florida Statute 403.067(7)(a)9 - Clean Waterways Act.

### **Clerk to the Board Instructions:**

E-mail Clerk's Memo to [karina.perez@brevardfl.gov](mailto:karina.perez@brevardfl.gov) and mail original Memo to Utility Services Department and mail a copy to Natural Resources.



Kimberly Powell, Clerk to the Board, 400 South Street • P.O. Box 999, Titusville, Florida 32781-0999

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July 24, 2024

**M E M O R A N D U M**

**TO:** Edward Fontanin, Utility Services Director

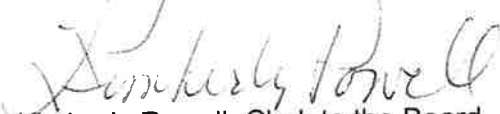
**RE:** Item F.7., Brevard County Wastewater Treatment Plan and Onsite Sewage Treatment and Disposal System (OSTDS) Remediation Plan per Florida Statute 403.067(7)(a)9 – Clean Waterways Act

The Board of County Commissioners, in regular session on July 23, 2024, approved the Brevard County Wastewater Treatment Plan and OSTDS Remediation Plan to be submitted to the Florida Department of Environmental Protection for compliance with Florida Statute 403.067(7)(a)9 - Clean Waterways Act.

Your continued cooperation is always appreciated.

Sincerely,

BOARD OF COUNTY COMMISSIONERS  
RACHEL M. SADOFF, CLERK

  
Kimberly Powell, Clerk to the Board

/ns

**cc:** Natural Resources  
Finance  
Budget

# BREVARD COUNTY

## CLEAN WATERWAYS COMPLIANCE

### FINAL BMAP PLAN

July 2024

Prepared by:  
**Kimley»Horn**

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## 1.0 INTRODUCTION

### 1.1 BACKGROUND

A portion of the 156-mile Indian River Lagoon (IRL) estuary is located within Brevard County, along the east coast of Florida. Due to the large geographical area of the IRL and the hydrological differences throughout the watershed, the Florida Department of Environmental Protection (FDEP) has divided the IRL into three subbasins, the Central Indian River Lagoon, North Indian River Lagoon, and Banana River Lagoon.

These subbasins have been designated by the State of Florida as an area requiring a basin management action plan (BMAP). A BMAP is a water quality restoration plan which is prepared in accordance with Section 403.067(7) Florida Statutes. These areas are designed to reduce nutrient, nitrogen and phosphorous, loading through an adopted Total Maximum Daily Load (TMDL).

Florida Statute Subparagraph 403.067(7)(a)9 specifies that local governments within a BMAP must develop a wastewater treatment plan as well as an onsite sewage treatment and disposal system remediation plan if the wastewater treatment facilities or onsite sewage treatment and disposal systems have been identified as contributors of at least 20 percent of point source, or non-point source, nutrient (nitrogen and phosphorus) pollution. BMAPs are also required if the FDEP determines remediation is necessary to meet total maximum daily load limits for nutrients such as nitrogen (TN) and phosphorus (TP). The following sections contain Brevard County's Wastewater Treatment Plan for nutrient reduction as required by the aforementioned Statute.

## 2.0 INDIAN RIVER LAGOON BASIN MANAGEMENT ACTION PLAN

The Indian River Lagoon is an estuary located along the east coast of Florida. There are impaired portions of the estuary within Volusia, Brevard, Indian River, and St. Lucie counties. Due to the large geographical extent of the impaired waterbody, the IRL was divided into three subbasins, the Banana River, North Indian River, and Central Indian River Lagoons, as shown in **Figure 2-1**.

The TMDLs for the IRL were established in March of 2009. These TMDLs were set to restore water quality to conditions necessary for seagrass regrowth at water depths where seagrass historically grew within the lagoon. Seagrass growing conditions have changed over the years due to pollution and runoff which contribute to conditions that prevent seagrass from growing in deeper waters. A summary of the nutrient loading targets for each BMAP area is presented below in **Table 2-1**.

**TABLE 2-1 SUMMARY OF BMAP NUTRIENT LOADINGS**

BMAP Area	TN Target Loading (lbs/ac/yr)	TP Target Loading (lbs/ac/yr)
North Indian River Lagoon	2.88	0.368
Central Indian River Lagoon	2.90	0.574
Banana River Lagoon	2.18	0.374

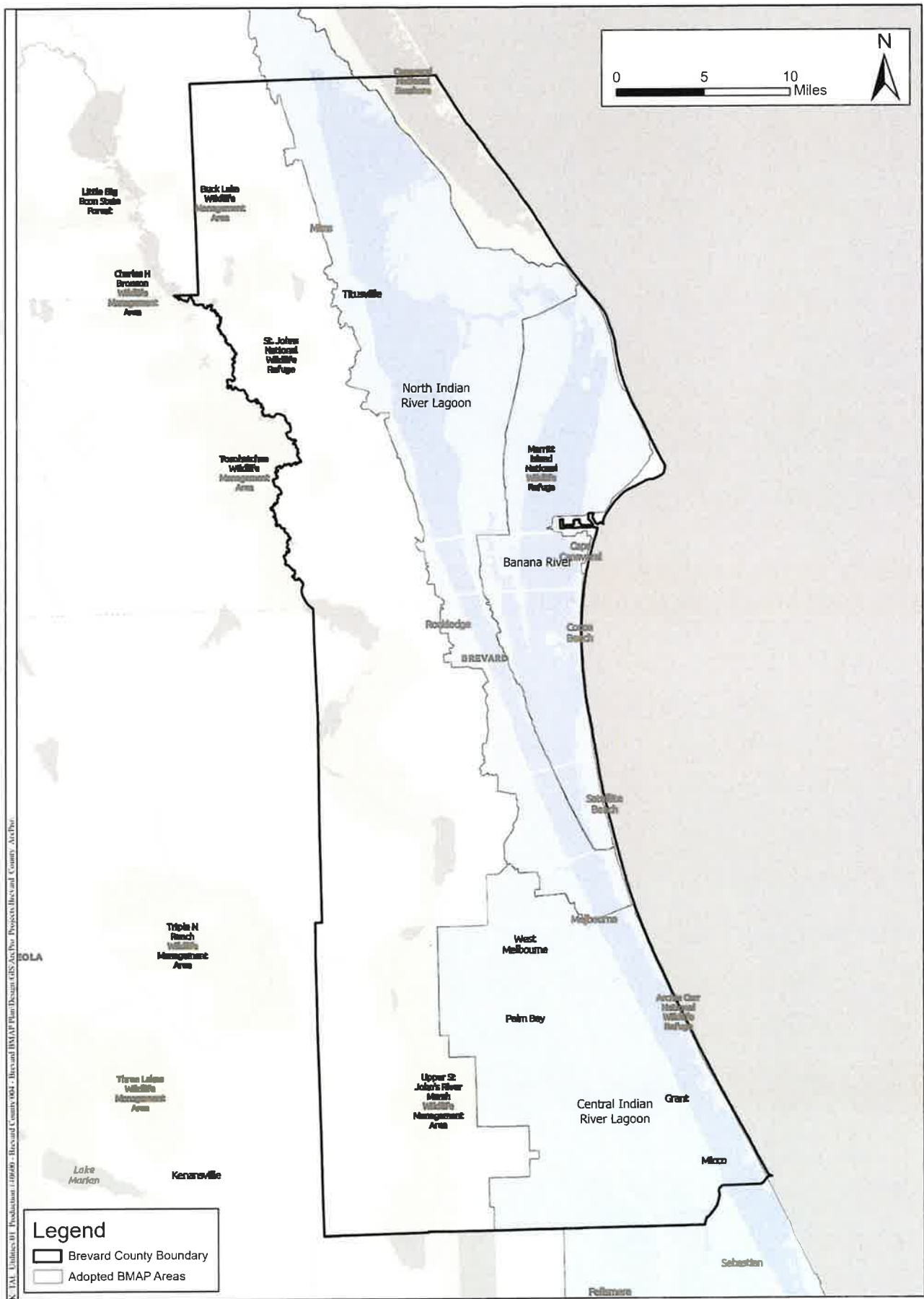
Source: TMDL Report Nutrient and Dissolved Oxygen TMDLs for the Indian River Lagoon and Banana River Lagoon, March 2009

## 2.1 BANANA RIVER LAGOON BMAP

The Banana River Lagoon is located between Cape Canaveral and Merritt Island and the southern portion of the lagoon connects to the Indian River Lagoon. The Banana River Lagoon has an outlet to the Atlantic Ocean through the lock at Port Canaveral. In addition to the TMDLs established for the IRL, additional TMDLs were established for the Sykes Creek/Barge Canal tributary of the Banana River Lagoon. The nutrient limits for the Banana River Lagoon BMAP are presented below in **Table 2-2**. In 2021 the BMAP was updated, as part of this update total nitrogen reductions for each stakeholder were established. Based on this update, Brevard County is required to reduce TN by 45,425 lb/yr within the Banana River Lagoon BMAP.

**TABLE 2-2 SUMMARY OF BANANA RIVER LAGOON BMAP NUTRIENT LOADINGS**

Entity Contributions	TN Starting Load (lb/yr)	Mandated TN Percent Reduction	TN Reduction (lb/yr)
Brevard County	54,981	82.6	45,425
All other Entities Except Natural Land	102,938	83.4	85,823
<b>Total TN Load in BMAP</b>	<b>271,752</b>	<b>48.3</b>	<b>131,245</b>



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Source: ESRI, FDOT, Muxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

**Figure 2-1 BMAP Areas**

**Brevard County  
BMAP Plan**

## 2.2 NORTH INDIAN RIVER LAGOON BMAP

The North Indian River Lagoon extends from the Turnbull Creek in Volusia County to the Melbourne Causeway in Brevard County. In addition to the TMDLs adopted for the main Indian River Lagoon, in 2013 TMDLs were adopted for two tributaries of the North Indian River Lagoon, Addison Creek and the Eau Gallie River. A summary of the TMDLs for the North Indian River Lagoon BMAP are presented below in **Table 2-3**. In 2021 the BMAP was updated, as part of this update total nitrogen reductions for each stakeholder were established. Based on this update Brevard County is required to reduce TN by 92,265 lb/yr within the North Indian River Lagoon BMAP.

**TABLE 2-3 SUMMARY OF NORTH INDIAN RIVER LAGOON BMAP NUTRIENT LOADINGS**

Entity Contributions	TN Starting Load (lb/yr)	Mandated TN Percent Reduction	TN Reduction (lb/yr)
Brevard County	178,194	51.8	92,265
All other Entities Except Natural Land	280,338	57.1	159,961
<b>Total TN Load in BMAP</b>	<b>759,084</b>	<b>33.2</b>	<b>252,226</b>

## 2.3 CENTRAL INDIAN RIVER LAGOON BMAP

The Central Indian River Lagoon is located between the Melbourne Causeway and the Fort Pierce Inlet, it includes areas drained by the Fort Pierce Farms Canal network and the C-25 Canal. In addition to the TMDLs adopted for the main Indian River Lagoon, in 2013 TMDLs were adopted for several tributaries of the Central Indian River Lagoon. A summary of the TMDLs for the Central Indian River Lagoon BMAP are presented in **Table 2-4**. In 2021 the BMAP was updated, as part of this update total nitrogen reductions for each stakeholder were established. Based on this update, Brevard County is required to reduce TN by 47,927 lb/yr within the Central Indian River Lagoon BMAP.

**TABLE 2-4 SUMMARY OF CENTRAL INDIAN RIVER LAGOON BMAP NUTRIENT LOADINGS**

Entity Contributions	TN Starting Load (lb/yr)	Mandated TN Percent Reduction	TN Reduction (lb/yr)
Brevard County	89,296	53.7	47,927
All other Entities Except Natural Land	1,512,439	38.4	580,801
<b>Total TN Load in BMAP</b>	<b>2,211,955</b>	<b>40.0</b>	<b>883,711</b>

## 3.0 WASTEWATER TREATMENT FACILITIES

### 3.1 BREVARD COUNTY WASTEWATER TREATMENT FACILITIES

Within Brevard County the Brevard County Utility Services (BCUS) owns and operates six (6) wastewater treatment facilities (WWTF), as shown in **Figure 3-1**. These facilities are located throughout Brevard County and have a combined permitted capacity of 28.38 MGD on an annual average daily flow (AADF) basis as shown in **Table 3-1**.

**TABLE 3-1 SUMMARY OF BREVARD COUNTY UTILITY DISTRICT WWTF**

Facility	Permit	Permitted Capacity (MGD AADF)
Barefoot Bay	FL0042293	0.90
North Regional (Mims)	FLA010263	0.99
Port St. John	FLA102750	0.49
South Beaches	FL0040622	8.00
South Central	FL0102679	12.00
Sykes Creek	FLA102695	6.00
<b>Total</b>		<b>28.38</b>

Discharge Monitoring Reports (DMRs) were compiled for the period of record, 2018 through October of 2023, and report the annual average daily flow for each facility as well as the average concentration of total nitrogen (TN) and total phosphorus (TP) in treated effluent for each facility. Processes utilized at each facility vary based on the treatment method and effluent management strategy which result in varying nutrient limits. A summary of each facility along with their permitted nutrient limit is provided in the subsections below.

Overall, BCUS has treated an average of 2.60 MGD AADF per year of wastewater between January 2018 and October 2023. A summary of the annual average daily flow of treated wastewater is provided in **Table 3-2**.

**TABLE 3-2 SUMMARY OF TREATED WASTEWATER ANNUAL AVERAGE DAILY FLOW**

Facility	2018 MGD AADF	2019 MGD AADF	2020 MGD AADF	2021 MGD AADF	2022 MGD AADF	2023 MGD AADF
Barefoot Bay	0.56	0.67	0.72	0.56	0.60	0.71
North Brevard	0.29	0.25	0.80	0.28	0.32	1.23
Port St. John	0.39	0.40	0.40	0.40	0.68	0.41
South Beaches	5.90	6.34	6.25	6.17	6.10	6.22
South Central	5.26	4.31	4.87	4.63	4.49	4.50
Sykes Creek	3.18	2.96	2.92	2.99	3.30	3.42





### 3.1.1 BAREFOOT BAY WWTF

Barefoot Bay Advanced WWTF, FDEP Permit FL0042293, is located in the southern portion of Brevard County and within the Central Indian River Lagoon BMAP area. The WWTF has a permitted capacity of 0.9 MGD AADF which consists of influent screening, flow equalization, two anoxic/aeration basins, secondary clarification, chemical feed systems, filtration, chlorination, dichlorination, and anerobic digestion of biosolids. This facility has one permitted surface water discharge (D-001) which has a capacity of 0.188 MGD AADF and discharges to the North Prong of the Sebastian River and the Micco Ditch system. Additionally, there is slow-rate public access reuse (R-001) which is permitted for 1.041 MGD AADF. Nutrient limits vary for the two effluent disposal systems and are presented below in **Table 3-3**.

**TABLE 3-3 BAREFOOT BAY ADVANCED WWTF PERMITTED NUTRIENT LIMITS**

Reuse or Disposal	Limit	Statistical Basis
D-001 Permitted TN	3.75 mg/L	Monthly Average
	4.50 mg/L	Weekly Average
	6.00 mg/L	Single Sample
	476.00 lb/yr	Annual Total
	Report lb/yr	Monthly Total
D-001 Permitted TP	1.25 mg/L	Monthly Average
	1.50 mg/L	Weekly Average
	2.00 mg/L	Single Sample
	78.00 lb.yr	Annual Total
	Report lb/yr	Monthly Total
R-001 Permitted TN	Report mg/L	Single Sample
R-001 Permitted TP	Report mg/L	Single Sample

From 2018 through October of 2023 the Barefoot Bay WWTF treated an average of 0.64 MGD AADF and had an annual average TN and TP concentrations of 13.38 mg/L and 3.06 mg/L respectively, at R-001, which correlates to 70.28 pounds per day (PPD) of TN and 16.06 PPD of TP. A summary of the annual average flows and nutrient concentrations for R-001 from 2018 through October of 2023 are provided in **Table 3-4**. Nutrient values were not reported for D-001; based on the R-001 reported TN and TP concentrations Barefoot Bay is in compliance with the permit limits.

**TABLE 3-4 BAREFOOT BAY ADVANCED WWTF SUMMARY OF FLOWS AND NUTRIENT CONCENTRATIONS**

Year	Flow (MGD AADF)	R-001 TN (mg/L)	R-001 TN (PPD)	TP (mg/L)	TP (PPD)
2018	0.56	11.91	55.19	3.52	16.3
2019	0.67	11.22	62.47	2.98	16.59
2020	0.72	9.55	57.28	2.82	16.89
2021	0.56	15.82	73.64	3.14	14.60
2022	0.60	16.69	83.53	3.18	15.89
2023	0.71	15.11	89.60	2.71	16.07
<b>Average</b>	<b>0.64</b>	<b>13.38</b>	<b>70.28</b>	<b>3.06</b>	<b>16.06</b>

Based on permit FL0042293, nutrient limits are only set for D-001, during the period of record there were no discharges to D-001. Based on the permitted nutrient limits the WWTF is in compliance, however, total nitrogen levels observed in the R-001 discharge are in excess of the permitted limits for D-001 in both concentration and pounds per year. It should also be noted that due to Senate Bill 64, all surface water discharges are required to be eliminated by January 1, 2032.

### 3.1.2 NORTH REGIONAL WWTF

The North Regional WWTF, FDEP Permit FLA010263, is located in the northern part of the County and is adjacent to the North Indian River Lagoon BMAP area. The WWTF is a 0.99 MGD AADF extended aeration oxidation ditch wastewater treatment facility. The treatment process consists of dual carousels, dual secondary clarifiers, dual flocculators, dual tertiary filters, chemical feed, a reuse storage tank and pump station, as well as chlorination and biosolids dewatering. The facility has 1.25 MGD AADF permitted capacity for slow-rate public access reuse (R-001) as well as a 0.75 MGD AADF permitted capacity rapid infiltration basin system (R-002). The nutrient limits for the public access reuse system as well as the rapid infiltration basin system is presented below in **Table 3-5**.

**TABLE 3-5 NORTH REGIONAL PERMITTED NUTRIENT LIMITS**

Reuse or Disposal	Limit	Statistical Basis
R-001 Permitted TN	Report mg/L	Single Sample
	Report mg/L	Annual Average
R-001 Permitted TP	Report mg/L	Single Sample
	Report mg/L	Annual Average
R-002 Permitted TN	12.00 mg/L	Single Sample



A review of the DMRs for the period of record found that the North Regional WWTF treated an average of 0.53 MGD AADF and had an average annual TN concentration of 2.53 mg/L (6.19 PPD) along with an annual average TP concentration of 4.95 mg/L (12.08 PPD). A summary of flows and nutrient concentrations is provided below in **Table 3-6**. In 2022 there was not a single sample of TN above 12.00 mg/L indicating that the North Regional WWTF was in compliance with TN permit limits.

**TABLE 3-6 NORTH REGIONAL SUMMARY OF FLOWS AND NUTRIENT CONCENTRATIONS**

Year	Flow (MGD)	R-001 TN (mg/l)	R-001 TN (PPD)	R-002 N (mg/l)	R-002 N (PPD)	TP (mg/l)	TP (PPD)
2018	0.29	9.36	22.84	4.98	12.14	4.03	9.84
2019	0.25	9.01	18.81	3.08	6.42	4.73	9.88
2020	0.80	9.83	24.18	3.13	7.71	4.54	11.17
2021	0.28	10.58	25.10	1.14	2.71	7.01	16.64
2022	0.32	9.65	25.35	1.52	3.98	5.37	14.10
2023	1.23	8.30	22.08	1.36	3.62	3.99	10.62
<b>Average</b>	<b>0.53</b>	<b>9.45</b>	<b>23.08</b>	<b>2.53</b>	<b>6.74</b>	<b>4.95</b>	<b>12.08</b>

On September 29, 2023, FDEP conducted an inspection of the North Regional WWTF, based on this inspection the facility was determined to be in compliance with FDEP rules and regulations. However, this inspection did note a nutrient exceedance for R-002 on July 31, 2023, for Nitrogen, Nitrate, Total (as N). Although nitrogen does not need to be reported to the FDEP for R-001, total nitrogen concentrations were observed to be higher than the permitted limits for R-002.

### 3.1.3 PORT ST. JOHN WWTF

The Port St. John WWTF, FDEP Permit FLA102750, is located in the central portion of the County and has service area within and adjacent to the North Indian River Lagoon BMAP area. This WWTF has a design capacity of 0.50 MGD AADF and a permitted capacity of 0.49 MGD AADF. The treatment process consists of conventional contact stabilization beyond secondary domestic wastewater treatment utilizing influent screening, contact and reaeration, secondary clarification, chemical feed, filtration, chlorination, and aerobic digestion of biosolids. Treated effluent is discharged through a 0.25 MGD AADF slow-rate public access reuse system (R-001) or a 0.356 MGD AADF rapid infiltration basin system (R-002). The nutrient limits for R-001 and R-002 are presented below in **Table 3-7**.

**TABLE 3-7 PORT ST. JOHN WWTF PERMITTED NUTRIENT LIMITS**

Reuse or Disposal	Limit	Statistical Basis
R-001 Permitted TN	Report mg/L	Annual Average
	Report mg/L	Monthly Average
R-001 Permitted TP	Report mg/L	Annual Average
	Report mg/L	Monthly Average
R-002 Permitted TN	12.00 mg/L	Single Sample

For the period of record, the Port St. John WWTF treated an average of 0.45 MGD AAD. The treated effluent had an average annual TN concentration of 9.32 mg/L along with an annual average TP concentration of 0.95 mg/L. A summary of flows and nutrient concentrations are provided below in **Table 3-8**.

**TABLE 3-8 PORT ST. JOHN WWTF SUMMARY OF FLOWS AND NUTRIENT CONCENTRATIONS**

Year	Flow (MGD)	R-001 TN (mg/l)	R-001 TN (PPD)	R-002 TN (mg/l)	R-002 (PPD)	TP (mg/l)	TP (PPD)
2018	0.39	11.95	38.71	2.07	6.69	1.30	4.21
2019	0.40	10.65	35.57	2.97	9.92	1.00	3.34
2020	0.40	9.38	31.54	3.10	10.43	1.14	3.84
2021	0.40	9.29	30.74	1.70	5.62	0.67	2.21
2022	0.68	11.81	42.63	1.03	3.70	1.19	4.30
2023	0.41	2.84	9.80	0.67	2.30	0.41	1.42
<b>Average</b>	<b>0.45</b>	<b>9.32</b>	<b>31.56</b>	<b>1.92</b>	<b>6.51</b>	<b>0.95</b>	<b>3.22</b>

A FDEP inspection was completed on November 8, 2019, this inspection found nitrogen exceedances for R-002 in December 2018. There has not been a nitrogen exceedance since April of 2020. At the time of this report the Port St John WWTF is in compliance for total nitrogen and total phosphorus concentrations. Although nitrogen does not need to be reported to the FDEP for R-001, total nitrogen concentrations were observed to be higher than the permitted limits for R-002.

### 3.1.4 SOUTH BEACHES WWTF

The South Beaches WWTF, FDEP Permit FL0040622, is located in the southern portion of the County. The South Beaches WWTF service area is within the Central Indian River Lagoon, North Indian River Lagoon, and Banana River BMAP areas. The WWTF is an 8.0 MGD AADF activated sludge wastewater treatment facility. The treatment process consists of two contiguous wastewater treatment facilities, a 6.0 MGD dual

rain carrousel oxidation ditch and a 2.0 MGD activated sludge plant. The two plants are connected in parallel with mechanical influent screening, grit removal, aeration, clarification, chemical feed facilities, disinfection, tertiary filtration, dichlorination, and dewatering of biosolids. Treated effluent can be discharged through a 0.11 MGD AADF surface water discharge (D-001) to the Indian River Lagoon, can be sent to an 8.0 MGD AADF underground injection well system (U-001), or can be utilized in a 3.0 MGD AADF slow-rate public access reuse system (R-001). The TN and TP limits for the effluent discharge systems are presented below in **Table 3-9**.

**TABLE 3-9 SOUTH BEACHES WWTF PERMITTED NUTRIENT LIMITS**

Reuse or Disposal	Limit	Statistical Basis
D-001 Permitted TN	173.00 lb/yr	Annual Average
	Report lb/yr	Monthly Total
D-001 Permitted TP	36.00 lb/yr	Annual Average
	Report lb/yr	Monthly Total
R-001 Permitted TN	Report mg/L	Annual Average
	Report mg/L	Monthly Average
R-001 Permitted TP	Report mg/L	Annual Average
	Report mg/L	Monthly Average

A review of DMRs for the period of record was conducted, it was determined the South Beaches WWTF treated an average of 6.16 MGD AADF. Each effluent discharge had varying average annual nutrient concentrations, the surface water discharge had an annual average TN of 4.95 mg/L and an annual average TP of 0.80 mg/L. The slow-rate public access reuse system had an annual average TN concentration of 8.17 mg/L and annual average TP concentration of 1.82 mg/L. A summary of the flows and nutrient concentrations are presented below in **Table 3-10**.

**TABLE 3-10 SOUTH BEACHES WWTF FLOWS AND NUTRIENT CONCENTRATIONS**

Year	Flow (MGD)	D-001 TN (mg/L)	R-001 TN (mg/L)	D-001 TP (mg/L)	R-001 TP (mg/L)
2018	5.90	NOD	6.86	NOD	1.86
2019	6.34	NOD	8.59	NOD	1.63
2020	6.25	NOD	9.03	NOD	1.86
2021	6.17	NOD	7.07	NOD	1.99
2022	6.10	4.40	9.85	0.80	2.04
2023	6.22	5.50	7.59	0.80	1.56
<b>Average</b>	<b>6.16</b>	<b>4.95</b>	<b>8.17</b>	<b>0.80</b>	<b>1.82</b>

On July 6, 2023, FDEP conducted an inspection at the South Beaches WWTF, during this inspection, it was determined the WWTF is in compliance with FDEP's rules and regulations. There were no reported exceedances for total nitrogen or total phosphorous at the time of the inspection. The annual average of nutrient concentrations in pounds per year are provided below in **Table 3-11**. These concentrations are below the permitted limit for both 2022 and 2023.

**TABLE 3-11 SOUTH BEACHES WWTF D-001 NUTRIENT CONCENTRATIONS**

Year	D-001 TN Annual Average (lb/yr)	D-001 TP Annual Average (lb/yr)
2018	0.00	0.00
2019	0.00	0.00
2020	0.00	0.00
2021	0.00	0.00
2022	24.29	4.42
2023	37.11	5.40

### 3.1.5 SOUTH CENTRAL WWTF

The South Central WWTF, FDEP Permit FL0102679, is located in the central portion of the County, its service area is within and adjacent to the North Indian River Lagoon BMAP area. The WWTF is a 12.0 MGD AADF activated sludge advanced wastewater treatment facility. The facility utilizes the IFAS BNR and Carrousel BNR Treatment Processes and consists of a mechanical bar screen and de-gritter assembly, 5-stage IFAS BNR and 4-stage Carrousel BNR Process, clarifiers, chemical feed facilities, filters and chlorination, as well as aerobic digestion and belt-thickening of biosolids. Treated effluent can be discharged through a permitted 0.99 MGD AADF surface water discharge to 4-Mile Canal (D-001) or to one of two slow-rate public access reuse systems, R-001 and R-002. R-001 has a permitted capacity of 8.2 MGD AADF and consists of on-site irrigation at the WWTF and within the approved Reuse Service Area. R-002 has a permitted capacity of 2.5 MGD AADF and consists of created wetlands with approximately 200 acres and an interior lake. The nutrient limits for D-001, R-001, and R-002 are presented below in **Table 3-12**.

**TABLE 3-12 SOUTH CENTRAL WWTF PERMITTED NUTRIENT LIMITS**

Reuse or Disposal	Limit	Statistical Basis
D-001 Permitted TN	2.00 mg/L	Monthly Average
	2.40 mg/L	Weekly Average
	3.20 mg/L	Single Sample
D-001 Permitted TP	0.20 mg/L	Monthly Average
	0.24 mg/L	Weekly Average
	0.32 mg/L	Single Sample
	46.00 lb/yr	Single Sample
	Report lb/mth	Monthly Total
R-001 Permitted TN	10.00 mg/L	Annual Average
	Report mg/L	Monthly Average
R-001 Permitted TP	6.00 mg/L	Annual Average
	Report mg/L	Monthly Average
R-002 Permitted TN	6.00 mg/L	Annual Average
	7.50 mg/L	Monthly Average
	9.00 mg/L	Weekly Average
	12.00 mg/L	Single Sample
R-002 Permitted TP	0.75 mg/L	Annual Average
	0.94 mg/L	Monthly Average
	1.13 mg/L	Weekly Average
	1.50 mg/L	Single Sample

For the period of record, the South Central WWTF treated an average of 4.68 MGD AADF. Annual average nutrient concentrations were determined for D-001, R-001, and R-002 and are presented below in **Table 3-13** and **Table 3-14**.

**TABLE 3-13 SOUTH CENTRAL WWTF FLOWS AND NUTRIENT CONCENTRATIONS (MG/L)**

Year	Flow (MGD AADF)	D-001 TN (mg/L)	R-001/R-002 TN (mg/L)	D-001 TP (mg/L)	R-001/R-002 TP (mg/L)
2018	5.26	1.62	7.85	0.09	0.65
2019	4.31	NOD	5.44	NOD	0.49
2020	4.87	1.60	3.36	0.06	0.15
2021	4.63	1.56	7.35	0.44	0.44
2022	4.49	1.38	8.66	0.44	0.28
2023	4.50	NOD	5.95	NOD	0.35
<b>Average</b>	<b>4.68</b>	<b>1.54</b>	<b>6.43</b>	<b>0.26</b>	<b>0.39</b>

**TABLE 3-14 SOUTH CENTRAL WWTF FLOWS AND NUTRIENT CONCENTRATIONS (PPD)**

Year	Flow (MGD AADF)	D-001 TN (PPD)	R-001/R-002 TN (PPD)	D-001 TP (PPD)	R-001/R-002 TP (PPD)
2018	5.26	11.81	107.02	0.68	28.31
2019	4.31	0.00	52.93	0.00	17.77
2020	4.87	16.23	136.16	0.57	6.12
2021	4.63	15.10	282.28	4.24	15.55
2022	4.49	21.61	360.95	6.93	10.52
2023	4.50	0.00	260.46	0.00	13.29
<b>Average</b>	<b>4.68</b>	<b>10.64</b>	<b>202.44</b>	<b>2.11</b>	<b>15.13</b>

On November 20, 2019, FDEP conducted an inspection of the South Central WWTF. Significant exceedances were noted for the TN annual average for R-001/R-002, these exceedances were attributed to construction and modifications to the treatment facility. In 2021 the facility entered into Consent Order 21-0180 due, in part, to total nitrogen concentration exceedances in 2020. While BCUS is working toward complying with the Consent Order, total nitrogen exceedances for R-001/R-002 are still occurring. On November 6, 2023, a time extension to correct the exceedances was granted.

### 3.1.6 SYKES CREEK WWTF

Sykes Creek Regional WWTF, FDEP Permit FLA102695, is located within the central portion of the County. The facility's service area is within the North Indian River Lagoon and the Banana River BMAP areas. The WWTF is a 6.0 MGD AADF carousel extended aeration wastewater treatment facility which consists of mechanical influent screenings, grit removal, two carousel aeration basins, chemical feed facilities, secondary clarification, tertiary filtration and chlorination, as well as dewatering of biosolids. Treated effluent is either sent to a 6.0 MGD AADF underground injection well system (U-001), or to a 4.5 MGD AADF slow-rate public access reuse system (R-001). The permitted limits for TN and TP for the public access reuse system are presented below in **Table 3-15**.

**TABLE 3-15 SYKES CREEK REGIONAL WWTF PERMITTED NUTRIENT LIMITS**

Reuse or Disposal	Limit	Statistical Basis
R-001 Permitted TN	Report mg/L	Annual Average
	Report mg/L	Monthly Average
R-001 Permitted TP	Report mg/L	Annual Average
	Report mg/L	Monthly Average



From 2018 through October of 2023 the Sykes Creek Regional WWTF treated an average of 3.13 MGD AADF and had average TN and TP concentrations of 2.92 mg/L and 1.64 mg/L respectively. A full summary of the annual average flows and concentrations for the period of record are provided in **Table 3-16**. A review of discharge monitoring reports found the Sykes Creek Regional WWTF is in compliance with permit limits set by Permit FLA102695.

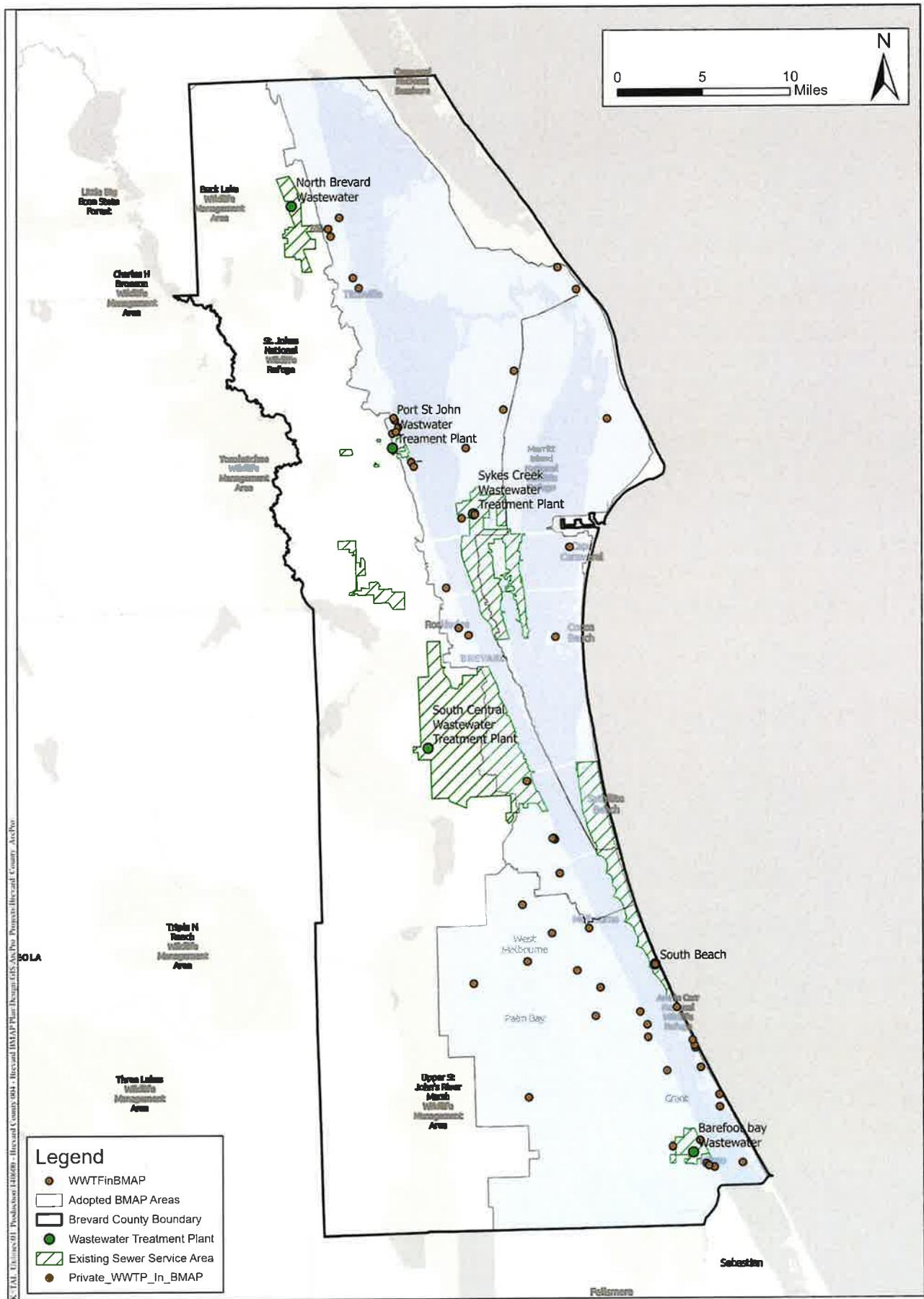
**TABLE 3-16 SYKES CREEK REGIONAL WWTF SUMMARY OF FLOWS AND NUTRIENT CONCENTRATIONS**

Year	Flow (MGD AADF)	TN (mg/L)	TN (PPD)	TP (mg/L)	TP (PPD)
2018	3.18	2.11	56.09	1.81	48.08
2019	2.96	3.27	80.67	1.48	36.43
2020	2.92	3.50	85.35	1.93	46.94
2021	2.99	3.26	81.52	1.68	42.01
2022	3.30	2.59	71.34	1.63	44.96
2023	3.42	2.77	78.97	1.30	37.06
<b>AVERAGE</b>	<b>3.13</b>	<b>2.92</b>	<b>76.17</b>	<b>1.64</b>	<b>42.76</b>

## 3.2 PRIVATE WASTEWATER TREATMENT FACILITIES

At the time of this report, throughout Brevard County there are 81 wastewater treatment facilities, 58 of which are located within the Banana River, North Indian River Lagoon, and Central Indian River Lagoon BMAP areas. Included in these 58 wastewater treatment facilities are three of the six BCUS owned and operated facilities, Barefoot Bay WWTF, South Beach WWTF, and Sykes Creek WWTF. The remaining 55 wastewater treatment facilities are private facilities which are located throughout the County and shown in **Figure 3-2**. Each private facility is permitted through FDEP and is required to be in compliance with nutrient limits set by their respective permits. Summaries of the private wastewater treatment facilities within the BMAP areas are provided in **Table 3-17**. A summary of the private facilities within the BMAP areas and BCUS service areas are provided below.

**Barefoot Bay WWTF Service Area** – The Barefoot Bay WWTF and the entirety of its service area are located within the Central Indian River Lagoon BMAP area. Within the Barefoot Bay service area there is one (1) wastewater treatment facility, the Indian River Shores Trailer Park WWTF, Permit FLA010374, which has a permitted capacity of 0.01 MGD AADF. A review of FDEP databases was conducted to determine if these private facilities were engaged in a consent order related to nutrient limit exceedances, or if any FDEP inspections had been completed within the last five (5) years. The Indian River Shores Trailer Park WWTF was inspected by FDEP on April 21, 2021, this inspection found the effluent to be in compliance with all permitted limits at the facility.



Source: ESRI, FDOT, Matar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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**Figure 3-2 Private Wastewater Treatment Facilities**

**Brevard County  
BMAP Plan**

1 inch = 5 miles

PROJECT NUMBER: 140600003.1.300

DECEMBER 2023



Sykes Creek WWTF Service Area – The Sykes Creek WWTF and its service area are located within the Banana River and North Indian River Lagoon BMAP areas. Within the existing Sykes Creek service area there is one (1) private wastewater treatment facility, the Tropical Trail Village WWTF, Permit FLA010355, which has a permitted capacity of 0.0125 MGD AADF. Based on an October 16, 2019 FDEP inspection the Tropical Village WWTF was in compliance with all effluent quality requirements.

Port St John WWTF Service Area – The Port St John WWTF service area is within the North Indian River Lagoon BMAP area. Within the exiting Port St John service area there is one (1) private wastewater treatment facility, the FPL – Cape Canaveral Power Plant, Permit FL0001473, which is an industrial treatment facility with a permitted capacity of 685 MGD AADF. An inspection was completed by FDEP on August 11, 2022, this inspection noted that effluent quality was in compliance with permit limits.

South Central WWTF Service Area – The South Central WWTF service area is within the North Indian River Lagoon BMAP area. Within the existing South Central service area there is one (1) private wastewater treatment facility, the Riverview Mobile Home & RV Park, permit FLA010383. This facility has a permitted capacity of 0.03 MGD AADF. A FDEP inspection in May of 2022 noted effluent quality was in compliance with permitted nutrient limits for total nitrogen and total phosphorous.

**TABLE 3-17 PRIVATE WASTEWATER FACILITIES WITHIN BMAP AREAS**

Facility	Permit	Permitted Capacity (MGD AADF)	Permitted TN Limits (mg/l)	Permitted TP Limits (mg/l)	Nutrient Compliance Status
River Grove Mobile Home Village WWTF	FLA010400	0.030	Report – Quarterly Average Report – Annual Average	Report – Quarterly Average Report – Annual Average	Unknown
Pelican Bay MHC WWTF	FLA010346	0.035	Report – Single Sample Report – Annual Average	Report – Single Sample Report – Annual Average	In Compliance – Inspection 4/21/2021
Summit Cove Condominium	FLA010338	0.030	Report – Quarterly Average Report – Annual Average	Report – Quarterly Average Report – Annual Average	Notice of Violation 8/17/2023
Indian River Shores Trailer Park WWTF	FLA010374	0.010	Report – Quarterly Average Report – Annual Average	Report – Quarterly Average Report – Annual Average	In Compliance – Inspection 4/21/2021
Lighthouse Cove WWTF	FLA010366	0.024	Report – Quarterly Average Report – Annual Average	Report – Quarterly Average Report – Annual Average	In Compliance – Inspection 2/1/2023

Facility	Permit	Permitted Capacity (MGD AADF)	Permitted TN Limits (mg/l)	Permitted TP Limits (mg/l)	Nutrient Compliance Status
Long Point Recreational Park WWTF	FLA010265	0.012	Report – Single Sample	Report – Single Sample	In Compliance – Inspection 7/18/2018
Cove at South Beaches Condominium Association WWTF	FLA010343	0.010	Report – Quarterly Average Report – Annual Average	Report – Quarterly Average Report – Annual Average	In Compliance – Inspection 4/23/2021
South Brevard Water Coop Demin Concentrate	FLA010389	0.036	N/A	N/A	In Compliance – Inspection 8/23/2023
South Shores Utility	FLA010357	0.075	Report – Annual Average Report – Monthly Average	Report – Annual Average Report – Monthly Average	In Compliance – Inspection 12/28/2022
Wingate Reserve Demineralization Concentrate	FLA010414	0.007	N/A	N/A	In Compliance – Inspection 8/2020
Aquarina Beach Community WWTF	FLA010352	0.099	Report – Single Sample	Report – Single Sample	In Compliance – Inspection 6/2020
Treetop Village	FLA010359	0.0056	Report – Quarterly Average Report – Annual Average	Report – Quarterly Average Report – Annual Average	In Compliance – Inspection 8/2023
Tropical Trail Village WWTF	FLA010355	0.0125	Report – Annual Average Report – Monthly Average	Report – Annual Average Report – Monthly Average	In Compliance – Inspection 10/16/2019
FPL – Cape Canaveral Power Plant	FL0001473	685.000	Report lbs/quarter Report lbs/year	Report lbs/quarter 146 lbs/year annual total	In Compliance – Inspection 8/11/2022
Riverview Mobile Home & RV Park	FLA010383	0.030	10.0 Annual Avg Report Monthly Avg	6.0 Annual Avg Report Monthly Avg	In compliance – Inspection 5/2022
Bay Wash of Rockledge – Car Wash Recycling System	FLA017378	0	N/A	N/A	N/A
Blue Origin Florida LLC	FLA000007	0	N/A	N/A	N/A

Facility	Permit	Permitted Capacity (MGD AADF)	Permitted TN Limits (mg/l)	Permitted TP Limits (mg/l)	Nutrient Compliance Status
Camelot RV Park Inc	FLA010363	0.020	Report – Annual Average Report – Monthly Average	NA	In Compliance – Inspection on 8/12/2019
Canebreaker Condo	FLA010354	0.008	Report – Annual Average Report – Monthly Average	Report – Annual Average Report – Monthly Average	In Compliance – Inspection on 8/1/2019
Cape Canaveral Air Force Station Regional WWTF	FL0102920	0.800	Report – Annual Average Report – Monthly Average	Report – Annual Average Report – Monthly Average	In Compliance – Inspection on 11/15/2019
Cape Canaveral WRF	FL0020541	1.800	Report – Annual Average Report – Monthly Average	Report – Annual Average Report – Monthly Average	In Compliance - Inspection on 5/31/2022
CEMEX Construct Materials FL LLC – Melbourne Ready Mix Plant	FLG110218	0.016	N/A	N/A	N/A
CMEX Construct Materials FL – Valkaria Ready Mix Plant	FLG110560	0.0043	N/A	N/A	N/A
City of Cocoa Beach	FL0021105	6.000	3.0 Monthly Avg 4.5 Weekly Avg 6.0 Single Sample	2.0 Single Sample 1.0 Monthly Avg 1.5 Weekly Avg	In Compliance – Inspection on 1/30/2023
Cocoa, City of – Cocoa Water Reclamation Facility	FL0021521	4.500	12.0 Monthly Avg 18.0 Weekly Avg 24.0 Single Sample	4.0 Monthly Avg 6.0 Weekly Avg 8.0 Single Sample	In Compliance – Inspection on 3/29/2023
David B Lee Wastewater Treatment Plant	FLA010323	6.000	Report – Annual Average Report – Monthly Average	Report – Annual Average Report – Monthly Average	In Compliance – Inspection on 9/12/2023
Discovery Elementary School	FLA010272	0.015	Report – Annual Average Report – Monthly Average	Report – Annual Average Report – Monthly Average	In Compliance – Inspection on 11/5/2019
Enchanted Lakes Estates	FLA010421	0.010	12.0 Single Sample	N/A	In Compliance – Inspection on 6/14/2018

Facility	Permit	Permitted Capacity (MGD AADF)	Permitted TN Limits (mg/l)	Permitted TP Limits (mg/l)	Nutrient Compliance Status
Hangar X	FLA000032	0	3.0 Annual Average	1.0 Annual Average	N/A
Harris Malabar Facility	FLA010356	0.035	Report – Quarterly Average Report – Annual Average	Report – Quarterly Average Report – Annual Average	In Compliance – Inspection on 3/3/2021
Harris Malabar Facility	FLA010415	0.094	Report – Daily Maximum	N/A	In Compliance – Inspection on 7/18/2023
Housing Authority of Brevard County WWTF	FLA010264	0.010	Report – Annual Average	Report – Annual Average	In Compliance – Inspection on 10/11/2019
Hurricane Car Wash II Recycle System	FLA016237	0	N/A	N/A	N/A
Linde Inc (fka Praxair Incorporated)	FLA103641	0.100	N/A	N/A	N/A
Maschmeyer CBP – Melbourne	FLG110888	0	N/A	N/A	N/A
Melbourne Grant St WWTP & DIW	FL0041122	5.500	20.0 Single Sample	1.0 Single Sample	In Compliance – Inspection 8/16/2021
Merritt Island Utility Company WWTF	FLA010377	0.070	10.0 Annual Avg Report – Monthly Average	6.0 Annual Avg Report – Monthly Average	In Compliance – Inspection 2/9/2021
NASA – LC 39B	FLA010299	0.500	N/A	N/A	N/A
Oak Point Mobile Home Park WWTF	FLA010375	0.015	Report – Quarterly Average Report – Annual Average	Report – Quarterly Average Report – Annual Average	In Compliance – Inspection 1/5/2023
Orlando Utilities Commission – Indian River Plant	FL0000680	820.00	Report – Single Sample	Report – Total Monthly (lbs)	In Compliance – Inspection 2/18/2021

Facility	Permit	Permitted Capacity (MGD AADF)	Permitted TN Limits (mg/l)	Permitted TP Limits (mg/l)	Nutrient Compliance Status
Orland Utilities Commission – Indian River Plant	FLA010336	0.005	N/A	N/A	N/A
Palm Bay South Regional WRF	FLA693782	0	Report – Annual Average Report – Monthly Average	Report – Annual Average Report – Monthly Average	N/A
Palm Bay, City of – WWTF	FLA103357	4.000	Report – Annual Average Report – Monthly Average	Report – Annual Average Report – Monthly Average	N/A
Palm Harbor Mobile Home Park WWTF	FLA010365	0.014	10.0 Annual Avg Report – Quarterly Average	6.0 Annual Avg Report – Quarterly Average	In Compliance – Inspection 8/1/2019
Preferred Materials, Inc. RMP (Melbourne Plant)	FLG110296	0	N/A	N/A	N/A
River Forest Mobile Home Park WWTF	FLA010361	0.018	10.0 Annual Avg	6.0 Annual Avg	In Compliance – Inspection 1/22/2021
Rockledge, City of	FL0021571	4.500	12.0 Single Sample	4.0 Single Sample	In Compliance – Inspection 12/3/2019
Southern Comfort Mobile Home Park WWTF	FLA010347	0.0075	12.0 Single Sample	N/A	In Compliance – Inspection 7/22/2022
Space X LC 39A	FLA010307	0.050	N/A	N/A	N/A
Tarmac-Melbourne Concrete Batch Plant	FLG110275	0.082	N/A	N/A	N/A
Titusville, City of – North – Osprey WWTF	FL0103268	2.750	Report – Annual Average Report – Monthly Average	Report – Annual Average Report – Monthly Average	N/A
West Melbourne, City of – Ray Bullard WWTF	FLA010332	2.500	Report – Single Sample	Report – Single Sample	N/A

Facility	Permit	Permitted Capacity (MGD AADF)	Permitted TN Limits (mg/l)	Permitted TP Limits (mg/l)	Nutrient Compliance Status
Wickham Road South Car Wash	FLA010398	0	N/A	N/A	N/A
Willow Lakes RV Park WWTF	FLA010358	0.050	Report - Annual Average Report – Single Sample	Report – Annual Average Report – Single Sample	N/A

Based on a review of FDEP databases, with the exception of Summit Cove Condominium, all private wastewater treatment facilities within the North Indian River Lagoon, Central Indian River Lagoon, and Banana River BMAP areas are in compliance with nutrient limits set by their respective treatment permits. On August 17, 2023, the Summit Cove Condominium was issued a notice of violation by the FDEP in which failure to monitor for total nitrogen is mentioned has a violation. It should also be noted, River Grove Mobile Home Village WWTF did not appear to be engaged in a consent order, and there were no records of an inspection within the last five (5) years.



## 4.0 WASTEWATER TREATMENT CAPACITY AND GROWTH

The six (6) BCUS owned facilities are located throughout Brevard County and have a combined permitted capacity of 28.38 MGD. Each facility is operating under their respective permitted capacity as shown in **Table 4-1**.

**TABLE 4-1 SUMMARY OF BREVARD COUNTY UTILITY DISTRICT WWTF CAPACITIES**

Facility	Permit	Permitted Capacity (MGD AADF)	Current Flows (2022) (MGD AADF)	Remaining Permitted Capacity (MGD AADF)
Barefoot Bay	FL0042293	0.90	0.60	0.30
North Regional	FLA010263	0.99	0.32	0.68
Port St. John	FLA102750	0.49	0.43	0.06
South Beaches	FL0040622	8.00	6.10	1.90
South Central	FL0102679	12.00	4.49	7.51
Sykes Creek	FLA102695	6.00	3.30	2.70
<b>Total</b>		<b>28.38</b>	<b>15.48</b>	<b>13.14</b>

## 4.1 POPULATION PROJECTIONS

In June of 2020 the Regional Utility Capital Improvement Projections through Year 2040 was conducted by Wade Trim. This report provided a general assessment of treatment facilities and infrastructure that could be necessary in the unincorporated portion of Brevard County based on where population growth was expected. A review of population growth within the County was conducted and showed most of the population growth would occur within the incorporated areas. Of the projected population in 2040, approximately 245,865 people are expected to be in the unincorporated areas of the County and approximately 436,943 people are expected to be in the incorporated areas of the County.

The 2020 report utilized ArcGIS software along with preliminary traffic analysis zone data to allocate the projected population within each utility service area. Results were then used to identify areas of population growth outside of the existing utility service areas. This data then established population projections within each wastewater service area through the year 2040 as shown in **Table 4-2**.

TABLE 4-2 SUMMARY OF POPULATION PROJECTIONS

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

## 4.2 PROJECTED WASTEWATER DEMANDS

In Article IV, Division 1, Section 62-602(d)(2) of the County's municipal code, the estimated volume of wastewater produced by a single-family residential dwelling unit (EDU) is 200 gallons per day (gpd). This level of service was utilized to determine the amount of wastewater that could be generated by the projected 2040 population of each service area as shown in **Table 4-3**. The projected wastewater generation was then compared to the wastewater treatment facility current permitted capacity, based on this comparison only three (3) of the facilities would need to undergo expansions in order to meet the demands of the projected 2040 population.

TABLE 4-3 SUMMARY OF PROJECTED WWTF CAPACITY

Service Area	Estimated Population within Expanded Service Boundary (2040)	Current Permitted Capacity (MGD AADF)	Estimated 2040 Flow (MGD, AADF)	Additional Treatment Capacity Required (MGD, AADF)
Barefoot Bay	10,391	0.90	1.15	0.25
North Regional	11,874	0.99	1.32	0.33
Port St. John	19,102	0.49	2.12	1.63
South Beaches	46,268	8.00	8.00	0.00
South Central	82,342	12.00	12.00	0.00
Sykes Creek	36,740	6.00	6.00	0.00

Based on the projections presented above, the Barefoot Bay WWTF is expected to exceed the permitted capacity of 0.90 MGD AADF in 2032 as shown in **Figure 4-1**. The North Regional WWTF is expected to exceed the permitted capacity of 0.99 in 2034 as shown in **Figure 4-2**. Additionally, the Port St. John WWTF is expected to exceed its permitted capacity of 0.49 in 2024 as shown in **Figure 4-3**.



FIGURE 4-1 BAREFOOT BAY WWTF PROJECTED WASTEWATER DEMANDS (MGD, AADF)  
(LOS 200 GPD)

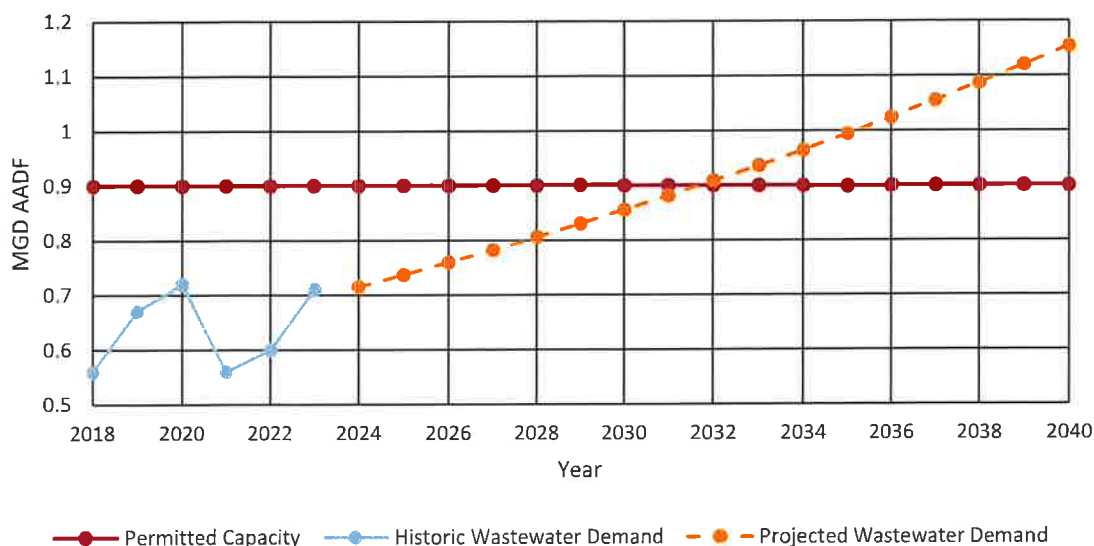


FIGURE 4-2 NORTH REGIONAL WWTF PROJECTED WASTEWATER DEMANDS (MGD, AADF)  
(LOS 200 GPD)

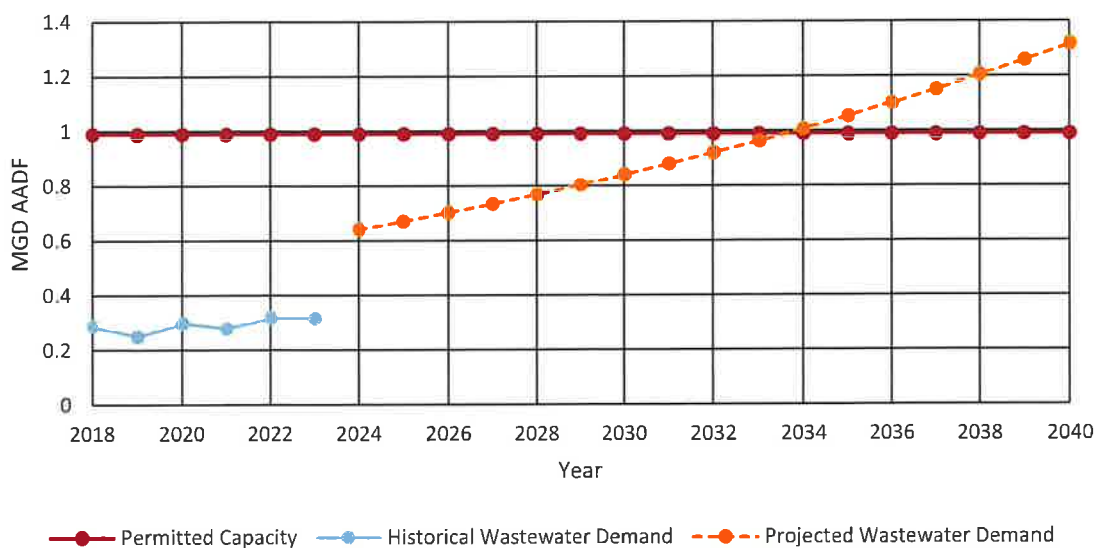
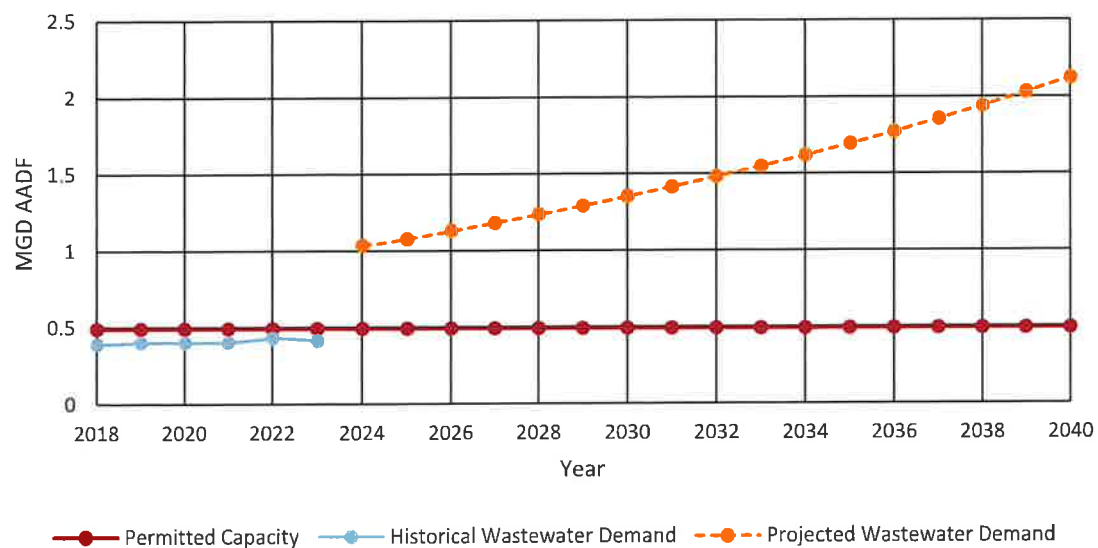


FIGURE 4-3 PORT ST JOHN WWTF PROJECTED WASTEWATER DEMANDS (MGD, AADF)  
(LOS 200 GPD)



## 5.0 WASTEWATER TREATMENT IMPROVEMENT PROJECTS

In order to reduce nitrogen, BCUS and cities within the County have implemented several projects at their respective treatment facilities. These projects involve facility construction, expansion, and upgrades, including advanced wastewater treatment (AWT) conversions and deep injection well (DIW) installation. A summary of treatment facility projects and their priority ranking based on the amount of TN to be removed is provided below.

### 5.1 WASTEWATER TREATMENT PROJECTS

The Brevard County Capital Improvement Plan, along with facility studies for North Brevard, South Central, South Beaches, and Sykes Creek were reviewed. From this review a list of projects related to facility construction, expansions, and upgrades necessary to meet nutrient water quality requirements was compiled. These projects are presented below in **Table 5-1**. For facilities that are not County-owned or operated, cost-share from Brevard County's Save Our Indian River Lagoon (SOIRL) Fund are shown rather than total costs.

**TABLE 5-1 PROJECTS TO REDUCE NITROGEN LOADING**

Project Name	Project Description	Estimated Project Cost or Cost Share from the SOIRL Fund
South Central WWTP - AWT	Conversion of the South Central Plant to AWT	\$ 1,500,000
South Beaches - Carrousel Treatment System BNR Conversion to Meet IRL AWT Requirements	Conversion of the 6.0 MGD South Beaches Plant to AWT	\$ 22,000,000
South Brevard AWT WWTP	Constructing a new AWT WWTP to serve the South Brevard unincorporated service area.	\$ 1,752,210
Cocoa Beach Water Reclamation Facility Upgrade	Not Brevard County Project	\$ 945,000
City of Melbourne Grant Street Water Reclamation Facility	Not Brevard County Project	\$ 9,128,125
City of Palm Bay Water Reclamation Facility	Not Brevard County Project	\$ 3,634,900

Project Name	Project Description	Estimated Project Cost or Cost Share from the SOIRL Fund
City of Titusville Osprey WWTF Nutrient Removal Upgrade	Not Brevard County Project	\$ 8,000,000
City of Titusville Osprey WWTF Nutrient Removal Upgrade Phase 2	Not Brevard County Project	\$ 300,000
Ray Bullard Water Reclamation Facility Biological Nutrient Removal Upgrades	Not Brevard County Project	\$ 5,784,232
City of Rockledge Flow Equalization Basin Project	Not Brevard County Project	\$ 2,308,768
Long Point Park Upgrade	Installation of a denitrification media wall installation around the perimeter of the treated effluent pond	\$ 22,207
Oak Point Wastewater Treatment Facility Improvements	Not Brevard County Project	\$ 279,000
Willow Lakes Recreational Vehicle Park	Not Brevard County Project	\$ 1,152,750
The Cove at South Beaches Package Plant Connection	Not Brevard County Project	\$ 128,790
Satellite Beach Pilot & Countywide Repair/Replacement (943 of 972 repairs completed)	Smoke testing the private service lines of over 41,000 homes, enforcing repairs, and assisting owners with costs	\$ 849,504
South Beaches Deep Injection Well	Will eliminate surface water discharge at the South Beaches WWTF	\$ 20,000,000

### 5.1.1 WASTEWATER TREATMENT PROJECT PRIORITIZATION

The amount of nitrogen that would be removed, in pounds per year, was estimated for each project if these projects were to be implemented. For projects involving Advanced Wastewater Treatment (AWT) conversions the pounds of nitrogen per year to be removed were determined using the AWT total nitrogen limit of 3.0 mg/l and the facility's current permitted TN limit. For upgrades other than AWT, the project benefit was based on pre- versus post- project effluent concentration multiplied by the annual average volume of reclaimed water dispersed and divided by four to account for 75% environmental attenuation between the discharge location and the Indian River Lagoon (per FDEP guidance). The projects were then prioritized based on the amount of nitrogen that would be removed from the treated

wastewater effluent. The estimated project cost was used to determine a cost per pound of nitrogen removed and is presented below in **Table 5-2**. If all projects are implemented an estimated 329,621 lb/yr of nitrogen will be removed. After adjusting AWT projects for environmental attenuation, the estimated reduction of nitrogen reaching the lagoon is 174,124 lb/yr.

**TABLE 5-2 PROJECT RANKING AND COST PER POUND OF NITROGEN REMOVED**

Ranking	Project Name	Estimated Project Cost or SOIRL Cost Share	Amount of Nitrogen Removed (lb/yr)	Cost per Pound of Nitrogen Removed
1	South Beaches - Carrousel Treatment System BNR Conversion to Meet IRL AWT Requirements	\$ 22,000,000	111,333	\$ 197.61
2	South Central WWTP - AWT	\$ 1,500,000	41,042-95,756	\$15.66 - \$36.55
3	City of Palm Bay Water Reclamation Facility	\$ 3,634,900	20,240	\$ 179.59
4	City of Melbourne Grant Street Water Reclamation Facility	\$ 9,128,125	18,052	\$ 505.66
5	Ray Bullard Water Reclamation Facility Biological Nutrient Removal Upgrades	\$ 5,784,232	11,360	\$ 509.18
6	City of Titusville Osprey WWTF Nutrient Removal Upgrade	\$ 8,000,000	8,660	\$ 923.79
7	Satellite Beach Pilot & Countywide Repair/Replacement	\$ 849,504	6,196	\$ 137.11
8	City of Rockledge Flow Equalization Basin Project	\$ 2,308,768	5,365	\$ 430.34
9	South Brevard AWT WWTP	\$ 1,752,210	4,316	\$ 405.98
10	City of Titusville Osprey WWTF Nutrient Removal Upgrade Phase 2	\$ 300,000	3,626	\$ 82.74

Ranking	Project Name	Estimated Project Cost or SOIRL Cost Share	Amount of Nitrogen Removed (lb/yr)	Cost per Pound of Nitrogen Removed
11	Cocoa Beach Water Reclamation Facility Upgrade	\$ 945,000	2,520	\$ 375.00
12	Willow Lakes Recreational Vehicle Park	\$ 1,152,750	725	\$ 1,590.00
14	Oak Point Wastewater Treatment Facility Improvements	\$ 279,000	186	\$ 1,500.00
15	Long Point Park Upgrade	\$ 22,207	163	\$ 136.24
16	The Cove at South Beaches Package Plant Connection	\$ 128,790	81	\$ 1,590.00
20	South Beached Deep Injection Well	\$ 20,000,000		

## 6.0 BREVARD COUNTY ONSITE SEWAGE TREATMENT DISPOSAL SYSTEMS

Brevard County (County) maintains a wastewater inventory, which allows for the categorization of parcels within the County by the type of wastewater treatment utilized. A review of the County's wastewater inventory was conducted, and a summary is provided below in **Table 6-1**.

**TABLE 6-1 SUMMARY OF BREVARD COUNTY WASTEWATER INVENTORY**

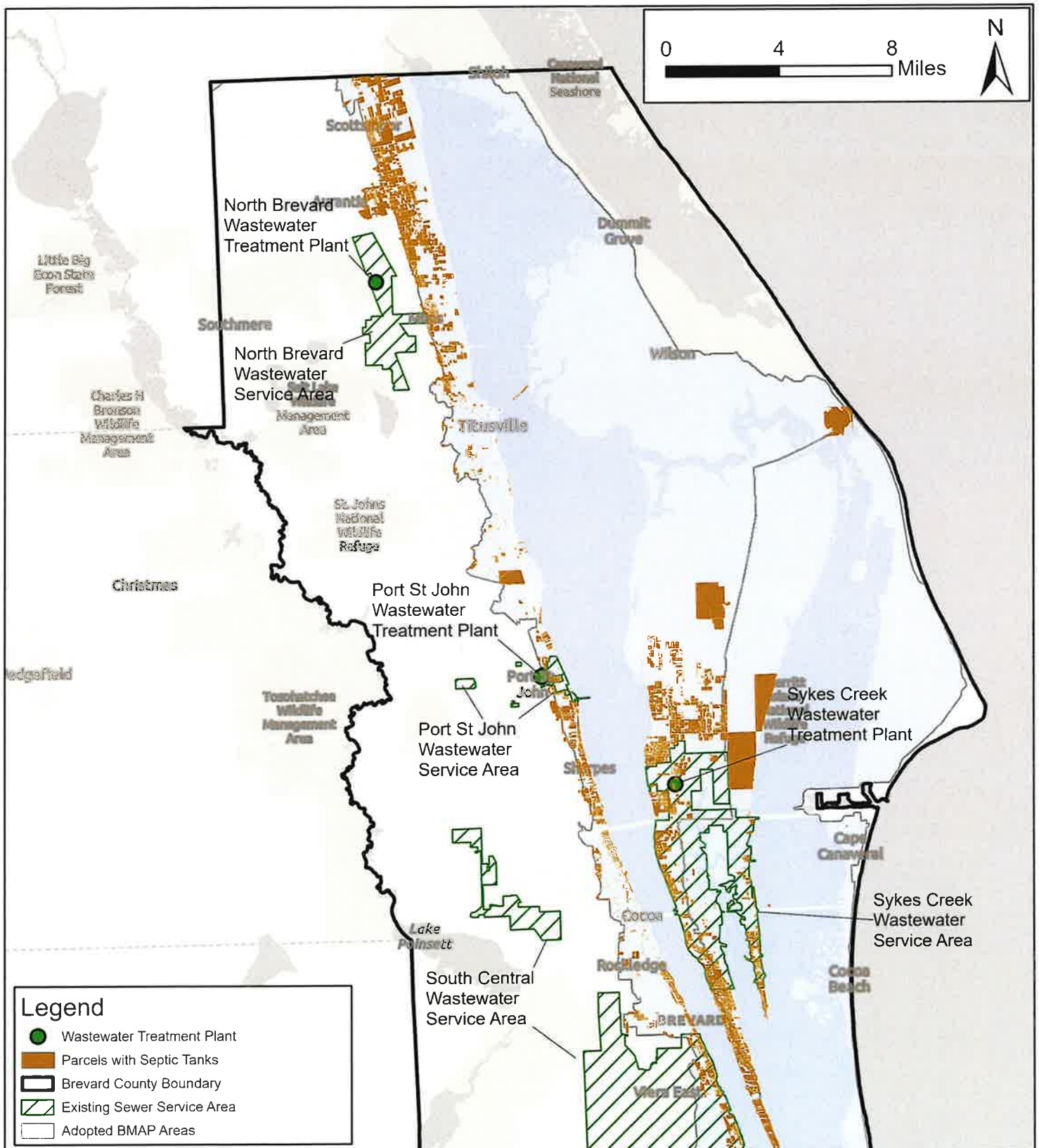
Wastewater Description	Number of Parcels
Natural / No Wastewater	53,533
Package Plant	506
Septic	62,226
Sewer	109,355
<b>Total</b>	<b>225,620</b>

Throughout the County there are approximately 62,226 onsite sewage treatment and disposal systems (OSTDS, or septic system) located within the Banana River, North Indian River Lagoon, and Central Indian River Lagoon BMAP areas as shown in **Figure 6-1**, **Figure 6-2**, and **Figure 6-3**. Of these, approximately 18,827 OSTDS are located within the unincorporated portion of Brevard County.

The County also maintains an inventory of septic systems within overlay boundaries. The overlay boundaries include the County's adopted Nitrogen Reducing Septic Overlay Ordinance Area, as well as a 1,000-foot buffer from the Indian River Lagoon or a natural tributary. These septic systems are shown in **Figure 6-4**, **Figure 6-5**, and **Figure 6-6**.



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Source: ESRI, FDOT, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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**Figure 6-1 OSTDS within BMAP Areas (North)**

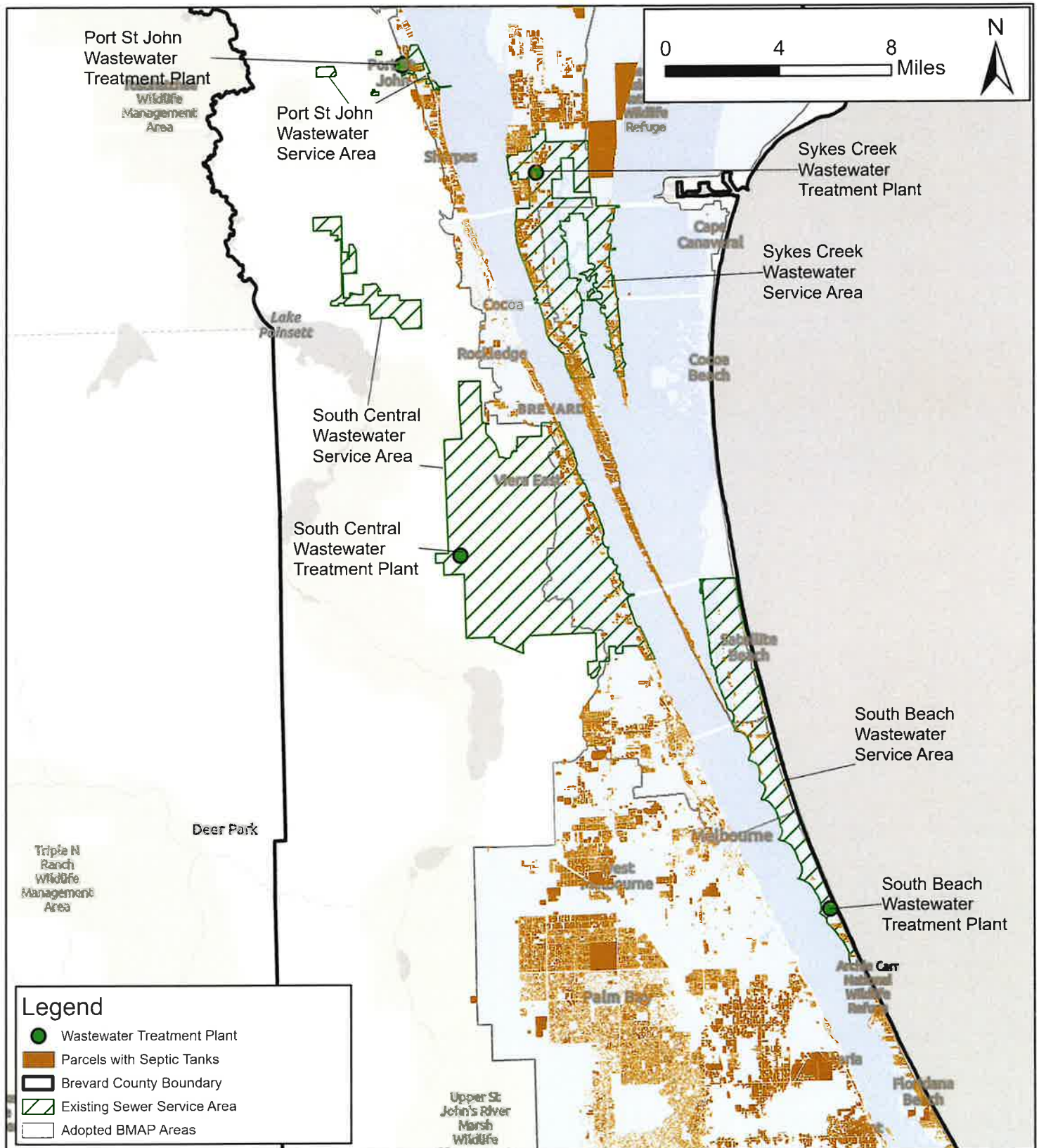
**Brevard County  
OSTDS Area Map**

1 inch = 4.5 miles

PROJECT NUMBER: 140600004.1.300

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**Figure 6-2 OSTDS within BMAP Areas (Central)**

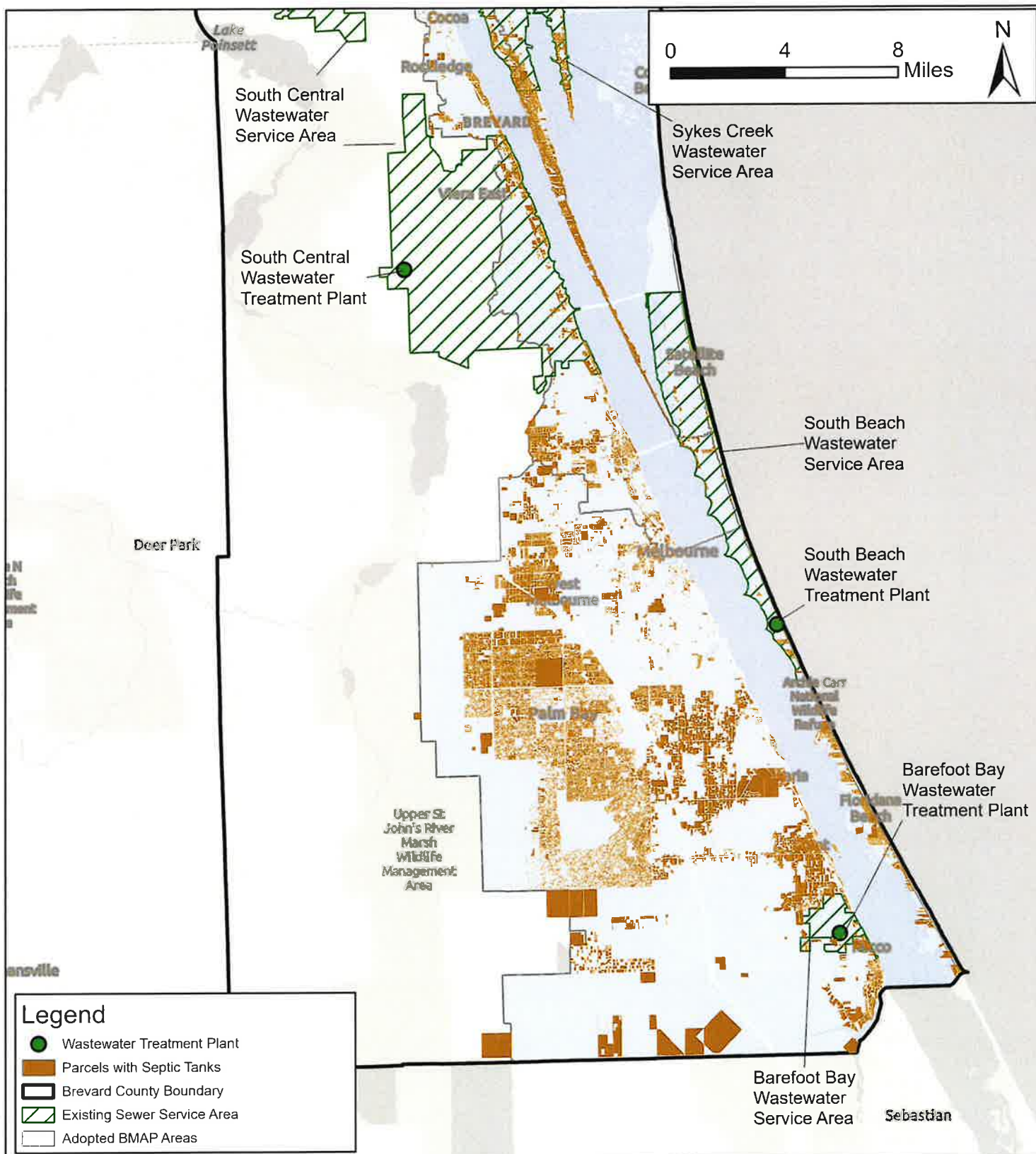
**Brevard County  
OSTDS Area Map**

1 inch = 4.5 miles

PROJECT NUMBER: 140600004.1.300

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**Figure 6-3 OSTDS Within BMAP Areas (South)**

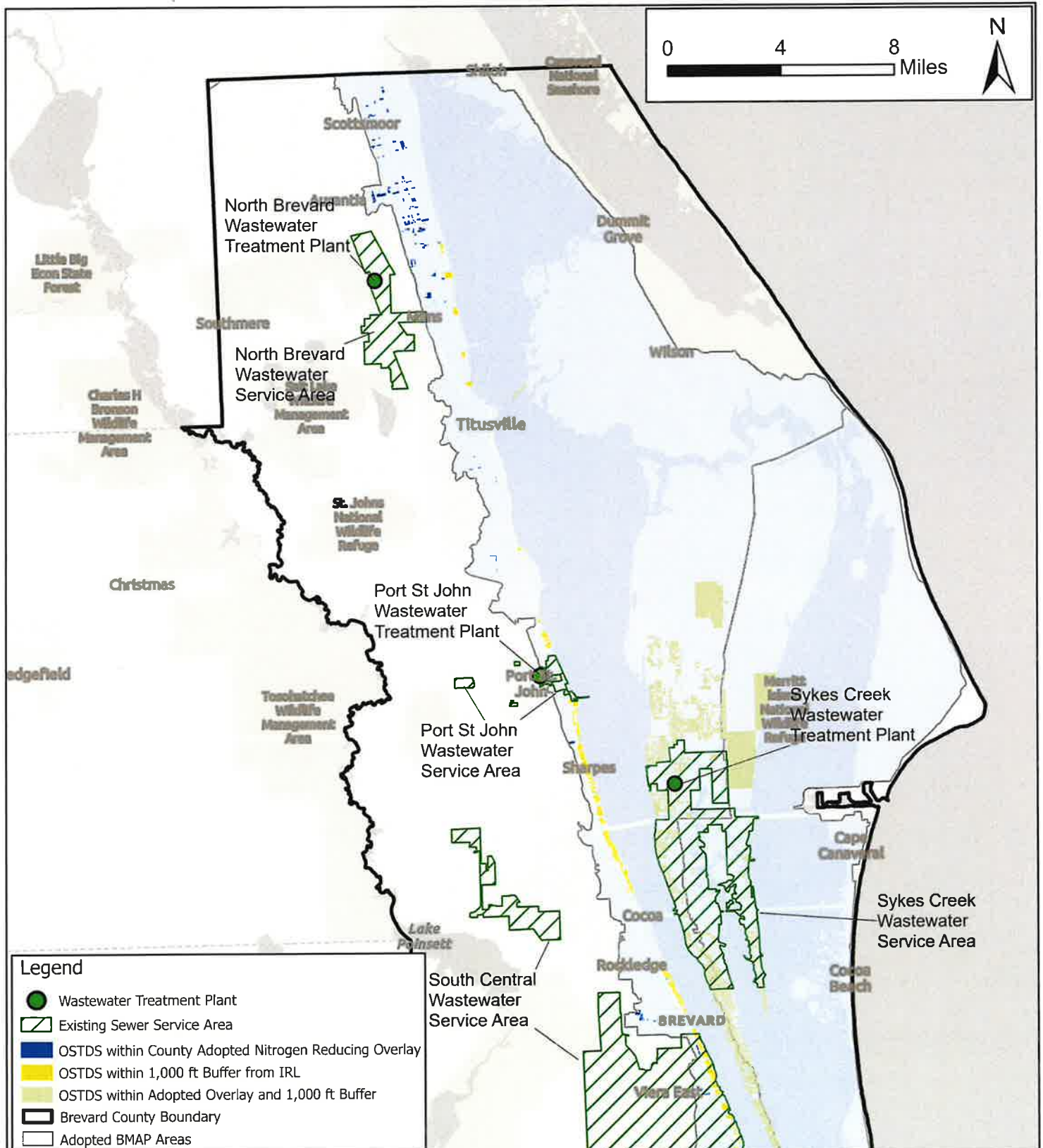
**Brevard County  
OSTDS Area Map**

1 inch = 4.5 miles

PROJECT NUMBER: 140600004.1.300

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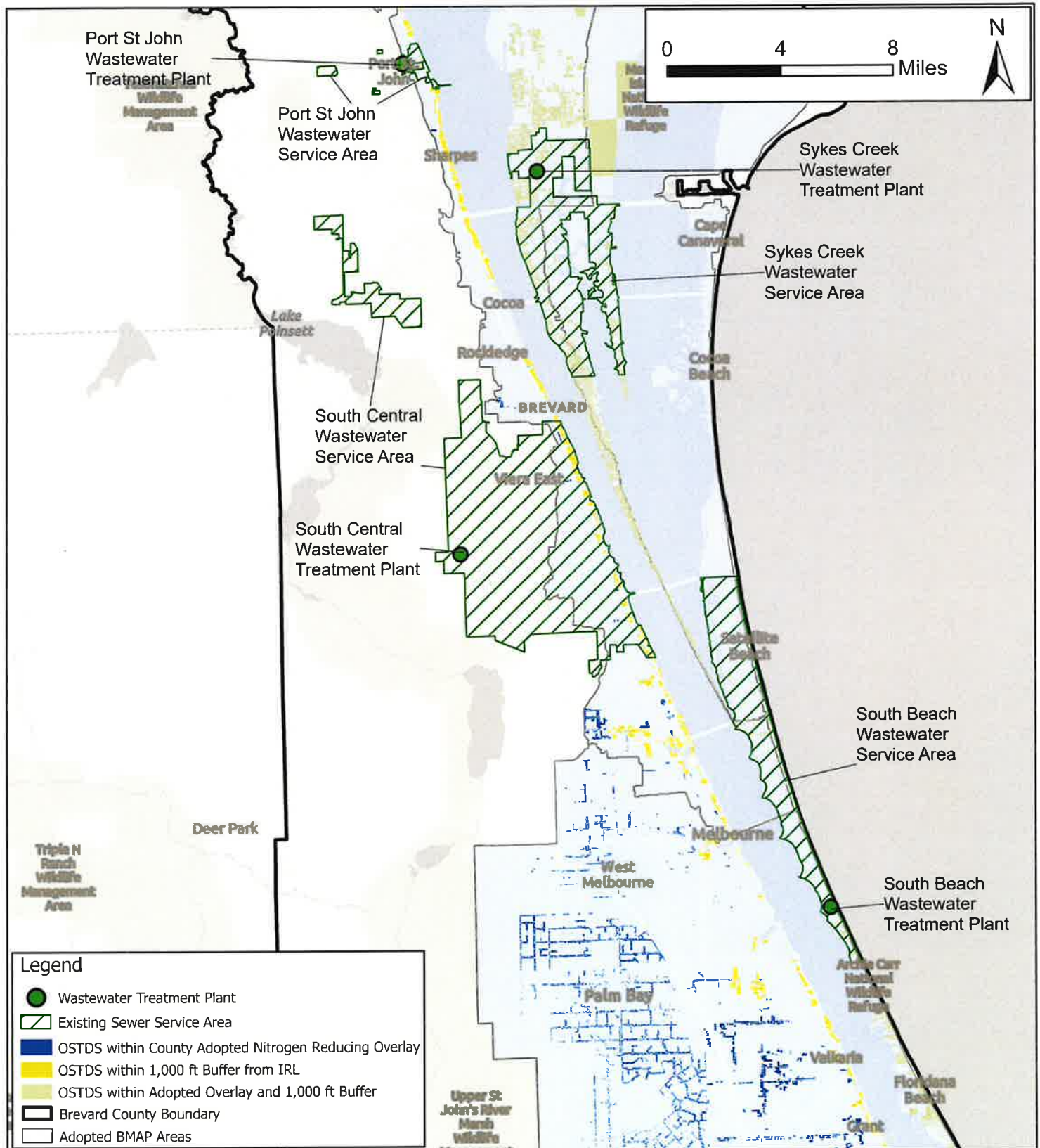
**Figure 6-4 OSTDS within Overlay Areas (North)**

**Brevard County  
OSTDS Area Map**

1 inch = 4.5 miles

PROJECT NUMBER: 140600004.1.300

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**Figure 6-5 OSTDS within Overlay Areas (Central)**

**Brevard County  
OSTDS Area Map**

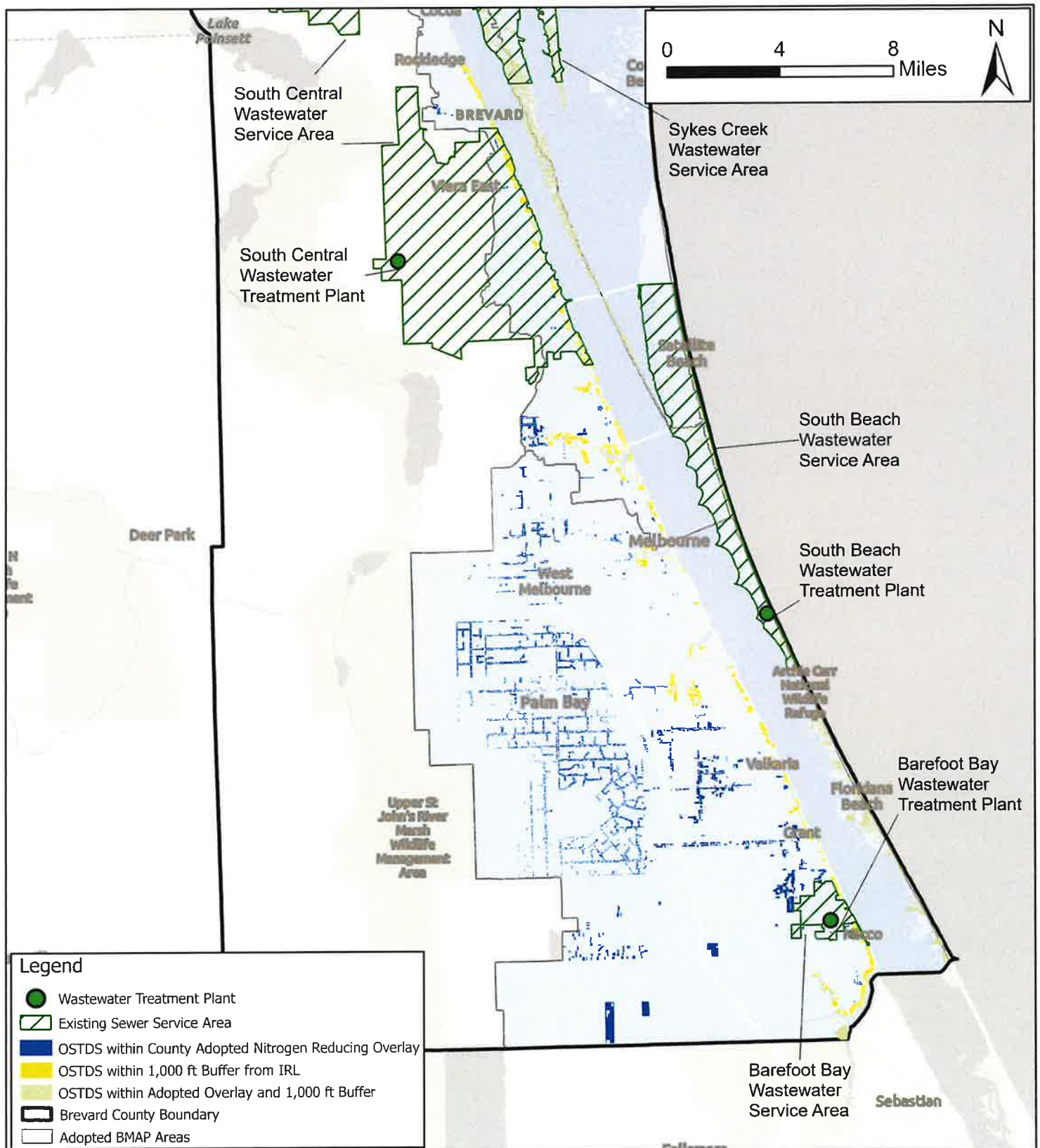
1 inch = 4.5 miles

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**Figure 6-6 OSTDS Within Overlay Areas (South)**

**Brevard County  
OSTDS Area Map**

1 inch = 4.5 miles

PROJECT NUMBER: 140600004.1.300

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## 6.1 OSTDS ELIMINATION

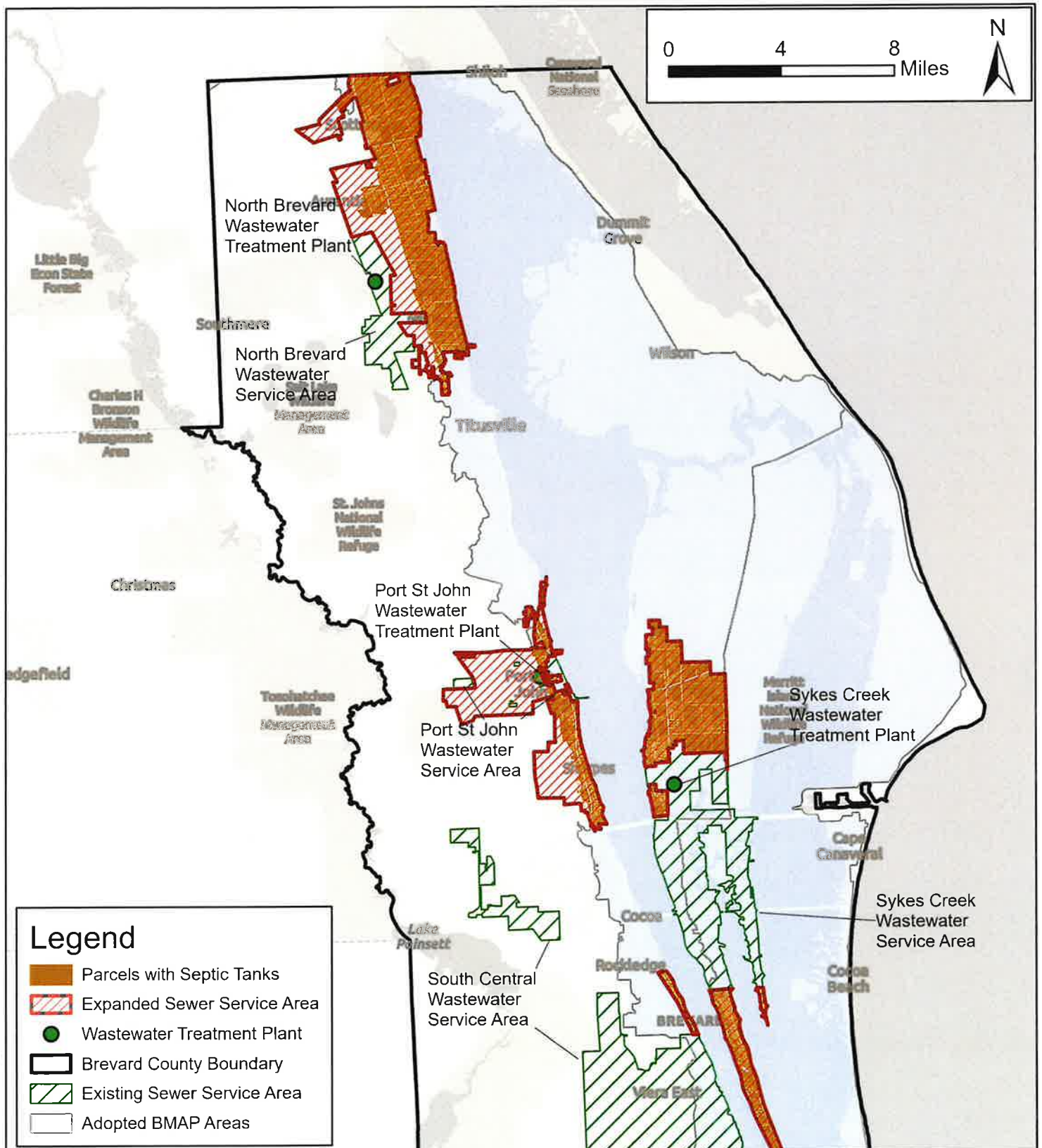
The County estimates 4,128 septic systems will be connected to centralized sewer within the next 20 years. Of these, 3,587 are in neighborhood septic to sewer conversion projects that can be associated with specific wastewater service areas. The remaining septic systems are first-come, first-serve opportunities for owners to connect voluntarily to existing sewer lines. The addition of these septic systems will expand the existing service areas of the following BCUS wastewater treatment facilities, Port St. John, Sykes Creek, South Central, South Beaches, and Barefoot Bay. A summary of the number of parcels containing septic systems estimated to be added to each wastewater service area is provided below in **Table 6-2**. The expanded service areas are shown in **Figure 6-7**, **Figure 6-8**, and **Figure 6-9**.

**TABLE 6-2 SUMMARY OF EXPANDED WASTEWATER SERVICE AREA**

Wastewater Service Area	Number of Parcels Containing Septic Systems to be Added
Port St. John	595
Sykes Creek	2,060
South Central	336
South Beaches	56
Barefoot Bay	540
<b>TOTAL</b>	<b>3,587</b>



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**Figure 6-7 Expanded Sewer Service Areas (North)**

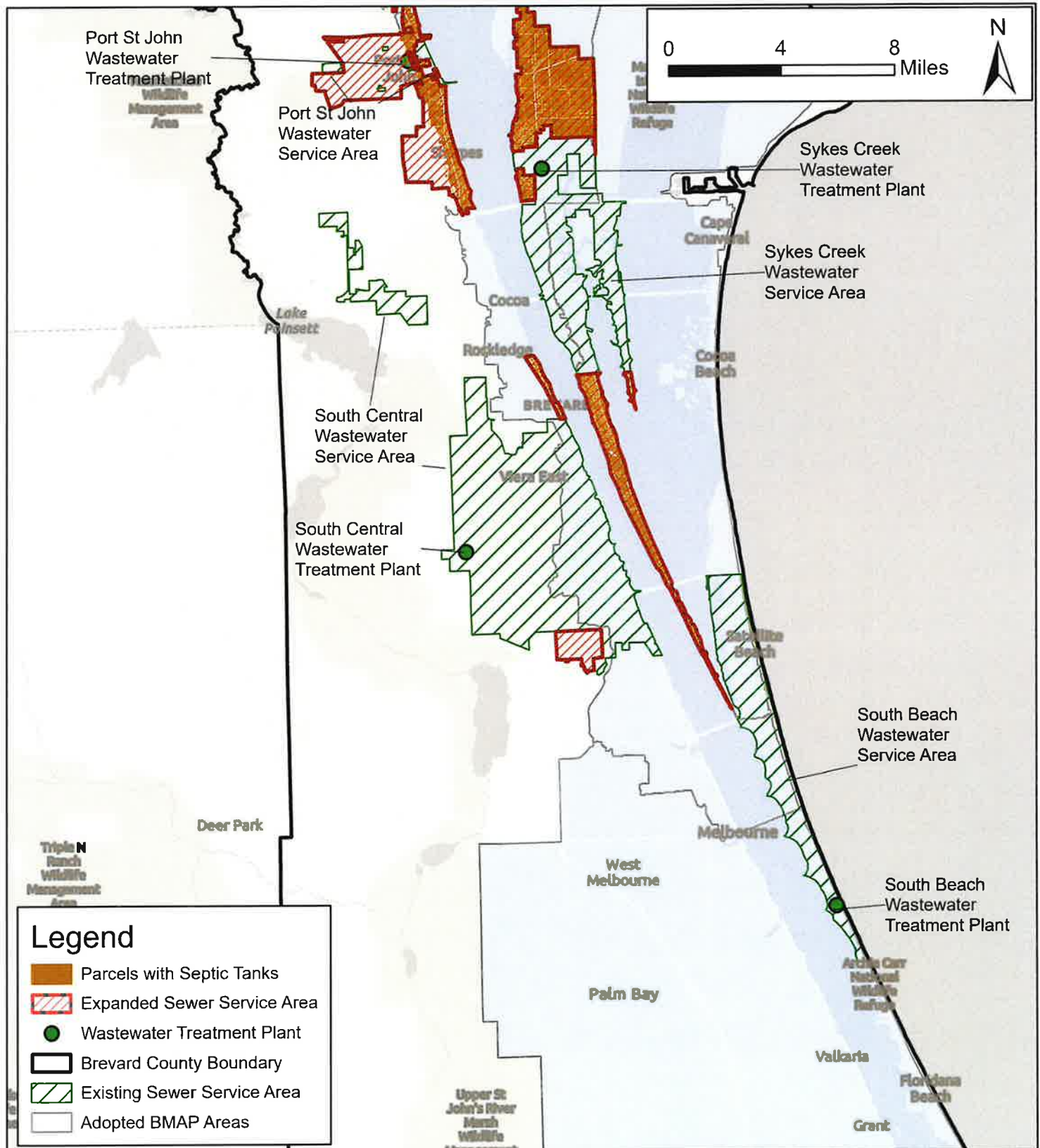
**Brevard County  
OSTDS Area Map**

1 inch = 4.5 miles

PROJECT NUMBER: 140600004.1.300

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**Figure 6-8 Expanded Sewer Service Areas (Central)**

**Brevard County  
OSTDS Area Map**

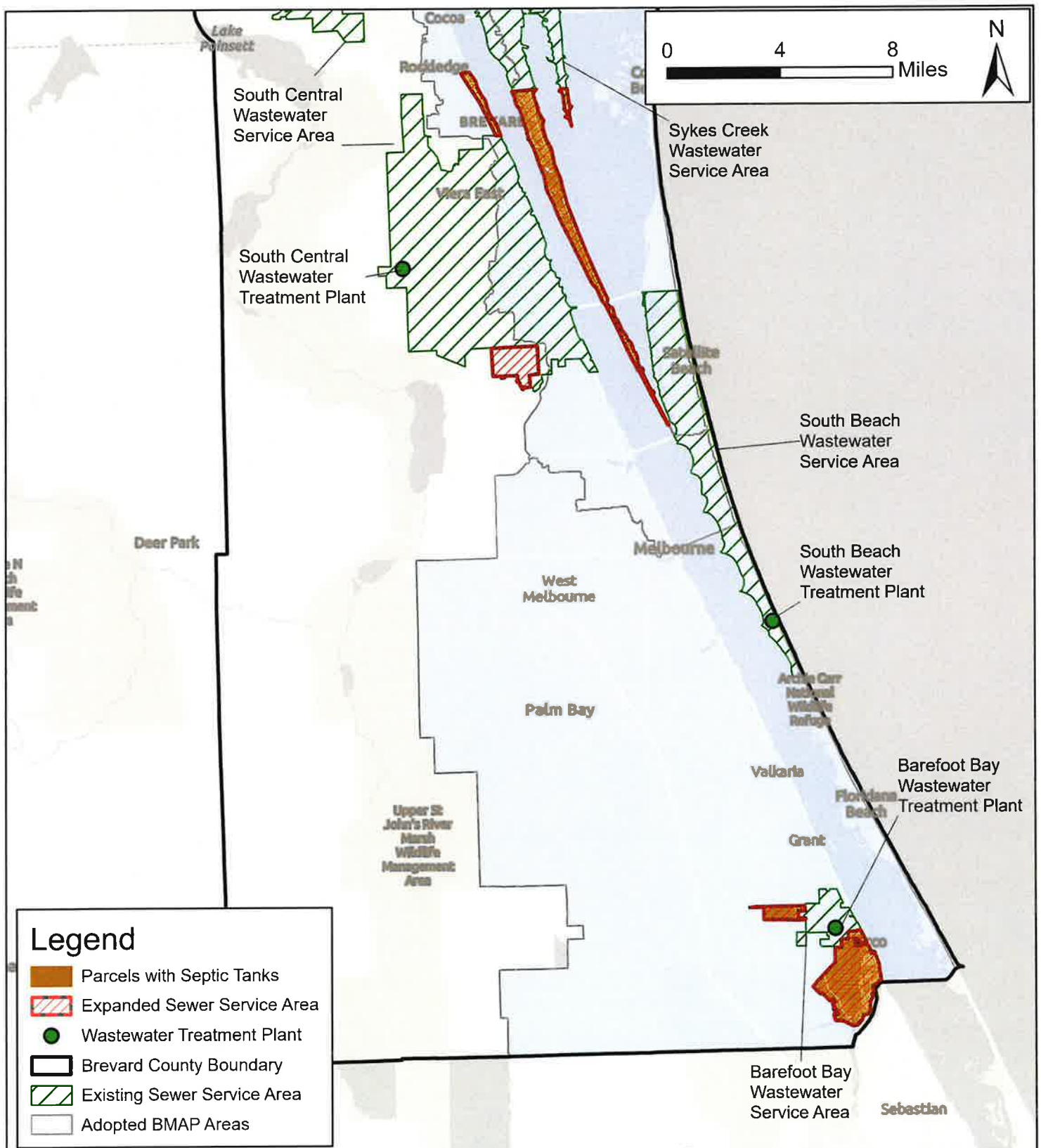
1 inch = 4.5 miles

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**Figure 6-9 Expanded Sewer Service Area (South)**

**Brevard County  
OSTDS Area Map**

1 inch = 4.5 miles

PROJECT NUMBER: 140600004.1.300

DECEMBER 2023

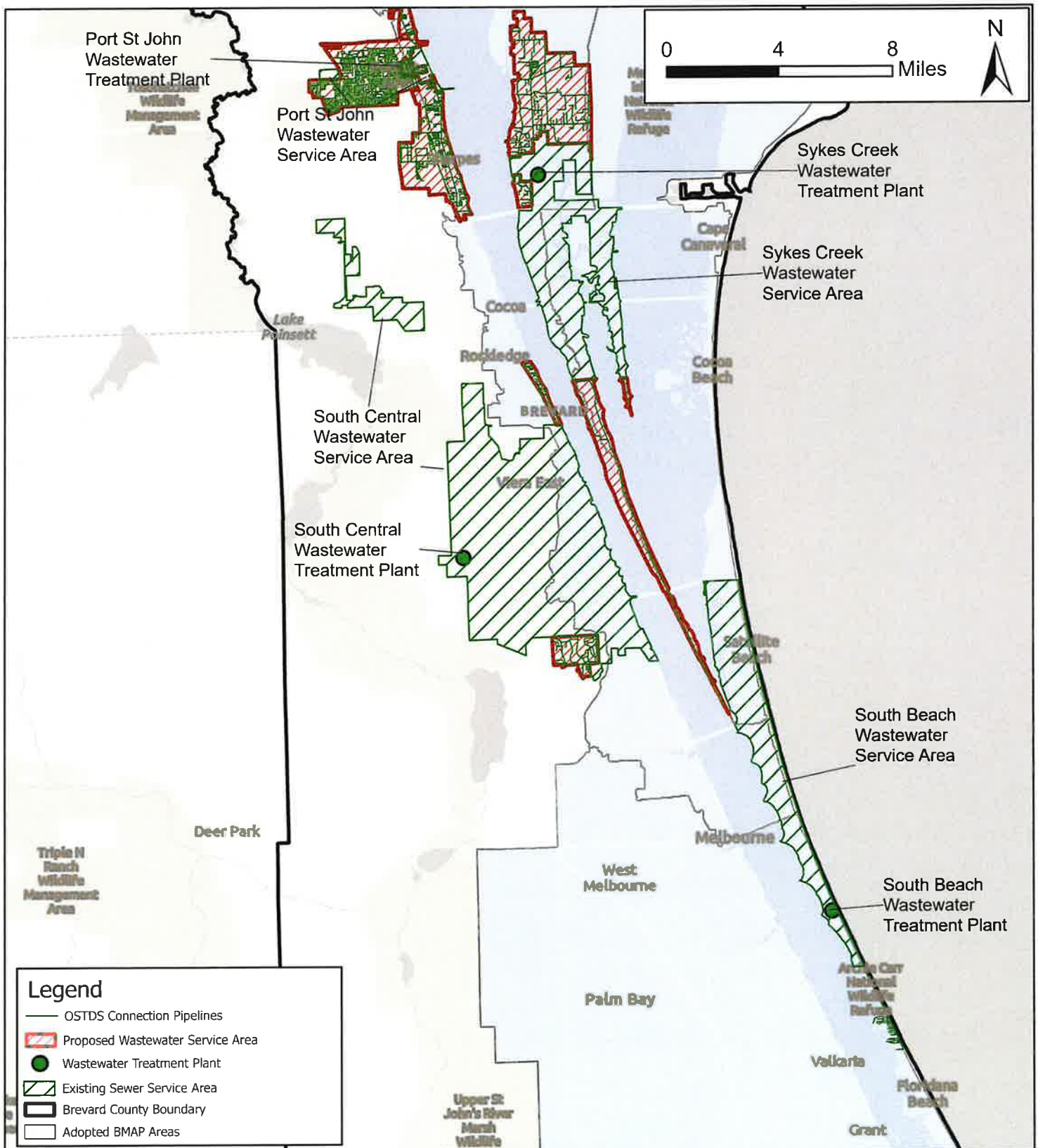
### 6.1.1 REQUIRED INFRASTRUCTURE

The addition of 4,128 parcels containing septic systems will require each service area to expand wastewater infrastructure including force mains, gravity mains, lift stations, vacuum stations, and all associated appurtenances. An evaluation of the major wastewater infrastructure associated with the conversion of 3,587 septic systems was performed. This evaluation led to the development of a general configuration of the future infrastructure routing as shown in **Figure 6-10**, **Figure 6-11**, and **Figure 6-12**. Planning level cost estimated for OSTDS elimination projects were developed on a project-by-project basis and are presented in **Section 8.0**.





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**Figure 6-11 Pipeline Layout to Connect OSTDS to Centralized Sewer (Central)**

**Brevard County  
OSTDS Area Map**

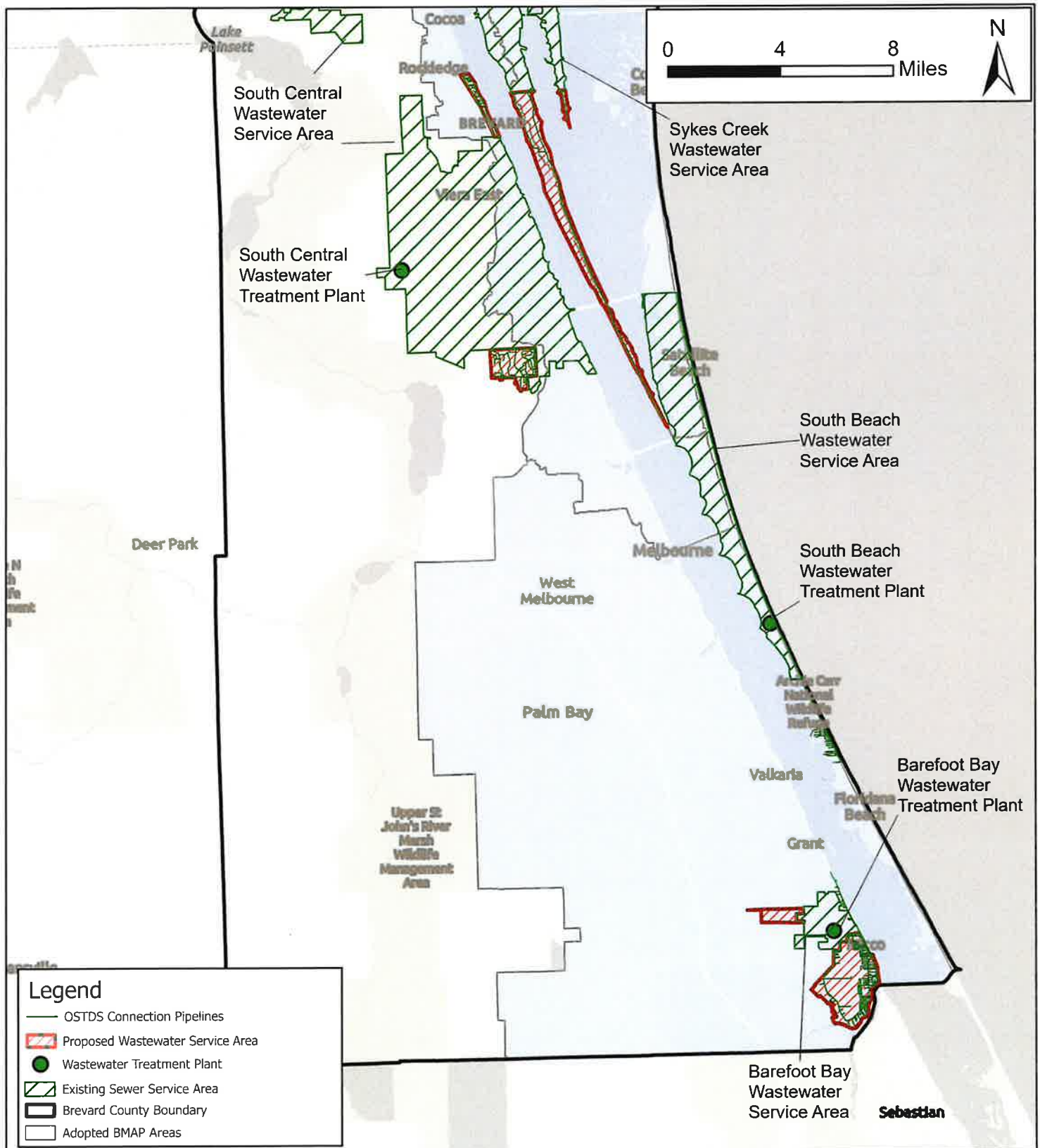
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**Figure 6-12 Pipeline Layout to Connect OSTDS to Centralized Sewer (South)**

**Brevard County  
OSTDS Area Map**

1 inch = 4.5 miles

PROJECT NUMBER: 140600004.1.300

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## 7.0 FUTURE GROWTH OF ONSITE SEWAGE TREATMENT AND DISPOSAL SYSTEMS

A projection of population growth in the areas not serviced by sewer was conducted in 2023 by Applied Ecology Inc (AEI) to comply with 403.067(7)(a)9. AEI generated future septic locations, density and loading potential to allow priority areas to be visualized as loading hotspots for consideration during the County's development of the required OSTDS Remediation Plan. Growth projections were based on the best available zoning data and assumed that vacant, developable parcels would grow to the maximum allowed density. The analysis included residential and non-residential growth projections and their associated nutrient loading.

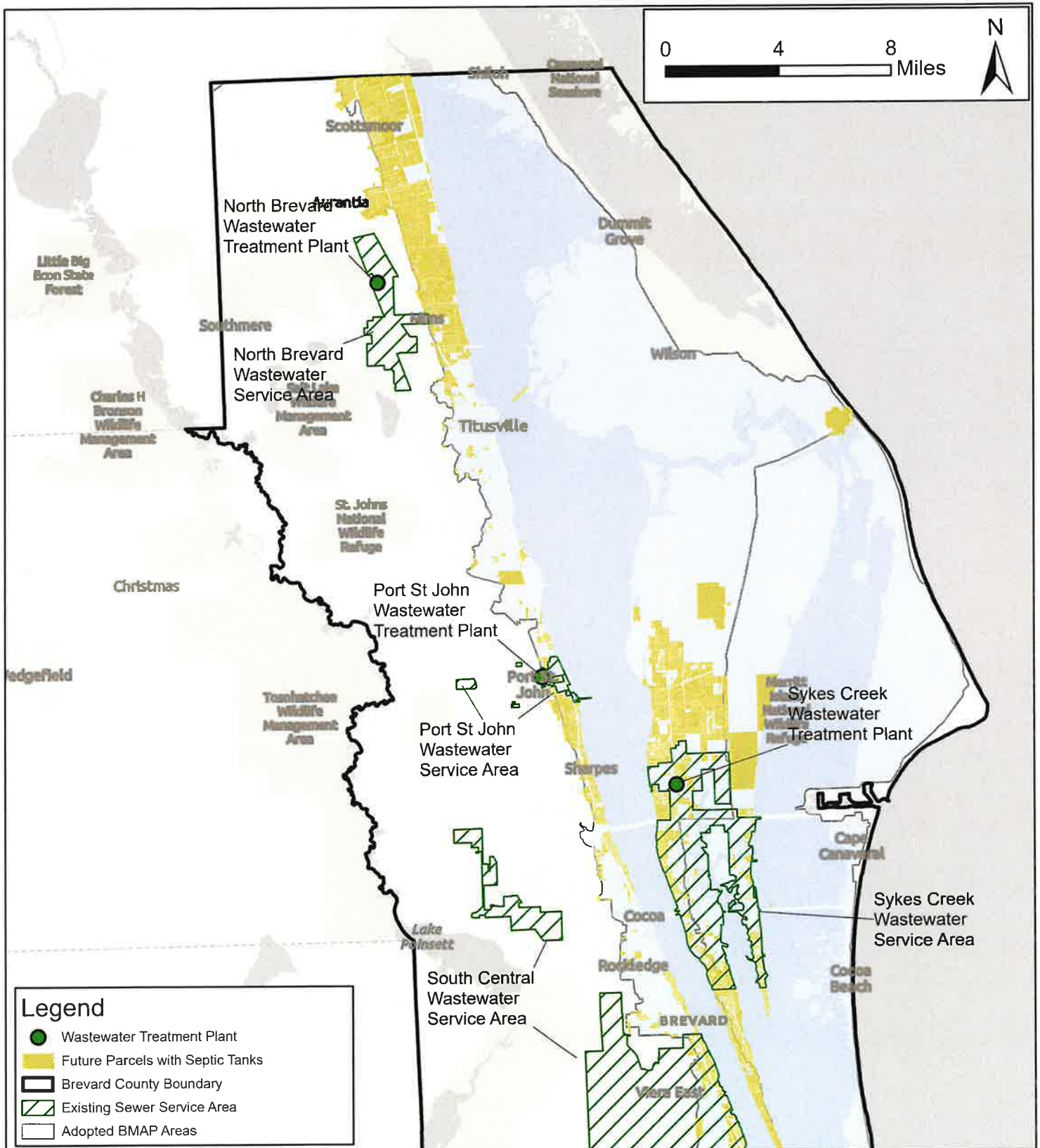
All future OSTDS, as shown in **Figure 7-1**, **Figure 7-2**, and **Figure 7-3**, were assumed to be enhanced nitrogen reducing systems, as required by state rule effective January 1, 2024. Spatial change was generated by comparing what the zoning would allow to the growth pressures projected for 2045 using UF BEBR data and 2050 SILVIS projections for land use and household density increases. Following state guidelines, particular attention was paid to projected developments of 50 units or more with lots under 1 acre each. Loading was projected using ArcNLET model output for existing soil, elevation above the groundwater table, and distance from open water connections to the Indian River Lagoon.

The spatial data were analyzed to identify future loading hotspots that could be avoided by expansion of current sewer service areas. The projections indicate that approximately 70 percent of the projected growth is expected in incorporated areas. The most concentrated hotspots of future loading in unincorporated Brevard lie within limited clusters located in 1) North Brevard, 2) Port St John, 3) Merritt Island, 4) Suntree, and 5) the South Beaches. These clusters are shown in **Figure 7-4**. Estimates of projected septic count and associated loading are compared to current septic count and loading in **Table 7-1** for the highest priority clusters.

TABLE 7-1 CLUSTERS OF GROWTH AND ASSOCIATED SEPTIC LOADING

Cluster ID	Current Septic Count	Current Septic Loads	Future Septic Count	Future Septic Loads	Location
5	491	9,281	616	10,780	South Beaches
10	884	8,424	1165	13,319	Port St John
11	845	8,470	1554	24,302	North Merritt Island
29	678	10,186	778	12,125	South Beaches
51	630	4,485	1582	21,165	North Brevard
58	1431	11,853	1720	21,278	Merritt Island
70	186	3,873	266	9,592	Suntree
4	2193	5,567	5771	20,681	Palm Bay
6	1887	5,057	4705	47,497	West Melbourne
7	3832	58,893	4163	70,185	Melbourne
71	147	7,802	180	7,962	Melbourne
9	421	9,695	628	15,680	Rockledge
12	5511	14,693	8592	23,909	Palm Bay
42	0	0	507	6,666	Palm Bay
44	1	5	992	14,670	Palm Bay

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Source: Applied Ecology, ESRI, FDOT, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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**Figure 7-1 Future OSTDS within BMAP Areas (North)**

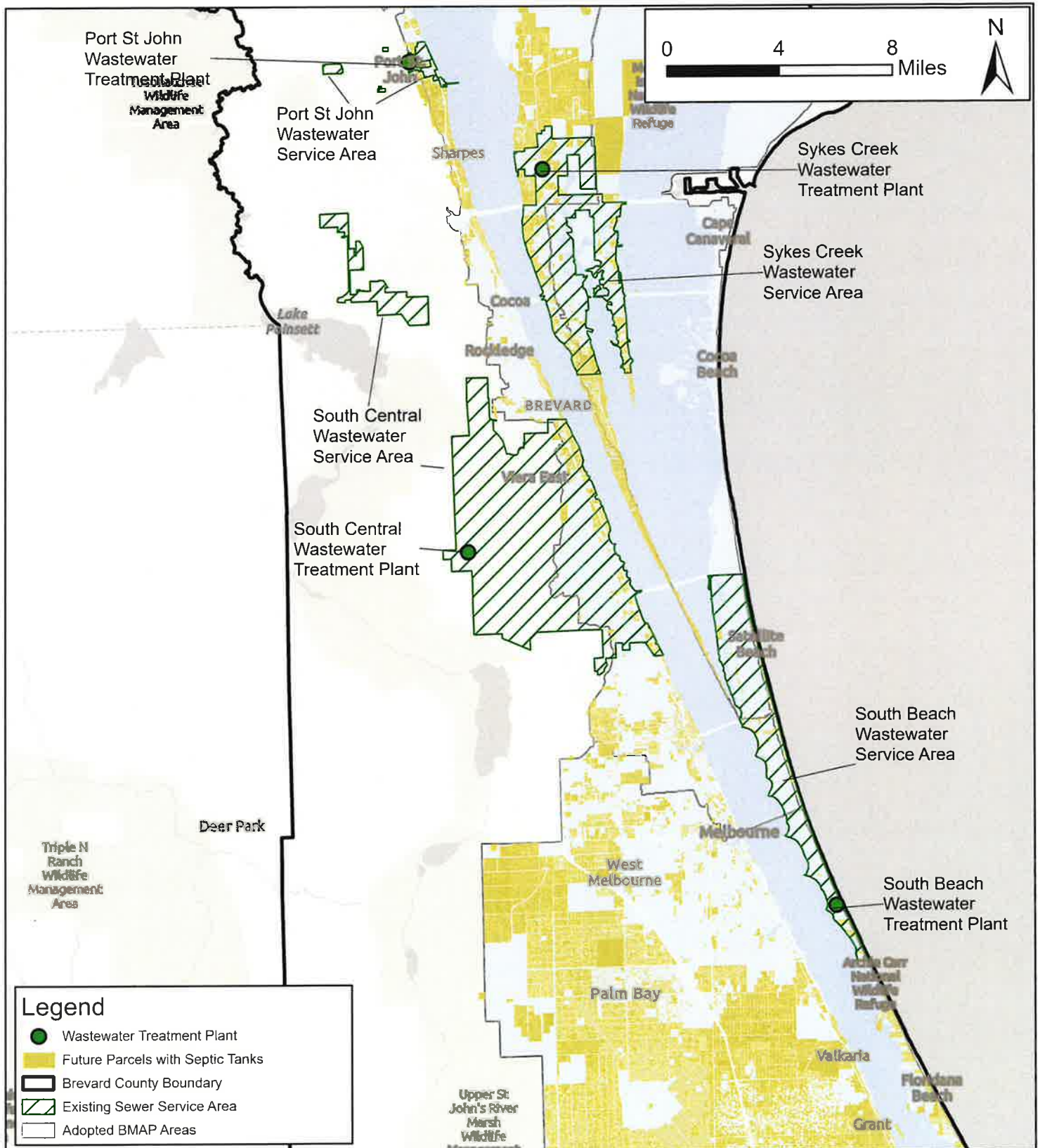
**Brevard County  
OSTDS Area Map**

1 inch = 4.5 miles

PROJECT NUMBER: 140600004.1.300

DECEMBER 2023





Source: Applied Ecology, ESRI, FDOT, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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**Figure 7-2 Future OSTDS within BMAP Areas (Central)**

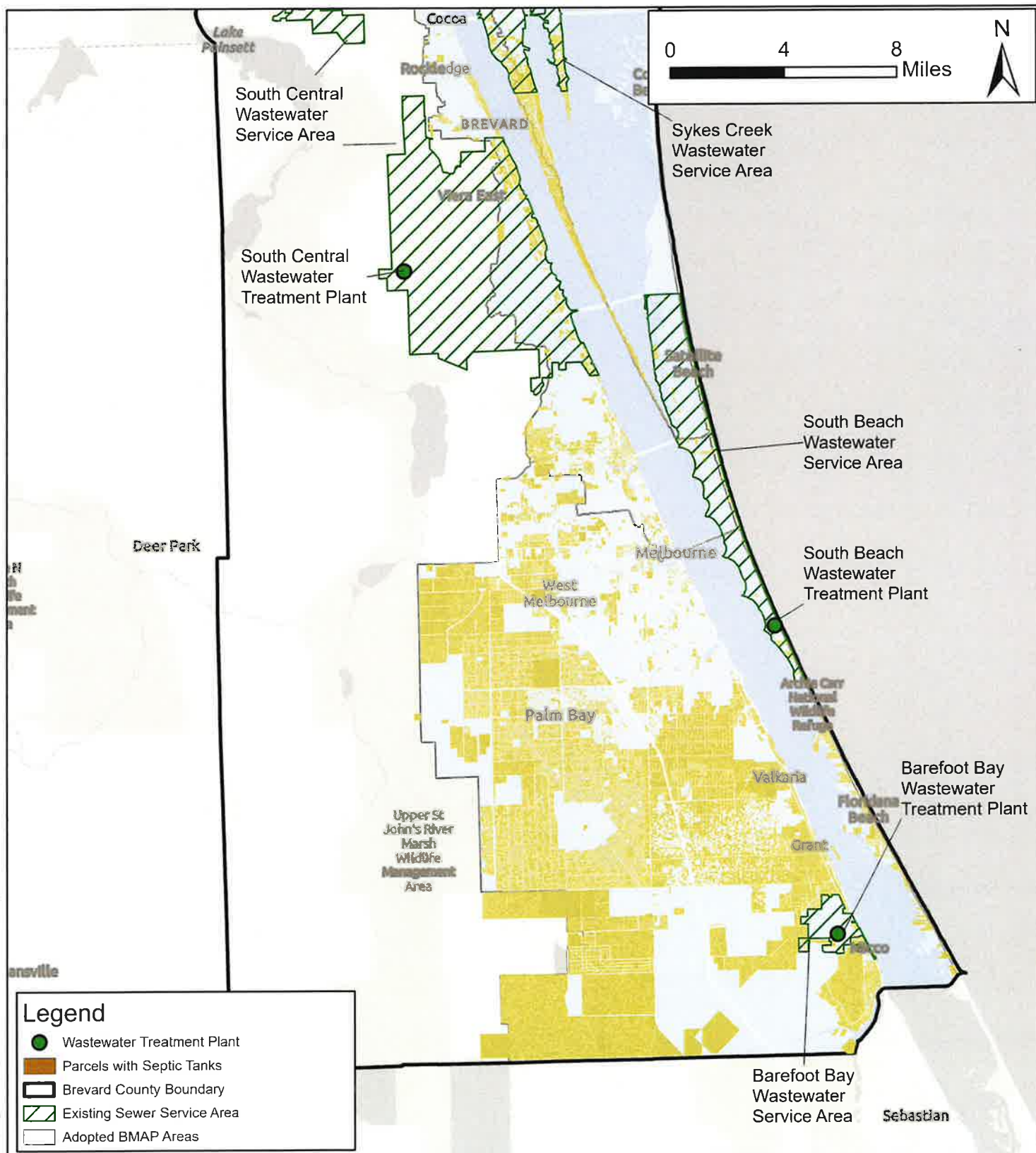
**Brevard County  
OSTDS Area Map**

1 inch = 4.5 miles

PROJECT NUMBER: 140600004.1.300

DECEMBER 2023

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Source: Applied Ecology, ESRI, FDOT, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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**Figure 7-3 Future OSTDS Within BMAP Areas (South)**

**Brevard County  
OSTDS Area Map**

1 inch = 4.5 miles

PROJECT NUMBER: 140600004.1.300

DECEMBER 2023



FIGURE 7-4 HIGHEST PRIORITY CLUSTERS OF POTENTIAL SEPTIC LOADING IN 2045-2050



## 8.0 OSTDS ELIMINATION AND ENHANCEMENT PROJECTS

In order to further reduce TN released into the BMAP areas, OSTDS elimination and enhancement projects have been developed. These projects address existing septic systems that will be abandoned/removed and the parcel connected to a centralized sewer system, as well as systems that will be upgraded to enhanced septic systems to reduce the amount of nitrogen in the septic effluent.

### 8.1 OSTDS ELIMINATION PROJECTS

The County maintains a database of all OSTDS elimination projects that are to be implemented over the next 20 years. This database includes the number of septic systems to be eliminated, the amount of nitrogen to be removed, as well as the estimated cost of the project, including all infrastructure and connection costs. These OSTDS elimination projects are presented below in **Table 8-1**.

**TABLE 8-1 OSTDS ELIMINATION PROJECTS**

Project Name	OSTDS Eliminated	Estimated Project Cost	Estimated Project Timeline
Banana River Lagoon BMAP – Quick Connects to Existing Sewer Lines	144	\$ 2,639,710	TBD – 5 of 144 are Complete
Central Indian River Lagoon BMAP – Quick Connects to Existing Sewer Lines	524	\$ 5,125,028	TBD – 90 of 524 are Complete
Cocoa – Zone C	61	\$ 4,038,210	Bid in 2026
Kelly Park	1	\$ 659,337	TBD
Lagoon Wide Quick Connects to Existing Sewer Lines	208	\$ 3,735,000	2025
Manatee Cove Park	1	\$ 1,322,826	TBD
Merritt Island – Zone C	43	\$ 3,968,750	Bid in 2025
Merritt Island – Zone F	71	\$ 3,817,063	Bid in 2024
Merritt Island – Zone G	785	\$ 41,099,476	Bid in 2026
Merritt Island Septic Phase Out	74	\$ 3,138,098	Complete
Micco – Zone B	229	\$ 14,569,652	Bid in 2026
Micco Sewer Line Extension (Phase I & II)	29	\$ 4,870,536	Connect Homes in 2024
North Indian River Lagoon BMAP – Quick Connects to Existing Sewer Lines	463	\$ 8,119,168	TBD – 49 of 463 are Complete

Project Name	OSTDS Eliminated	Estimated Project Cost	Estimated Project Timeline
North Merritt Island – Zone E	223	\$ 14,481,227	Bid in 2026
Riverwalk Park	1	\$ 781,007	TBD
Rotary Park	1	\$ 977,802	TBD
Sharpes – Zone A	186	\$ 8,824,805	Bid in 2025
Sharpes – Zone B	136	\$ 6,423,394	Bid in 2025
South Banana – Zone B	41	\$ 3,628,315	Bid in 2024
South Beaches – Zone A	37	\$ 592,160	Connect Homes in 2024
South Beaches – Zone O	4	\$ 218,225	Bid in 2024
South Beaches – Zone P	15	\$ 702,800	Bid in 2024
South Central – Zone A	101	\$ 11,873,437	Bid in 2024
South Central – Zone C	140	\$ 10,304,255	Connect Homes in 2024
South Central – Zone D	94	\$ 4,977,278	Bid in 2024
Sykes Creek – Zone M	56	\$ 11,974,524	Bid in 2025
Sykes Creek – Zone N	91	\$ 7,253,175	Bid in 2024
Sykes Creek – Zone R	221	\$ 16,765,897	Bid in 2026
Sykes Creek – Zone T	148	\$ 18,510,687	Bid in 2024
<b>TOTAL</b>	<b>4,128</b>	<b>\$ 215,391,842</b>	-

## 8.2 OSTDS ELIMINATION PROJECT PRIORITIZATION

The amount of nitrogen that would be removed, in pounds per year, if the OSTDS elimination projects were to be implemented and project cost were utilized to determine the cost per pound of nitrogen removed. The projects were then prioritized based on the cost per pound of nitrogen that would be removed and is presented below in **Table 8-2**. If all OSTDS elimination projects are implemented, an estimated 91,472 lb/yr of nitrogen will be removed from the BMAPs, which accounts for approximately 49% of Brevard County's total required nitrogen reduction.

TABLE 8-2 OSTDS ELIMINATION PROJECTS PRIORITIZATION

Ranking	Project Name	OSTDS Eliminated	Estimated Project Cost	Amount of Nitrogen Removed (lb/yr)	Cost per Pound of Nitrogen Removed
1	South Beaches - Zone A (1 of 37 connected)	37	\$ 592,160	1,306	\$ 453.42
2	Central Indian River Lagoon BMAP - Quick Connects to existing Sewer Lines	524	\$ 5,125,028	8,803	\$ 582.19
3	North Indian River Lagoon BMAP - Quick Connects to Existing Sewer Lines	463	\$ 8,119,168	11,339	\$ 716.04
4	Banana River Lagoon BMAP - Quick Connects to Existing Sewer Lines	144	\$ 2,639,710	3,224	\$ 818.77
5	Lagoon Wide Quick Connects to Existing Sewer Lines	208	\$ 3,735,000	3,120	\$ 1,197.12
6	Merritt Island Septic Phase Out	74	\$ 3,138,098	2,492	\$ 1,259.27
7	South Beaches - Zone P (0 of 15 connected)	15	\$ 702,800	489	\$ 1,437.22
8	South Central - Zone D (0 of 94 connected)	94	\$ 4,977,278	3,387	\$ 1,469.52
9	Cocoa - Zone C (0 of 61 connected)	61	\$ 4,038,210	2,550	\$ 1,583.61
10	South Beaches - Zone O (0 of 4 connected)	4	\$ 218,225	136	\$ 1,604.60
11	Micco - Zone B (0 of 229 connected)	229	\$ 14,569,652	8,687	\$ 1,677.18
12	Sharpes - Zone A (0 of 186 connected)	186	\$ 8,824,805	5,248	\$ 1,681.56
13	South Central - Zone C (59 of 150 connected)	140	\$ 10,304,255	5,146	\$ 2,002.38
14	Sharpes - Zone B (0 of 136 connected)	136	\$ 6,423,394	2,692	\$ 2,386.10
15	Sykes Creek - Zone N (0 of 91 connected)	91	\$ 7,253,175	2,784	\$ 2,605.31
16	Merritt Island - Zone C (0 of 43 connected)	43	\$ 3,968,750	1,419	\$ 2,796.86
17	Merritt Island - Zone F (0 of 71 connected)	71	\$ 3,817,063	1,292	\$ 2,954.38
18	South Central - Zone A (0 of 101 connected)	101	\$ 11,873,437	3,655	\$ 3,248.55

Ranking	Project Name	OSTDS Eliminated	Estimated Project Cost	Amount of Nitrogen Removed (lb/yr)	Cost per Pound of Nitrogen Removed
19	Micco Sewer Line Extension (Phase I and II) (1 of 29 connected)	29	\$ 4,870,536	1,493	\$ 3,262.25
20	Sykes Creek - Zone R (0 of 221 connected)	221	\$ 16,765,897	5,040	\$ 3,326.57
21	South Banana - Zone B (0 of 41 connected)	41	\$ 3,628,315	915	\$ 3,965.37
22	North Merritt Island - Zone E (0 of 223 connected)	223	\$ 14,481,227	3,287	\$ 4,405.61
23	Merritt Island - Zone G (0 of 785 connected)	785	\$ 41,099,476	7,588	\$ 5,416.38
24	Sykes Creek - Zone T (0 of 148 connected)	148	\$ 18,510,6867	3,360	\$ 5,509.13
25	Sykes Creek - Zone M (0 of 56 connected)	56	\$ 11,974,524	1,798	\$ 6,659.91
26	Kelly Park	1	\$ 659,337	90	\$ 7,325.97
27	Rotary Park	1	\$ 977,802	104	\$ 9,401.94
28	Manatee Cove Park	1	\$ 1,322,826	24	\$ 55,117.75
29	Riverwalk Park	1	\$ 781,007	4	\$ 195,251.75

### 8.3 OSTDS ENHANCEMENT PROJECTS

Of the 18,827 existing OSTDS in unincorporated Brevard County, 18,561 are conventional OSTDS. Of these, 4,128 are planned to be converted to sewer, leaving up to 14,433 conventional septic systems that are not including in the septic system elimination projects. These septic systems will require upgrading to enhanced nutrient reducing septic systems. The County maintains a database of all septic system enhancement projects which are to take place over the next 20 years. This database includes the estimated cost of the project as well as the amount of nitrogen that will be eliminated once the project is complete. These Funded OSTDS enhancement projects are presented below in **Table 8-3**



TABLE 8-3 OSTDS ENHANCEMENT PROJECTS

Project Name	No. of Septic Systems	Estimated Project Cost	Cost per Pound of Nitrogen Removed
Lagoon-wide Septic Upgrades to Advanced Treatment Units	144	\$ 2,704,653	\$ 1,252.15
Banana River Lagoon BMAP Septic Upgrades to Advanced Treatment Units	100	\$ 2,122,244	\$ 1,097.33
North Indian River Lagoon BMAP Septic Upgrades to Advanced Treatment Units	586	\$ 12,447,196	\$ 898.26
Central Indian River Lagoon BMAP Septic Upgrades to Advanced Treatment Units	939	\$ 20,462,273	\$ 922.14
<b>TOTAL</b>	<b>1,769</b>	<b>\$ 37,736,366</b>	<b>\$ 4,169.88</b>

Of the 18,561 conventional OSTDS in unincorporated Brevard County, there are an estimated 12,664 septic systems in unincorporated Brevard that are not included in the 4,128 homes to be connected by the septic system elimination projects, or the 1,769 homes to be upgraded by the septic system enhancement projects listed above. These septic systems will require upgrading to enhanced nutrient reducing septic systems. These septic systems were sorted into three levels of potential future OSTDS enhancement projects.

#### 8.4 OSTDS ENHANCEMENT PROJECTS PRIORITIZATION

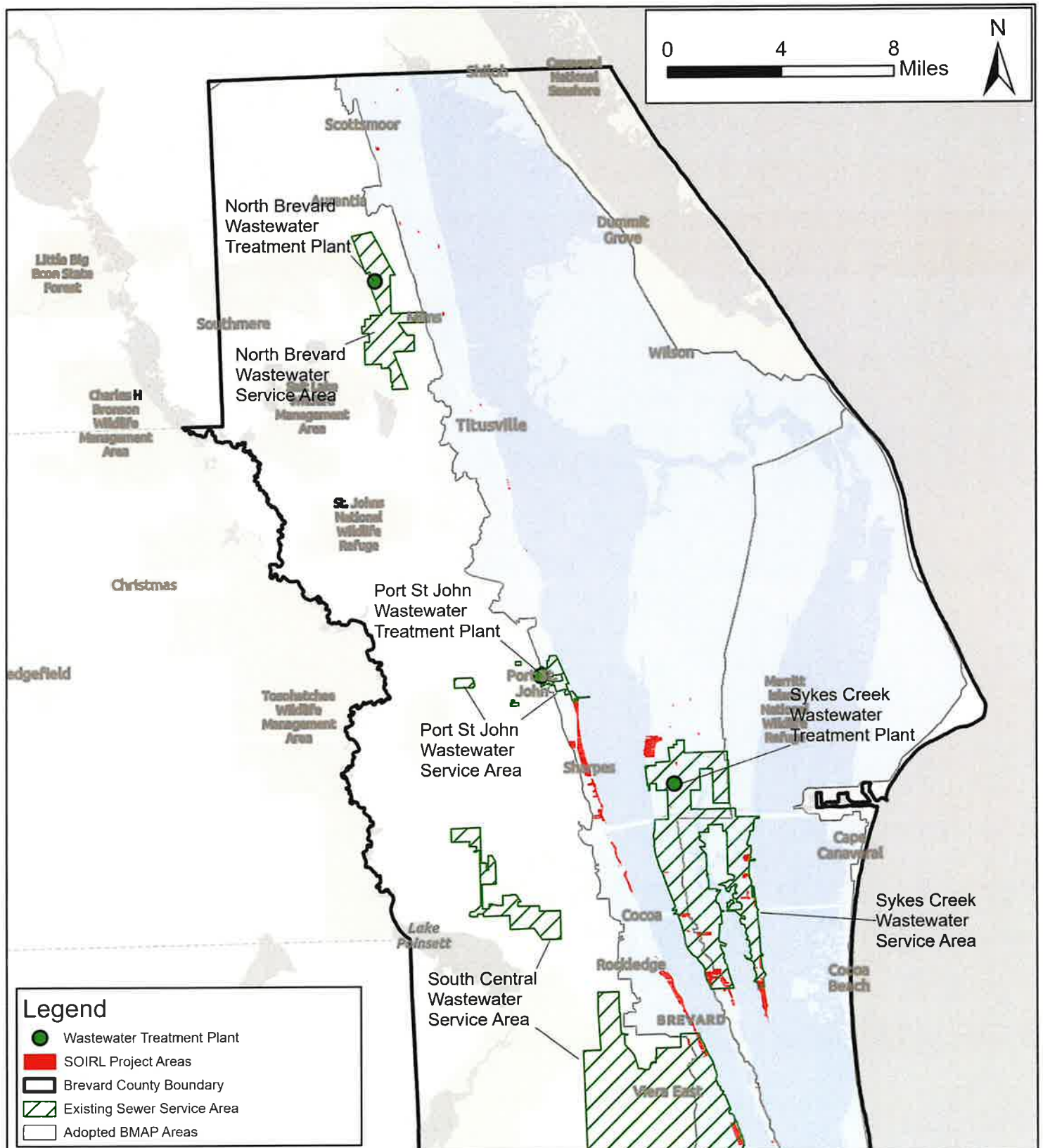
The amount of nitrogen to be removed by each potential OSTDS Enhancement Project was calculated using the ArcNLET tool developed for the State for estimating the load that migrates from the septic system drainfield to a waterbody of interest. In this case, the waterbody of interest is the Indian River Lagoon. Costs of \$20,000 per upgrade were based on recent, local experience of completing over 100 septic upgrades in the unincorporated County. Cost effectiveness for each potential future level of septic enhancement project was estimated using the ArcNLET based load and the \$20,000 per upgrade cost. The OSTDS enhancement projects were then prioritized based on the cost per pound of nitrogen to be removed, this prioritization is presented in **Table 8-4**. If the funded OSTDS enhancement projects are implemented, an estimated 40,141 lb/yr of nitrogen will be removed from the BMAPs, which accounts for approximately 22% of the County's total required nitrogen reduction. If all existing OSTDS are upgraded to enhanced nitrogen reducing systems, an estimated 110,697 lb/yr of nitrogen will be removed from the BMAPs, which accounts for approximately 60% of the County's total required nitrogen removal.



TABLE 8-4 OSTDS ENHANCEMENT PROJECTS PRIORITIZATION

Ranking	Project Name	Estimated Project Cost	Amount of Nitrogen Removed (lb/yr)	Cost per Pound of Nitrogen Removed
1	SOIRL – Funded OSTDS Upgrades (1,769)	\$ 31,957,000	40,141	\$ 796.12
2	Enhancement of 8,919 Unfunded OSTDS within Brevard County's Adopted Septic Overlay Ordinance Area	\$ 178,380,000	48,095	\$ 3,708.94
3	Enhancement of 7,931 Unfunded OSTDS Outside Brevard County's Adopted Septic Overlay Ordinance Area	\$ 156,620,000	22,461	\$ 6,972.84
<b>Area Combinations</b>				
1 & 2	SORIL Funded OSTDS Upgrades and Enhancements within Brevard County's Adopted Septic Overlay Ordinance Area (10,688)	\$ 210,337,000	88,236	\$ 2,383.81
1, 2, & 3	All Unincorporated Areas (18,519)	\$ 366,957,000	110,697	\$ 3,314.94
2 & 3	All unfunded in Unincorporated Areas (16,750)	\$ 335,000,000	70,556	\$ 4,748.00

The projects funded in the SOIRL Project Plan and described above are shown below in **Figure 8-1**, **Figure 8-2**, and **Figure 8-3**.



Source: Applied Ecology; ESRI; FDOT; Maxar; GeoEye; Earthstar Geographics; CNES/Airbus DS; USDA; USGS; AeroGRID; IGN; and the GIS User Community

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**Figure 8-1 SOIRL Project Areas (North)**

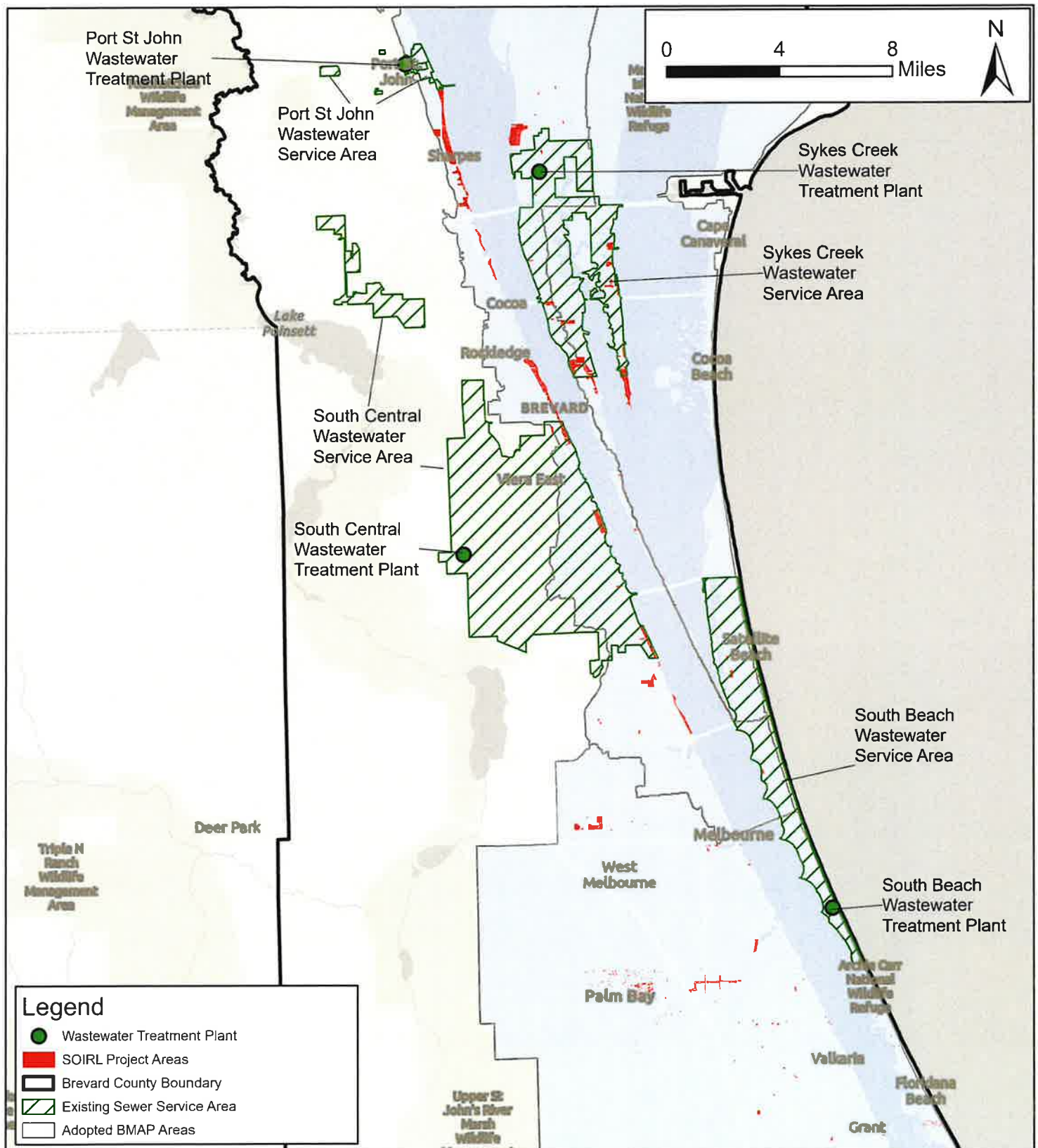
**Brevard County  
OSTDS Area Map**

1 inch = 4.5 miles

PROJECT NUMBER: 140600004.1.300

DECEMBER 2023

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Source: Applied Ecology; ESRI, FDOT, Muxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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**Figure 8-2 SOIRL Project Areas (Central)**

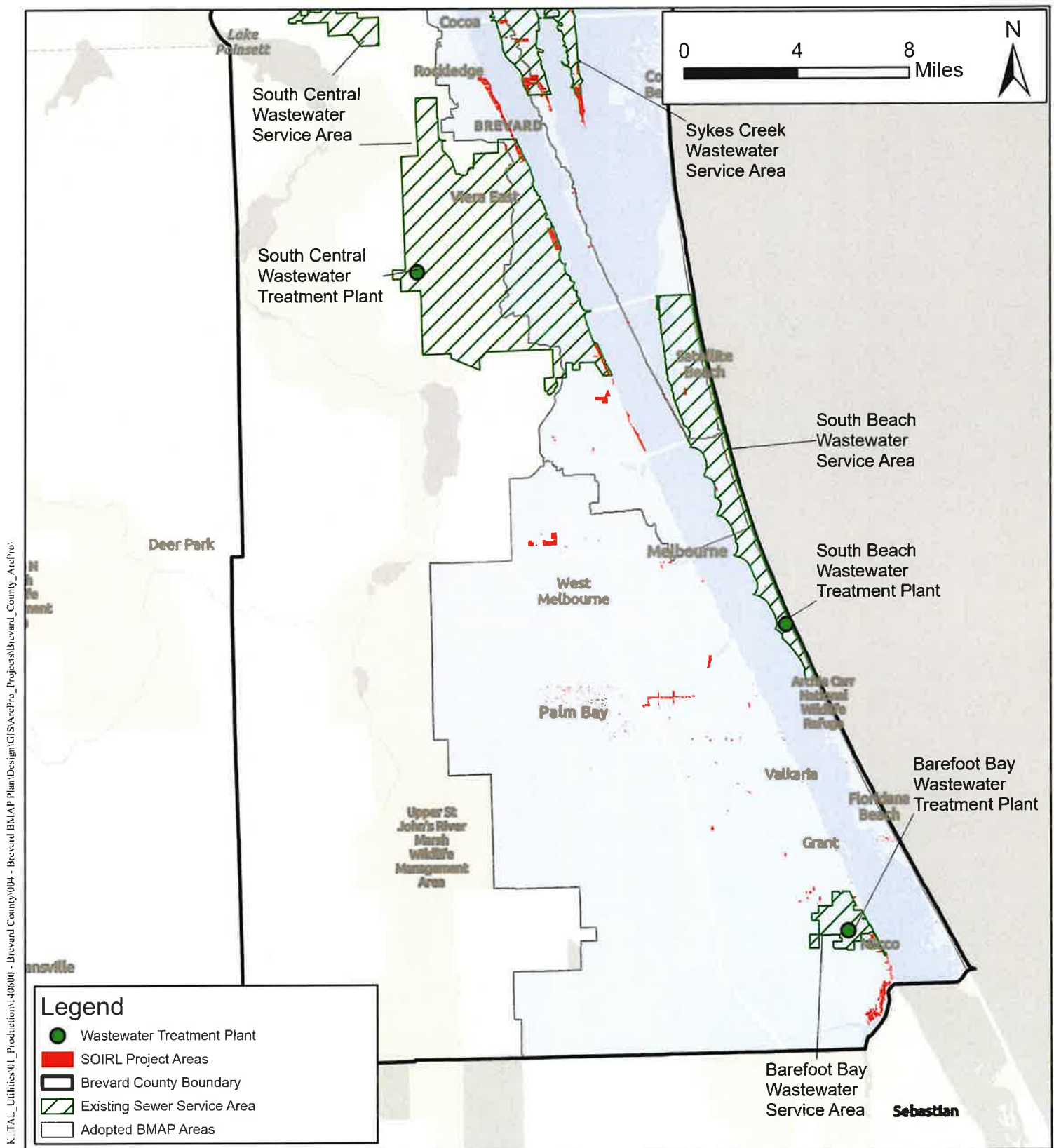
**Brevard County  
OSTDS Area Map**

1 inch = 4.5 miles

PROJECT NUMBER: 140600004.1.300

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Source: Applied Ecology, ESRI, FDOT, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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**Figure 8-3 SOIRL Project Areas (South)**

**Brevard County  
 OSTDS Area Map**

## 9.0 CONCLUSION

With the implementation of the wastewater treatment projects discussed previously, Brevard County will be able to remove an estimated 207,089 lb/yr of total nitrogen. In addition, with the implementation of funded OSTDS elimination and enhancement projects Brevard County will be able to remove an estimated 131,613 lb/yr of total nitrogen. A summary of TN removed within each BMAP area relative to the County's required nitrogen reduction is presented below in **Table 9-1**.

The aforementioned projects will allow the County to remove approximately 338,702 lb/yr of TN as shown in **Table 9-2**, this accounts for approximately 182% of the total nitrogen that the County is required to remove each year.

**TABLE 9-1 SUMMARY OF TN REMOVAL BY BMAP AREA FOR NITROGEN REMOVAL PROJECTS**

BMAP Area	Required Nitrogen Reduction (lb/yr)	Wastewater Treatment Facility Projects Nitrogen Removed (lb/yr)	OSTDS Elimination Projects Nitrogen Removed (lb/yr)	OSTDS Enhancement Projects Nitrogen Removed (lb/yr)
Banana River Lagoon	45,425	0	27,614	1,934
North Indian River Lagoon	92,265	41,042 – 95,756	41,755	13,857
Central Indian River Lagoon	47,927	111,333	18,983	22,190
Unspecified BMAP	N/A	N/A	3,120	2,160
<b>Total</b>	<b>185,617</b>	<b>207,089</b>	<b>91,472</b>	<b>40,141</b>

**TABLE 9-2 SUMMARY OF TN REMOVAL FOR ALL PROJECTS**

Project Type	TN Reduction (lb/yr)
Treatment	207,089
Septic Elimination	91,472
Septic Enhancement	40,141
<b>Total</b>	<b>340,280</b>