



*Florida Department of
Environmental Protection*

Caloosahatchee Estuary BMAP Technical Meeting

March 8, 2011

South Florida Water Management District
2301 McGregor Boulevard, Ft. Myers Florida



Agenda

1. Welcome and Opening Remarks
2. Summary of Updated Loading and Interim Targets
3. Comments Received
4. Monitoring Plan





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Caloosahatchee Estuary BMAP

Review of BMAP Process



Caloosahatchee Estuary TMDL

3240A, 3240B, 3240C

- TMDL for Nutrients
 - **Causative Pollutant** – Total Nitrogen (TN)
 - **Target** : Seagrass light requirements in San Carlos Bay
- TMDL= 23% Reduction in Total Nitrogen (over the entire river basin)





Caloosahatchee BMAP

- Current Total Load at the Estuary – 11,799,762 lbs/yr
- Required Reduction (23%) – 2.71 million pounds
- Target TN load at Estuary – 9,085,817 lbs/yr
- Current Load from Tidal Portion - 2,063,723 lbs/yr





Summary of TMDL

Source of Total Nitrogen	Existing Loading		
	Load (lb/yr)	Load (tons/y)	% of Total
Upstream of S-79			
Lake Okeechobee at TMDL	6,222,155	2,822	52.7%
Load to be Removed from Lake O	782,224	355	6.6%
NPS Loading	2,731,660	1,239	23.2%
Subtotal From S-79	9,736,039	4,416	82.5%
Estuarine (Below S-79)			
WWTP Loads	136,875	62	1.2%
NPS Loads	1,926,848	874	16.3%
Subtotal Below S-79	2,063,723	936	17.5%
Total to Estuary	11,799,762	5,352	100.0%
Load at TMDL	9,085,817	4,121	77.0%
Amount Reduced	2,713,945	1,231	23.0%



Updated Loading Below S-79

Source	Total Load (lb/yr)	% of Total
Direct WWTP	136,875	7.4%
Indirect WWTP	13,713	0.7%
Nonpoint Sources	1,690,084	91.8%
Total	1,840,672	100.0%

- Accounts for Indirect WWTP Originally Counted with NPS
- Accounts for Corrected Conversion of Organic Nitrogen Loading



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Caloosahatchee Estuary BMAP

Summary of Updated Loading and Interim Targets



Key Stakeholders - Tidal Caloosahatchee Basin

- Lee County
- Charlotte County
- City of Cape Coral
- City of Ft. Myers
- East County Water Control District
- Lucaya CDD
- FDOT
- FDACS





Separation of NPS and PS in Watershed

- 13,713 lb/yr in Load Points 10, 13, 17 and 24
- Lehigh Acres, Jamaica Bay West, River Trails MHP, North Ft. Myers, Del Tura Country Club, Lee County Fiesta Village





Updated Summary of Loading

Area Name (Within Tidal Caloosahatchee Watershed)	Total Area (Acres)	Average Annual TN Load (lb)	Load Expressed as % of Tidal Basin load
City of Cape Coral	36,678	328,225	19.4%
City of Fort Myers	11,802	158,547	9.4%
ECWCD	32,982	158,808	9.4%
Lucaya CCD	134	803	0.0%
Unincorp. Lee County	64,375	500,623	29.6%
Charlotte County	72,285	232,990	13.8%
FDOT	2,256	23,934	1.4%
Agriculture	39,215	286,154	16.9%
Total Load	259,727	1,690,084	100.0%





Background Load

Area Name (Within Tidal Caloosahatchee Watershed)	Existing Loading		Background Loading		
	Total Area (Acres)	Average Annual TN Load (lb)	NPS Background Loading (lb/yr)	Non- Background Load (Total - Natural Load, lb/yr)	% of Total Non- Background Load
City of Cape Coral	36,678	328,225	185,333	142,892	26.6%
City of Fort Myers	11,802	158,547	102,000	56,547	10.5%
ECWCD	32,982	158,808	106,667	52,141	9.7%
Lucaya CCD	134	803	620	183	0.0%
Unincorp. Lee County	64,375	500,623	306,000	194,623	36.2%
Charlotte County	72,285	232,990	231,687	1,303	0.2%
FDOT	2,256	23,934	11,333	12,601	2.3%
Agriculture	39,215	286,154	209,333	76,821	14.3%
Total Load	259,727	1,690,084	1,152,974	537,110	100.0%

Background Load = Total Load from Natural Land Uses





Allocation Process

- Start with The TMDL Requirement
- Calculate Background Load
- Difference Between the Two is Non-Background Load
- Allocate by Stakeholders Percent of Non-Background Load
- Add Background Load
- Result is Allocated Loading





Allocation by % of Non-Background Loading

Area Name (Within Tidal Caloosahatchee Watershed)	Average Annual TN Load (lb)	NPS Background Loading (lb/yr)	Allocated Load by % Non- Background	Background + Allocated Load	Load Reduction (lb/yr)	% Reduction	1st 5-Year Load Reduction (lb/yr)
City of Cape Coral	328,225	185,333	39,478	224,811	103,414	31.5%	34,471
City of Fort Myers	158,547	102,000	15,623	117,623	40,924	25.8%	13,641
ECWCD	158,808	106,667	14,405	121,072	37,736	23.8%	12,579
Lucaya CCD	803	620	51	671	132	16.5%	44
Unincorp. Lee County	500,623	306,000	53,770	359,770	140,853	28.1%	46,951
Charlotte County	232,990	231,687	360	232,047	943	0.4%	314
FDOT	23,934	11,333	3,481	14,815	9,119	38.1%	3,040
Agriculture	286,154	209,333	21,224	230,557	55,597	19.4%	18,532
Total Load	1,690,084	1,152,974	148,391	1,301,365		23.0%	129,573

Non-Background Load at TMDL = TMDL Load –
Background Load = 1,301,365 – 1,152,974 = 148,391





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Caloosahatchee Estuary BMAP

Comments Provided by Stakeholders



Major Comments Received

- Supporting information for loading factors
 - See Next Slide
 - Full Allocation Analysis on ftp Site in Next Week
- Accounting for loads from failing septic systems
 - Not Included in Modeling for Caloosahatchee Estuary
- Credit for education
- Modeling Issues





Loading Factors

Land Use Type	HSPF Loading (lb/ac/yr) for Precipitation Zones					Loading Factor	
	1	2	3	4	5	Zone A	Zone B
Forest/Rural Open	6.3	6.6	3.9	3.8	4.0	0.34	0.26
Urban Open	7.3	7.7	4.5	4.3	4.7	0.40	0.31
Agriculture/Pasture	14.2	15.0	8.4	8.2	8.9	0.77	0.58
Low Density Residential	10.8	11.3	7.4	7.2	7.7	0.58	0.50
Medium Density Residential	15.9	16.6	11.4	11.3	12.0	0.86	0.78
High Density Residential	18.6	19.3	14.6	14.5	15.2	1.00	1.00
Commercial	19.0	19.7	16.3	16.3	16.8	1.02	1.11
Industrial	19.0	19.7	16.3	16.3	16.8	1.02	1.11
Highway	19.0	19.7	16.3	16.3	16.8	1.02	1.11
Water Wetlands	5.7	6.1	3.6	3.6	3.8	0.31	0.25
Zone	A	A	B	B	B		





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Caloosahatchee Estuary BMAP

Monitoring Program



Purpose of Monitoring

- Milestones
 - Trends Regarding Ambient TN Concentrations in Caloosahatchee Estuary
 - Trends in Nutrient Loads to Estuary from Lands Below S-79
- Research
 - Data to Update and Upgrade Nutrient Modeling Within Tributaries and Estuary





Milestone Monitoring

- Are we succeeding in reducing loads to the estuary?
 - Pick out tributaries with the greatest input
 - Calculate loads using ambient data and flows





Research Monitoring

- Answer unknowns
 - Refinement of Model Inputs
 - Effect of BMPs
 - Contribution by a land use category



Existing Monitoring Data

Multiple Sources:

- City of Cape Coral
- City of Ft. Myers
- Lee County
- SCCF
- SFWMD
- FDEP
- USGS

Multiple Parameters:

- Chlorophyll A
- Color
- Dissolved Oxygen
- Nitrogen Species
- Phosphorus Species
- Many Others





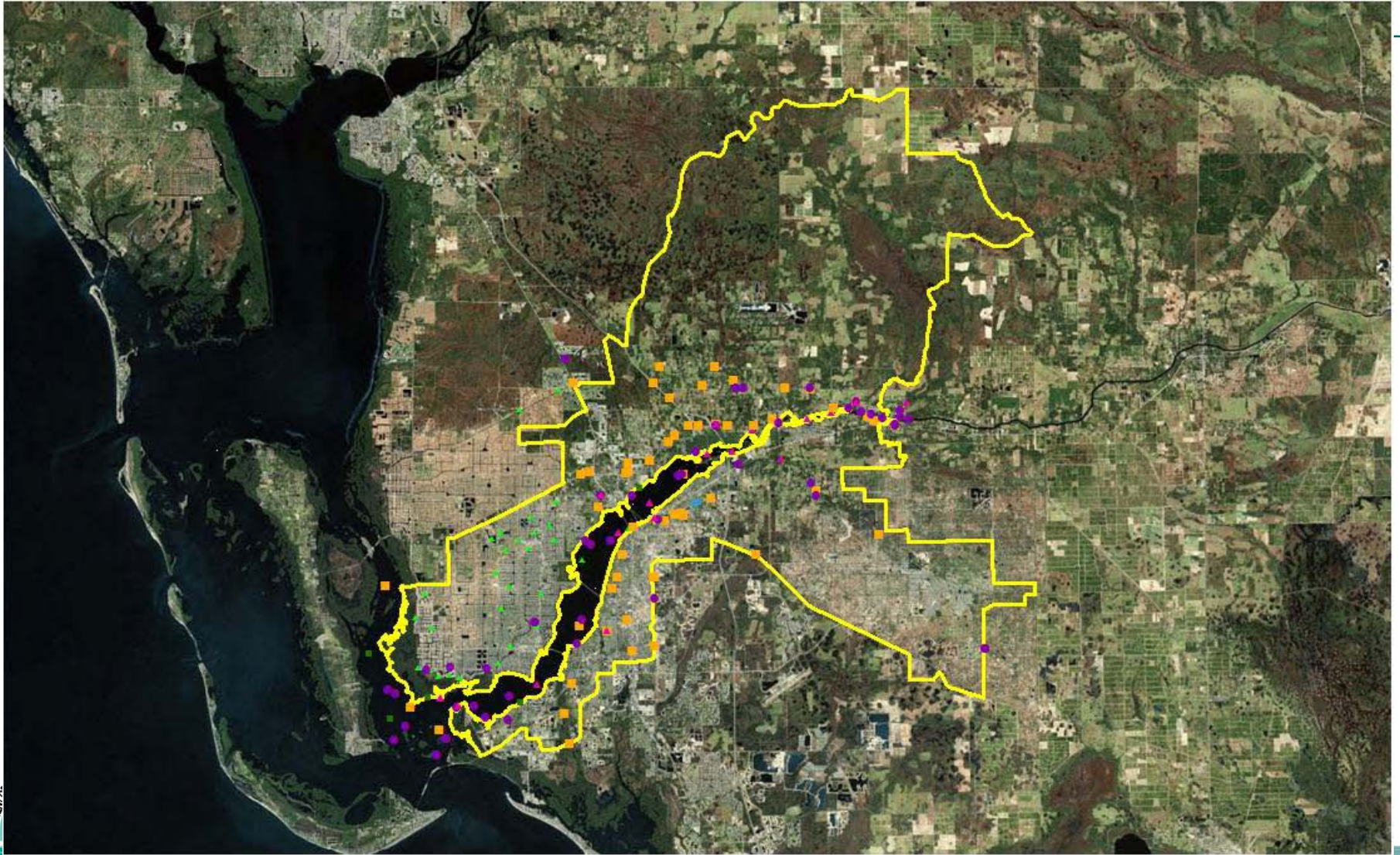
Existing Monitoring by Stakeholders

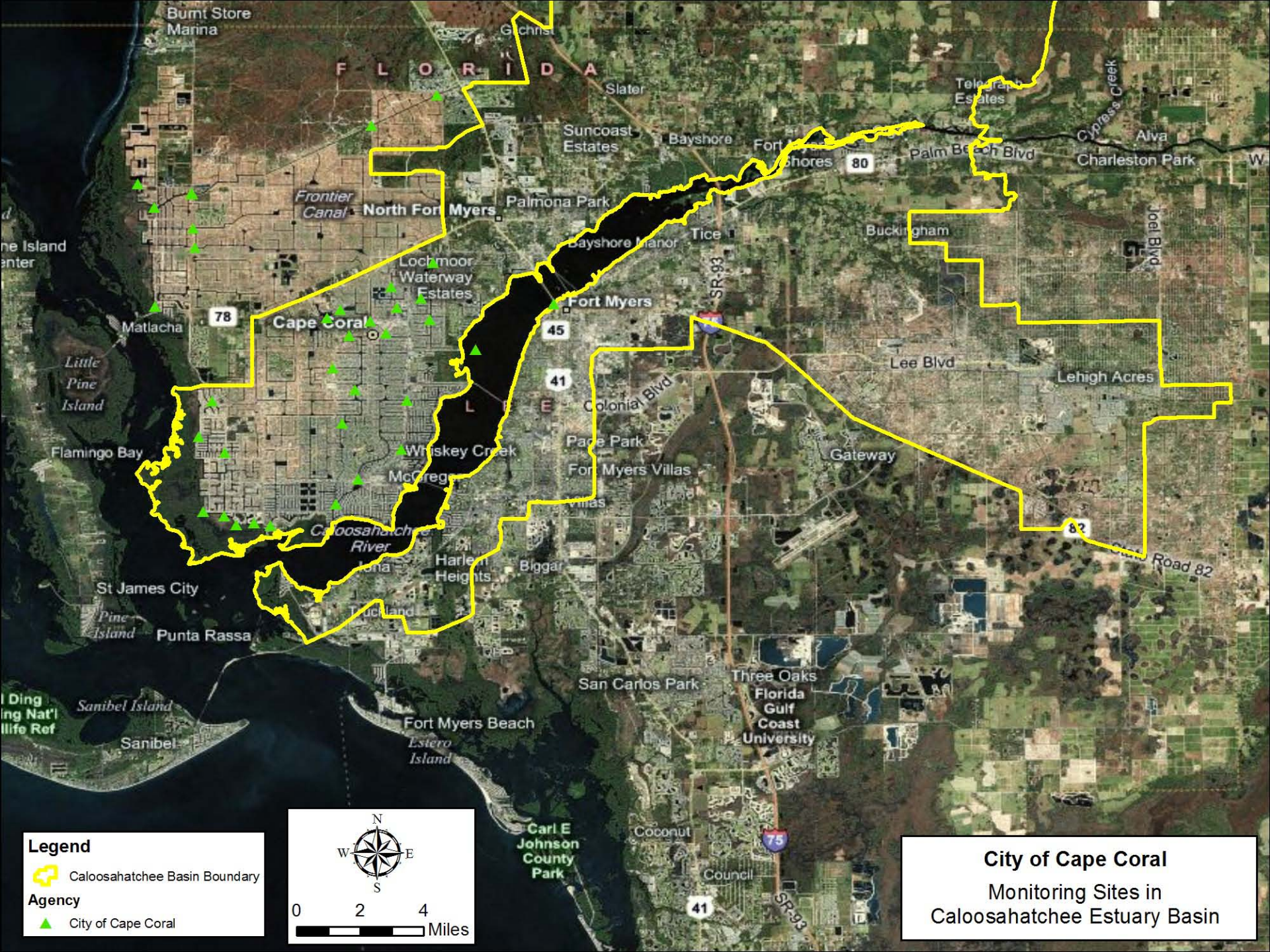
- Presentation - Sampling by entity:
Lee, Cape Coral, Ft. Myers, SFWMD, USGS, FDEP etc.
- Supporting handout –parameters and frequency.





Existing Monitoring Stations





Legend



Caloosahatchee Basin Boundary

Agency



City of Cape Coral

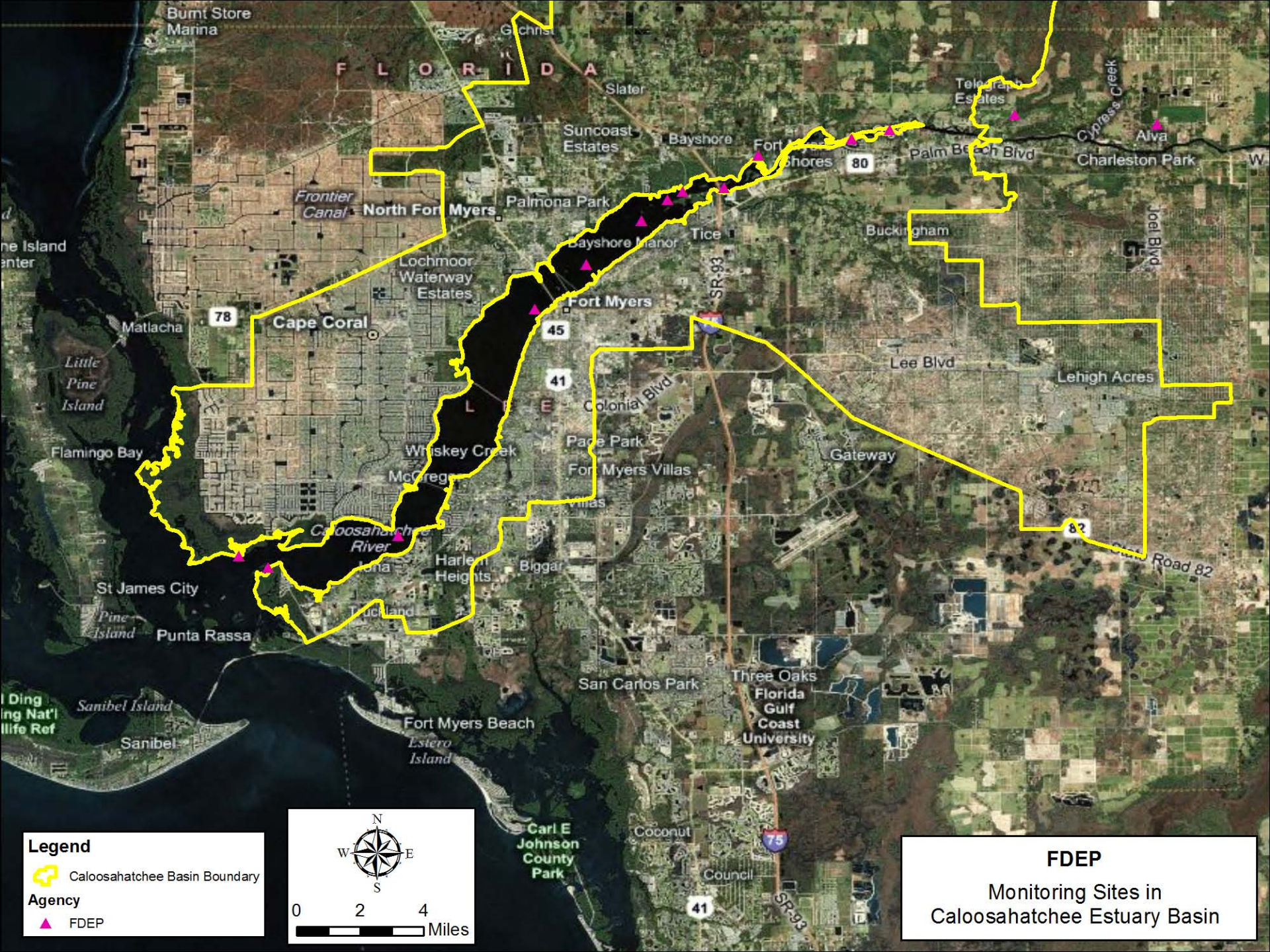


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Miles

City of Cape Coral

Monitoring Sites in
Caloosahatchee Estuary Basin

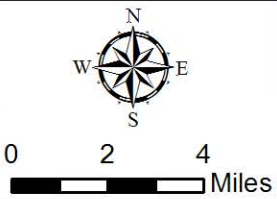


Legend

 Caloosahatchee Basin Boundary

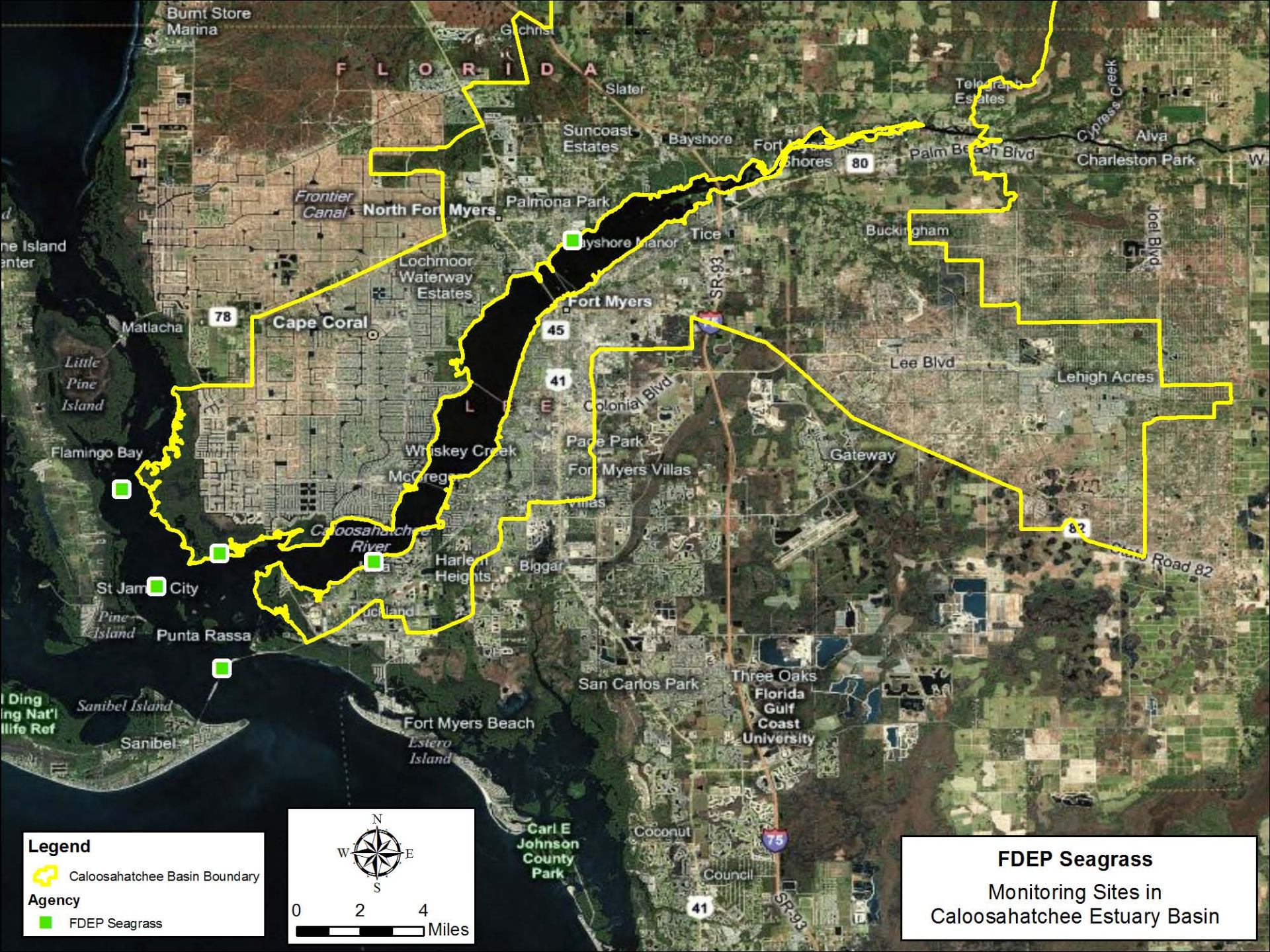
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 FDEP



FDEP

Monitoring Sites in
Caloosahatchee Estuary Basin

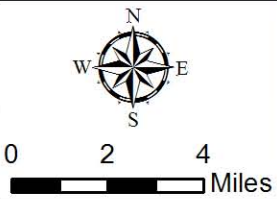


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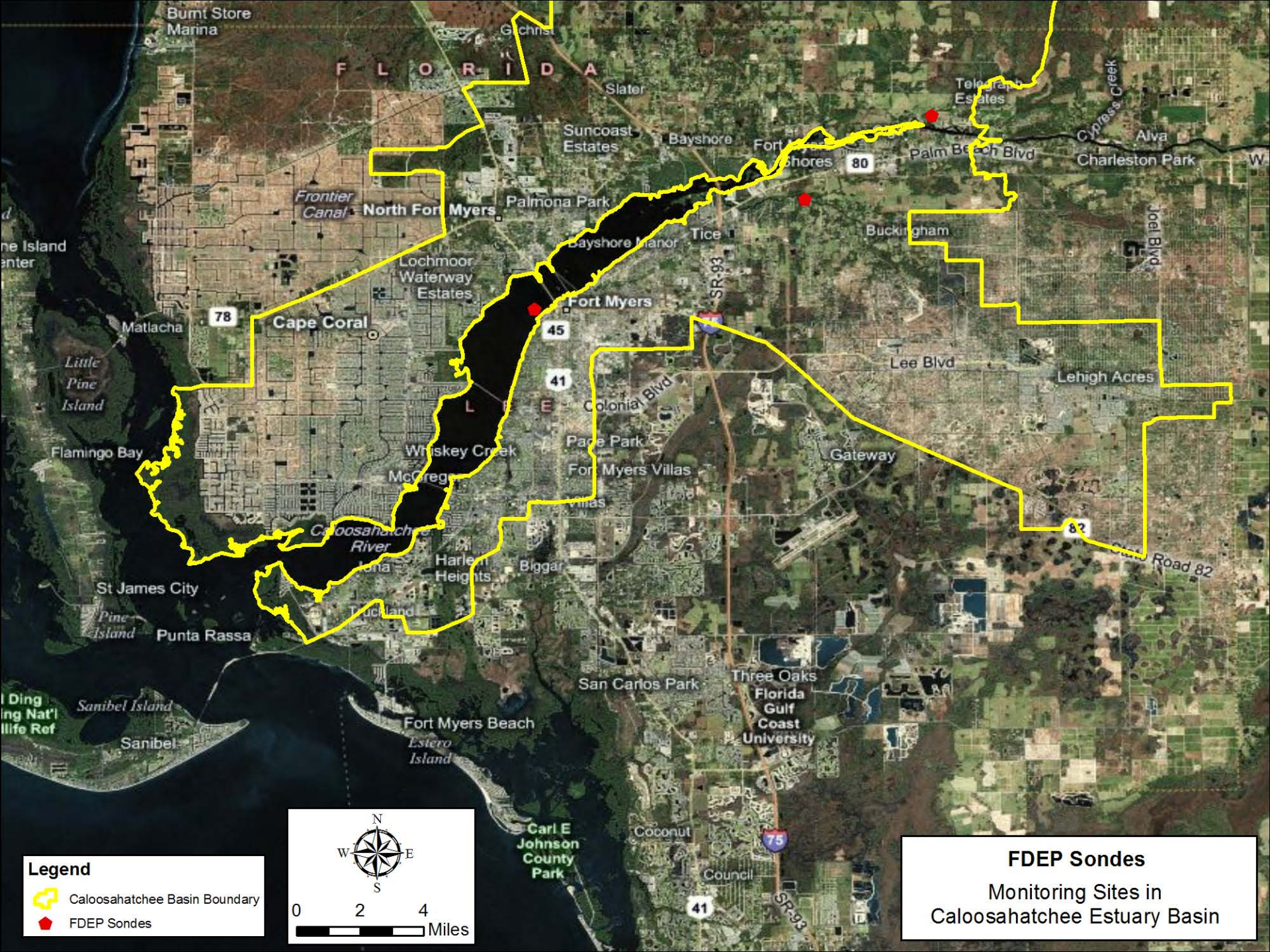
 Caloosahatchee Basin Boundary

Agency

 FDEP Seagrass



FDEP Seagrass
Monitoring Sites in
Caloosahatchee Estuary Basin



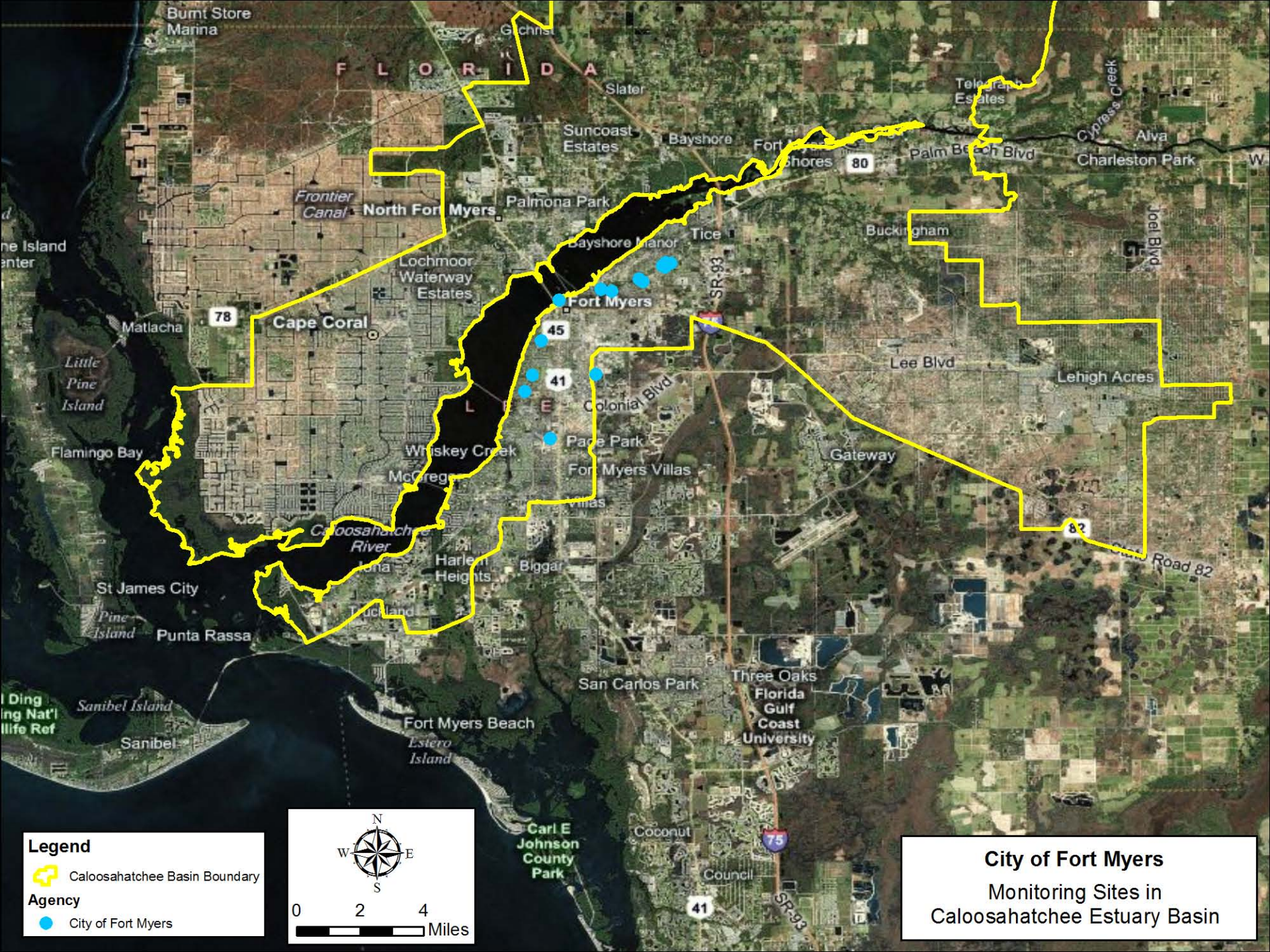
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-  Caloosahatchee Basin Boundary
-  FDEP Sondes

0 2 4 Miles



FDEP Sondes
Monitoring Sites in
Caloosahatchee Estuary Basin



Legend



Caloosahatchee Basin Boundary

Agency



City of Fort Myers

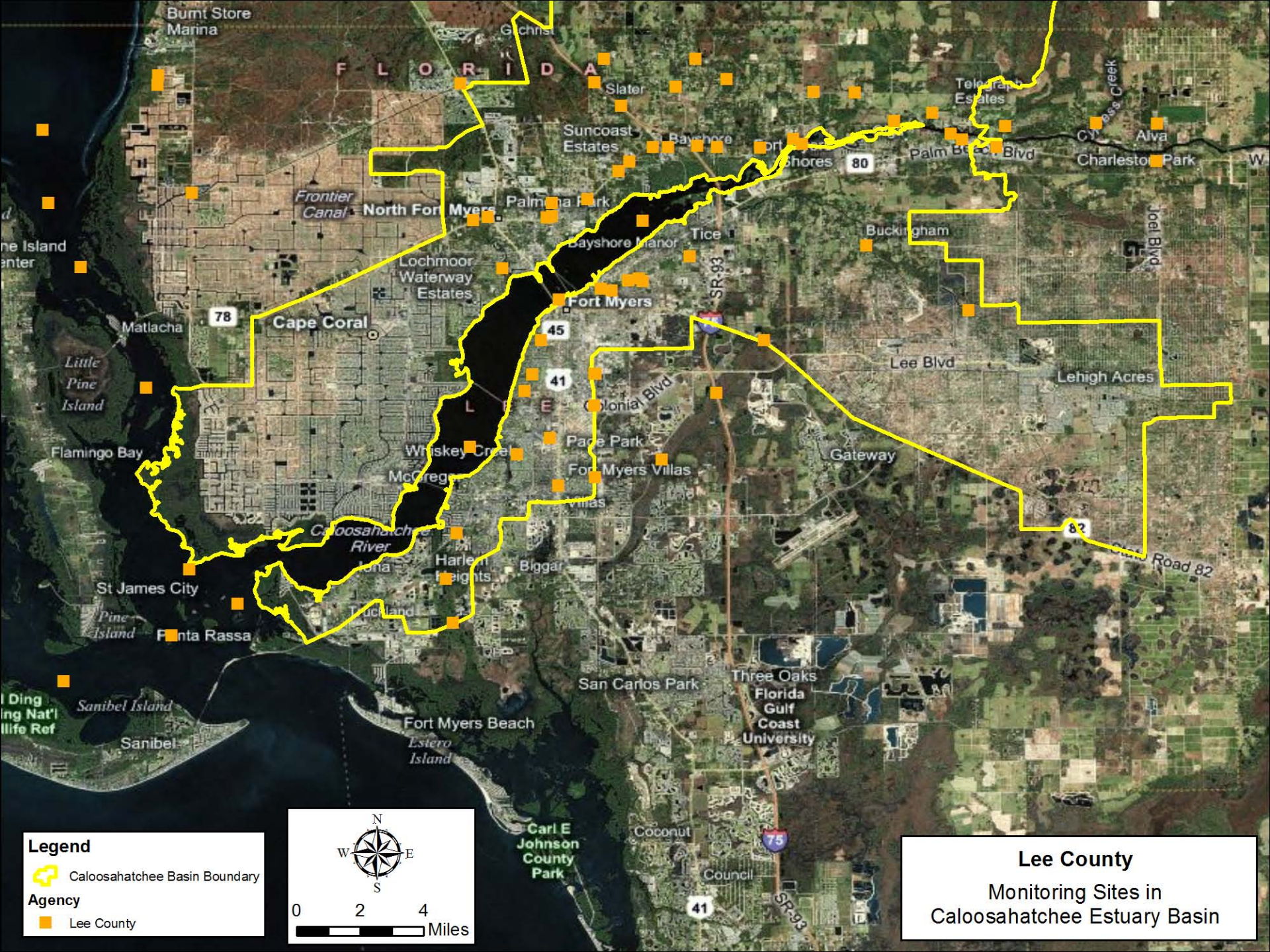


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Miles

City of Fort Myers

Monitoring Sites in
Caloosahatchee Estuary Basin

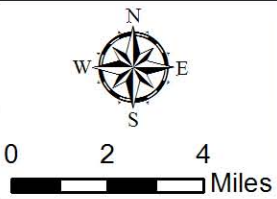


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 Caloosahatchee Basin Boundary

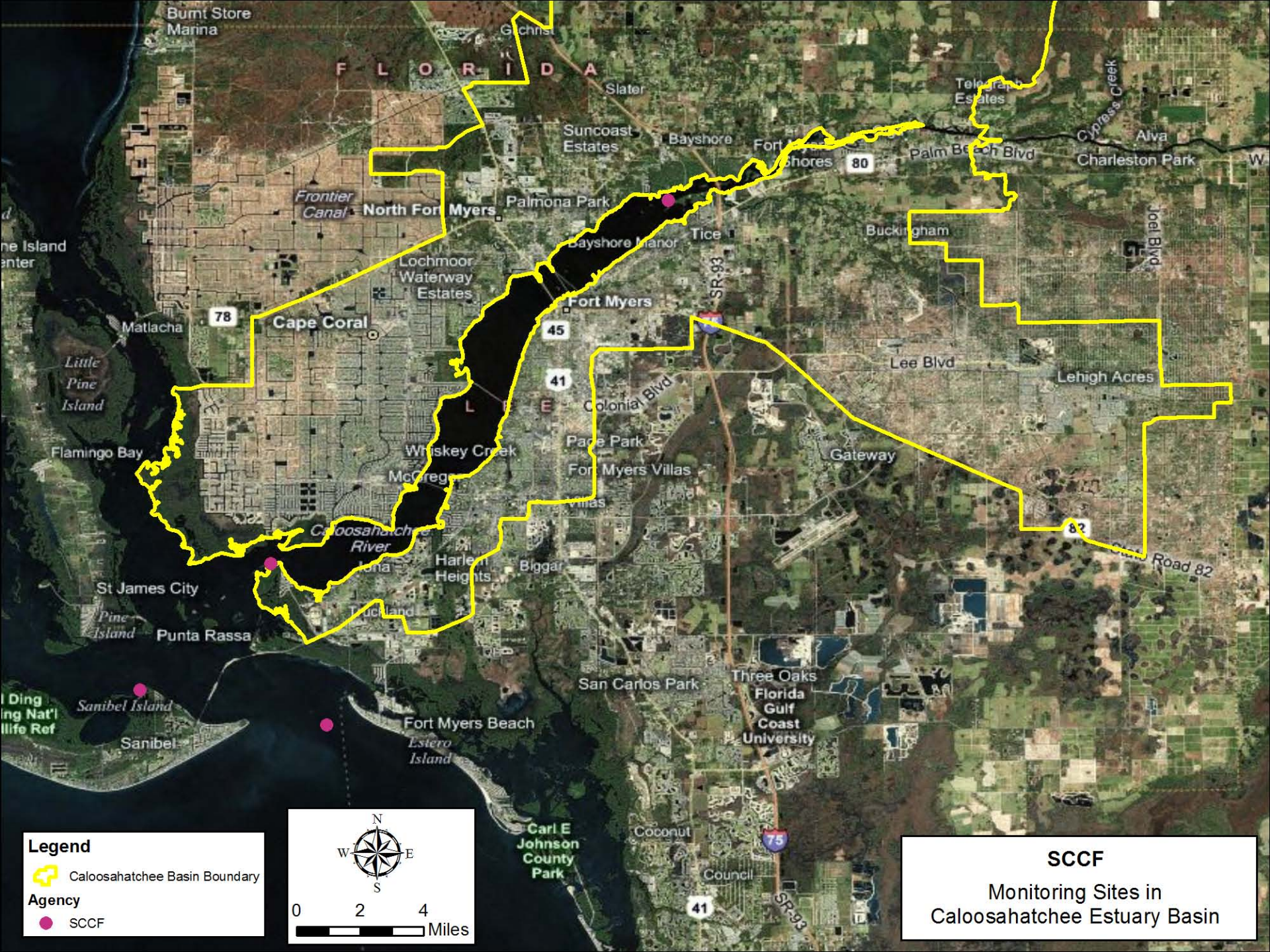
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 Lee County



Lee County

Monitoring Sites in
Caloosahatchee Estuary Basin

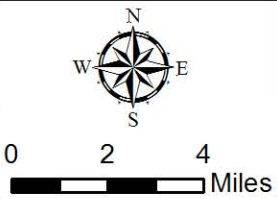


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 Caloosahatchee Basin Boundary

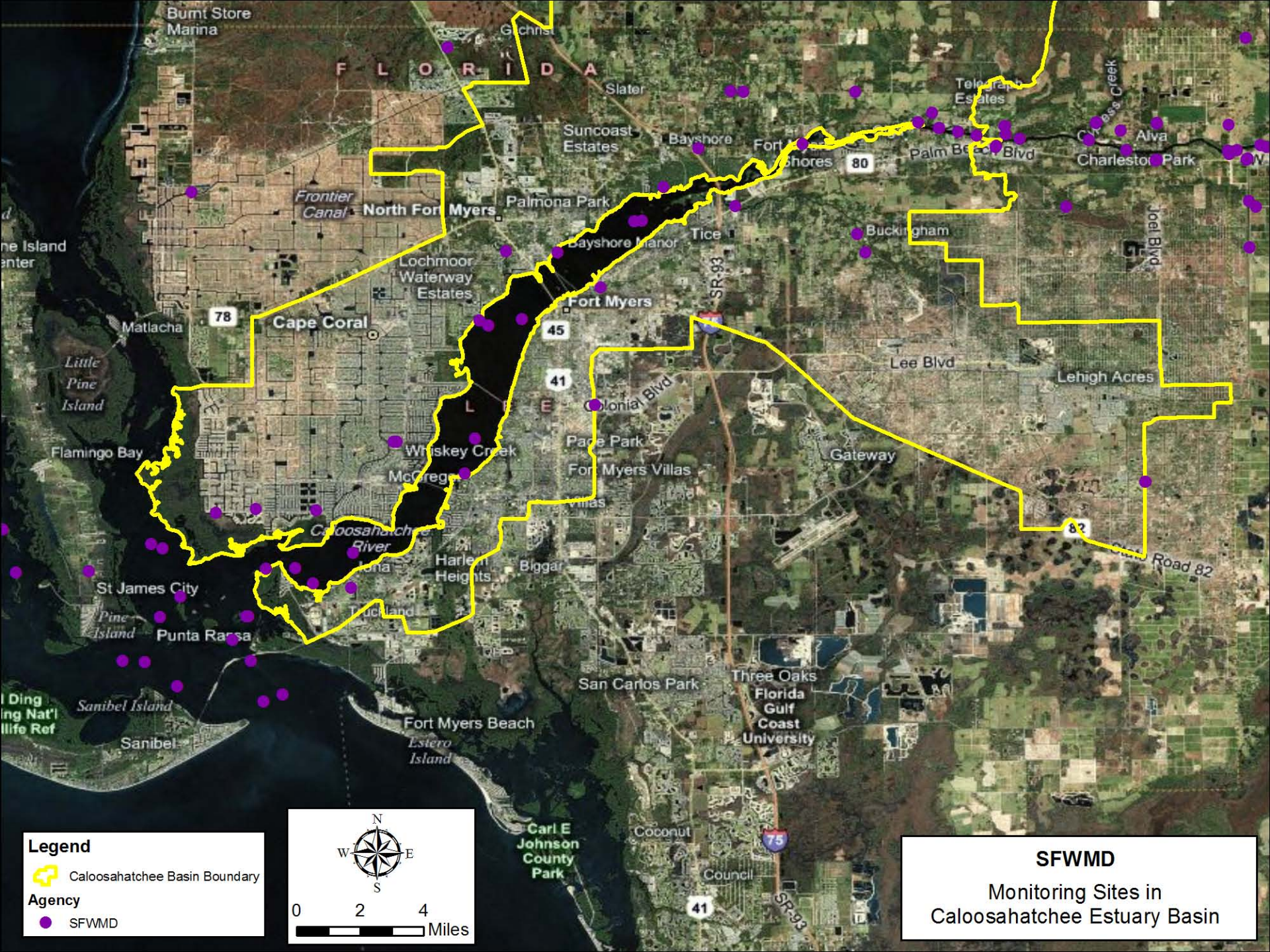
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 SCCF



SCCF

Monitoring Sites in
Caloosahatchee Estuary Basin

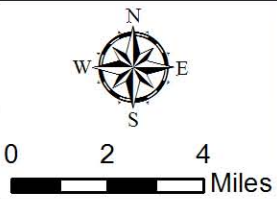


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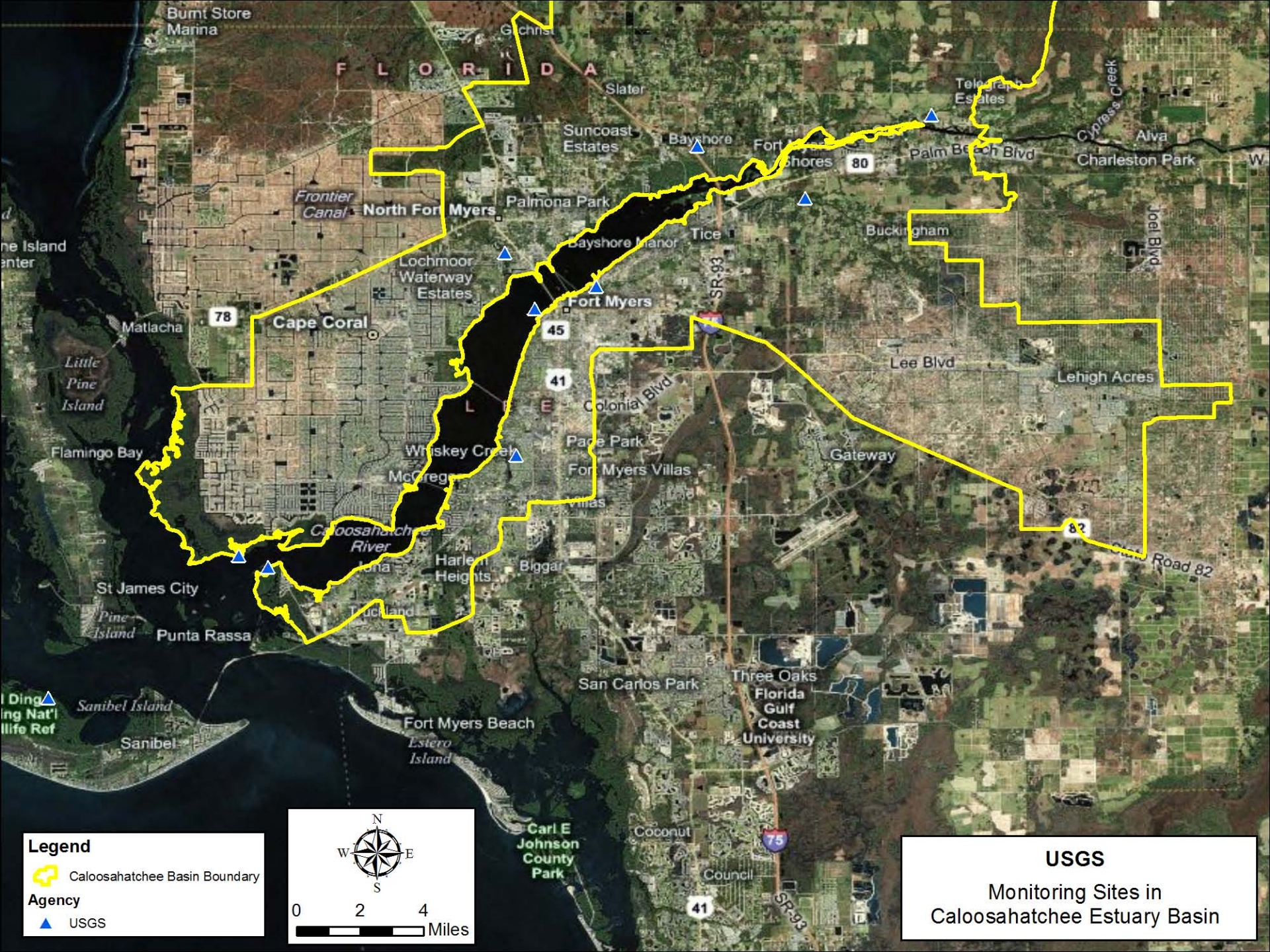
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 SFWMD



SFWMD

Monitoring Sites in
Caloosahatchee Estuary Basin



Legend

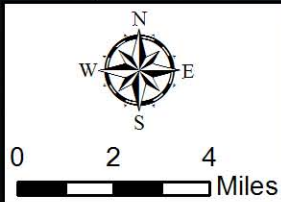


Caloosahatchee Basin Boundary

Agency



USGS



USGS

Monitoring Sites in
Caloosahatchee Estuary Basin



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NEXT STEPS



Action Items

- Provide Additional Comments by End of April
- Finalize Projects By Next Meeting
- Identifying Priorities That Should Be Addressed During The First 5-Year Phase

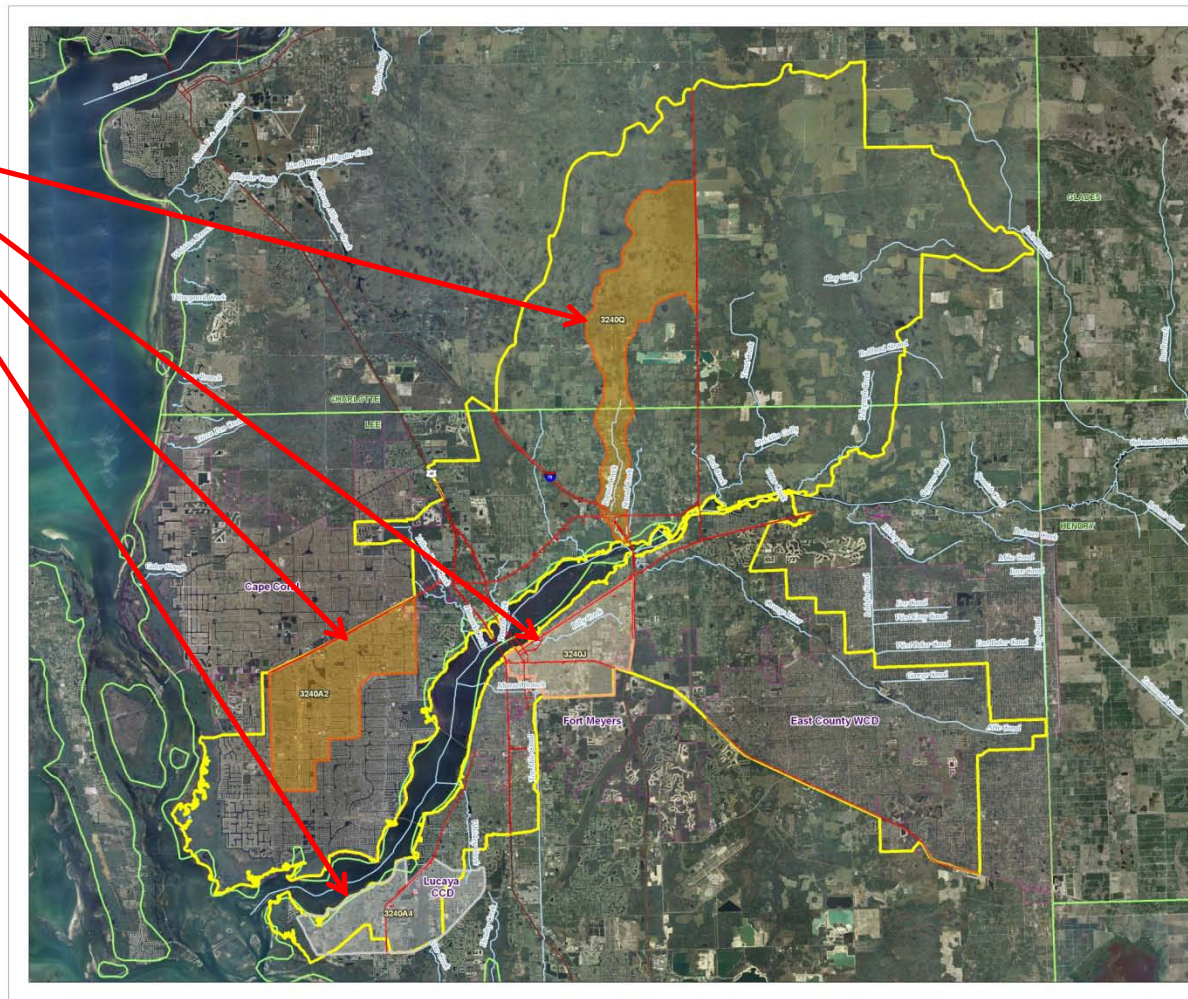




Caloosahatchee Tributary TMDLs

3240Q
3240J
3240A2
3240A4

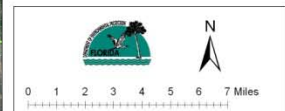
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Caloosahatchee Tidal BMAP Basin
Impaired WBID Waterbodies

Map prepared March 2, 2011. This map is a representation of general conditions and is not intended for distribution outside of the Bureau's office. For more information or copies, contact TMDL Engineer at (888) 247-4741, or tmdl@impair.org.

Rivers and Larger Streams
FDOT1 Caloosahatchee Jurisdiction
Jurisdictions
Counties
Impaired WBIDs
DO
Nutrients
Both





Next Meeting

- May or June
- Potential Topics to Consider
 - Mixed Jurisdictional Responsibilities
 - Refinements to Monitoring Plans
 - Priorities for 1st 5-Year Phase





Questions & Comments?

