



Webinar Housekeeping

Attendee Participation

Open your control panel.

Join audio:

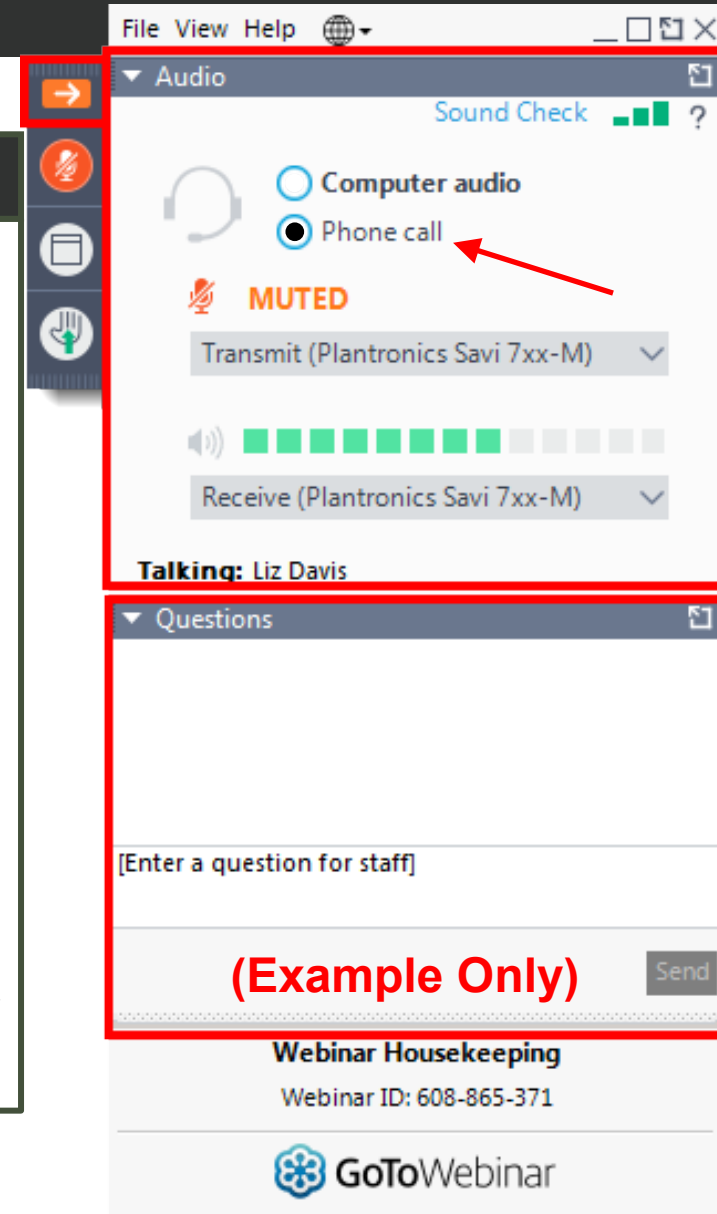
- Choose Computer Audio or
- Choose Phone Call and dial using the information provided with your registration

Attendee audio will automatically be muted.

Submit questions and comments via the **Questions** panel.

If viewing this webinar as a group, please provide a list of attendees via the **Questions** panel.

Note: Today's presentation is being recorded and will be provided on the file transfer protocol (FTP) site after the webinar.





Annual Meeting the Indian River Lagoon Basin Management Action Plans (BMAPs)

Presenter Stacy Cecil

DEAR/Watershed Protection and Coordination Section
Florida Department of Environmental Protection

Annual Public Meeting | April 3, 2023



BMAP PROGRAM STAFF UPDATE

<https://floridadep.gov/dear/water-quality-restoration/content/basin-management-action-plans-bmaps>





The Florida Stormwater, Erosion, and Sedimentation Control Inspector (FSESCI) Program

To become qualified to conduct National Pollutant Discharge Elimination System (NPDES) Construction Generic Permit (CGP) Stormwater Inspections, take this class to learn:

- Construction Best Management Practices – Common Techniques and Technologies,
- Proper compliance with the NPDES CGP,
- Creating and reviewing a Stormwater Pollution Prevention Plan (SWPPP),
- Florida specific stormwater regulation,
- How to conduct stormwater inspections.

For more information and a list of public classes, visit:

- www.fsesci.com, or
- www.FDEPstormwaterclass.com.

Become an FSESCI Instructor for your organization:

- www.fsesci.com/newinstructor/

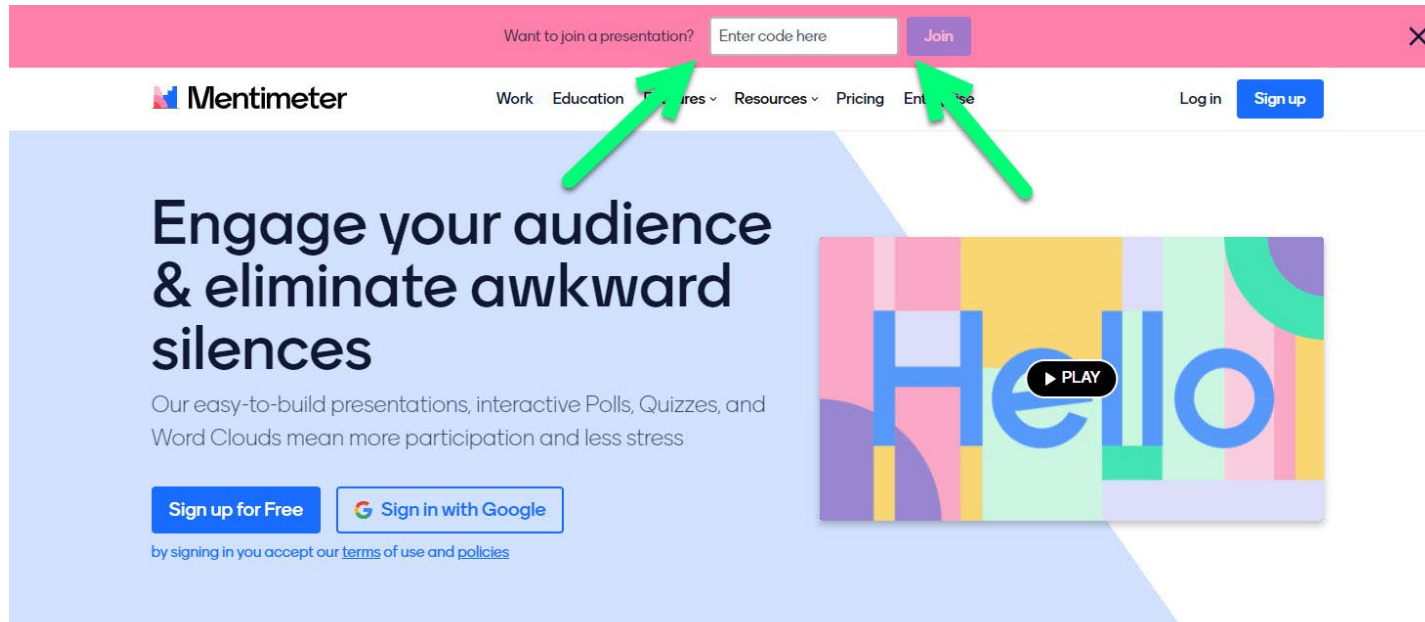
DEP Statewide Training Coordinator:

Jared Searcy | Jared.Searcy@floridadep.gov | 850-245-8445



MENTIMETER SURVEY

To participate in the opening survey, please go to [mentimeter.com](https://www.mentimeter.com) and use code [3471 1444](#).



Don't close the window!
There are more questions
throughout the meeting!



Who are you representing today?



Myself, a citizen of the lagoon



Federal Government



State Government



County Government



Municipal Government



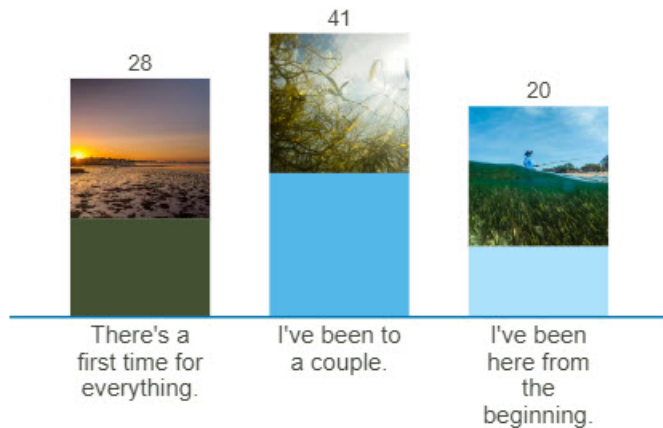
Special District Staff/
Contractor



Non-Governmental
Organization



How many Annual Meetings have you attended?





What is one word or short phrase that describes your expectations for this meeting?

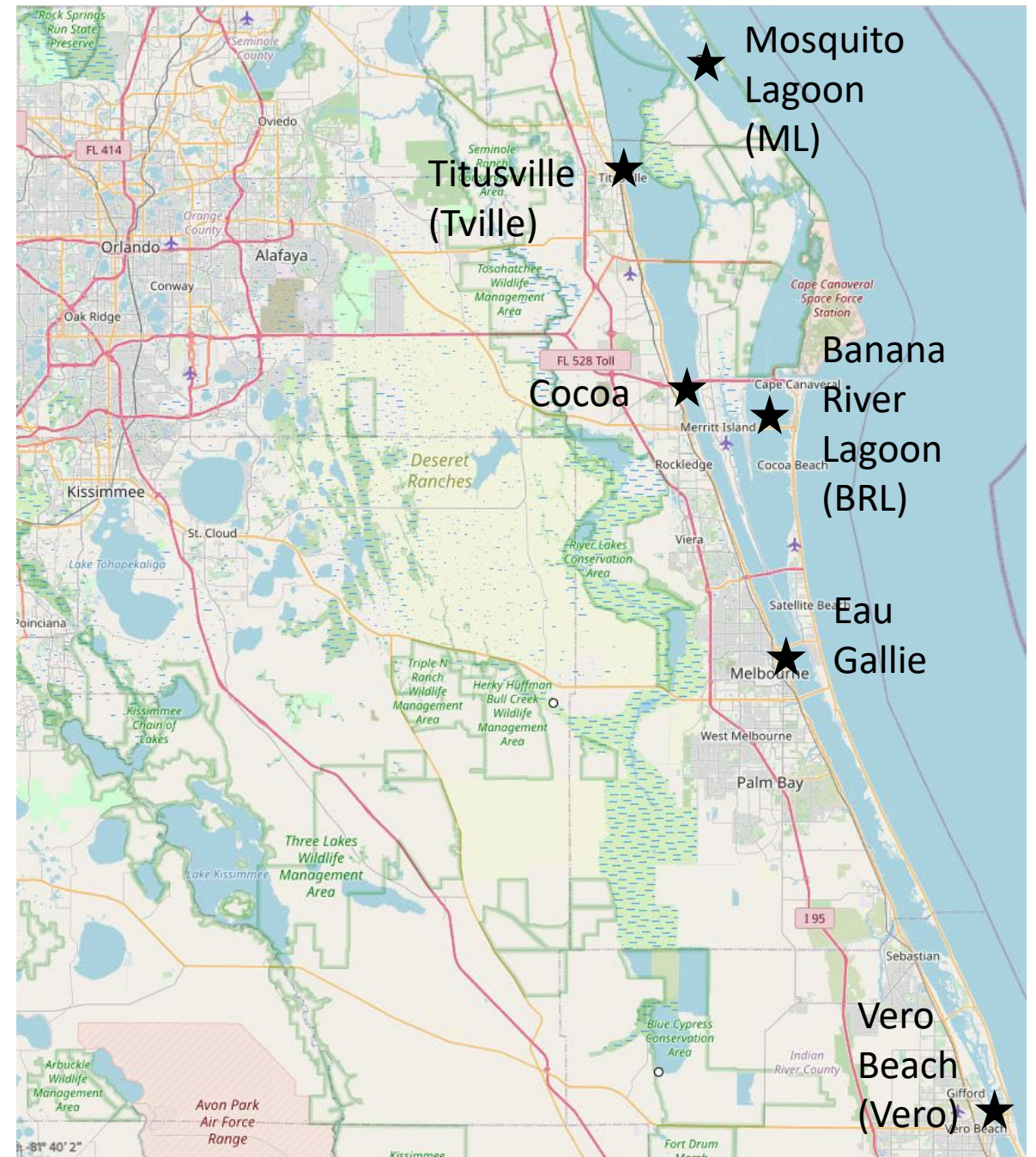


Update on the northern and central Indian River Lagoon



St. Johns River
Water Management District

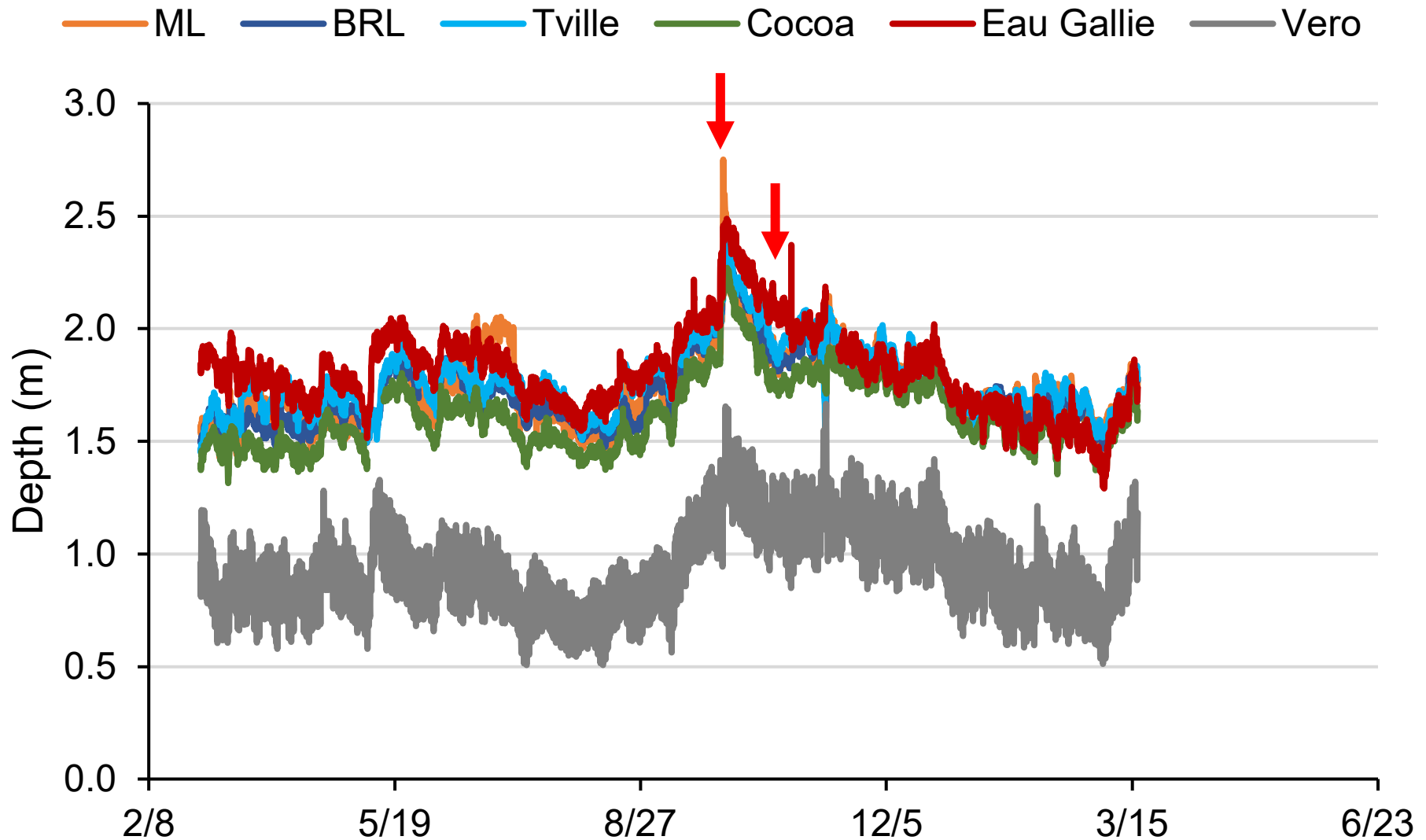
Stations with continuous monitoring sondes



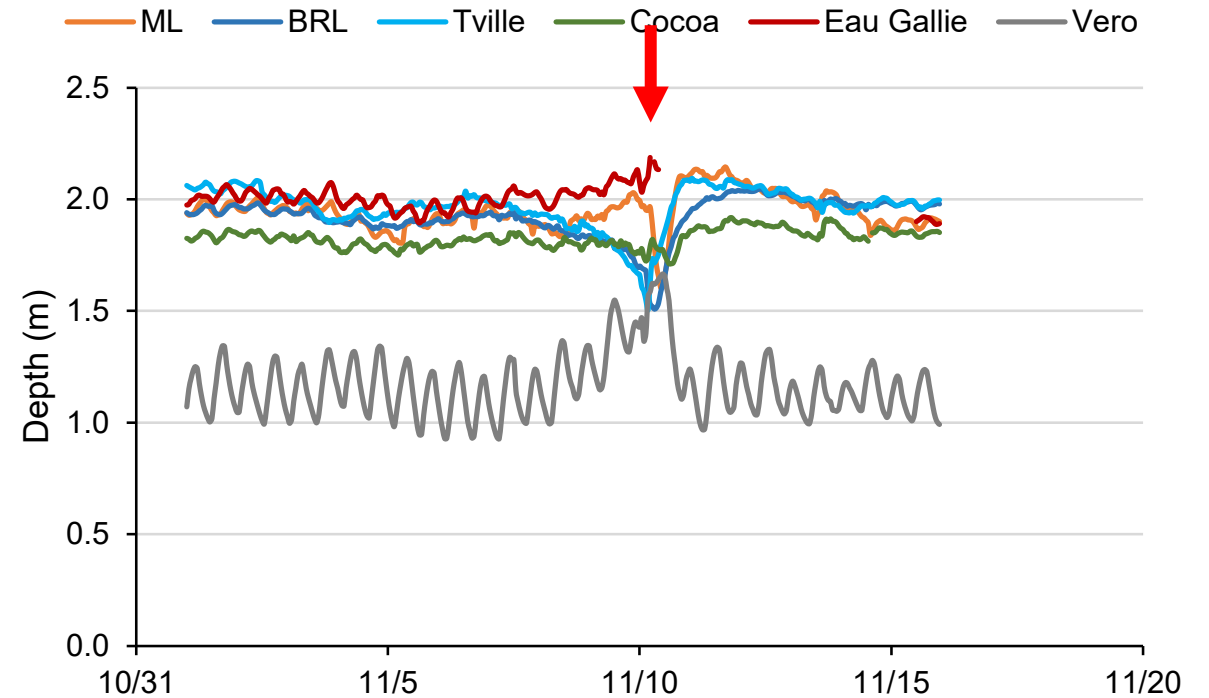
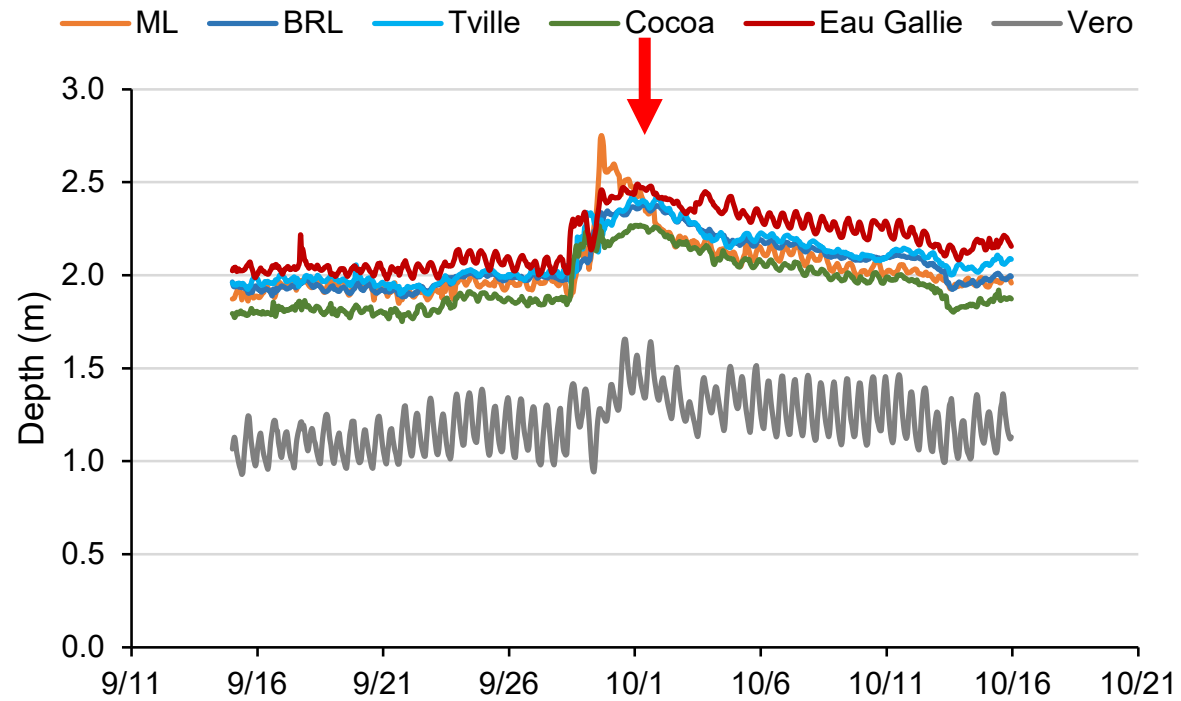
Hurricanes



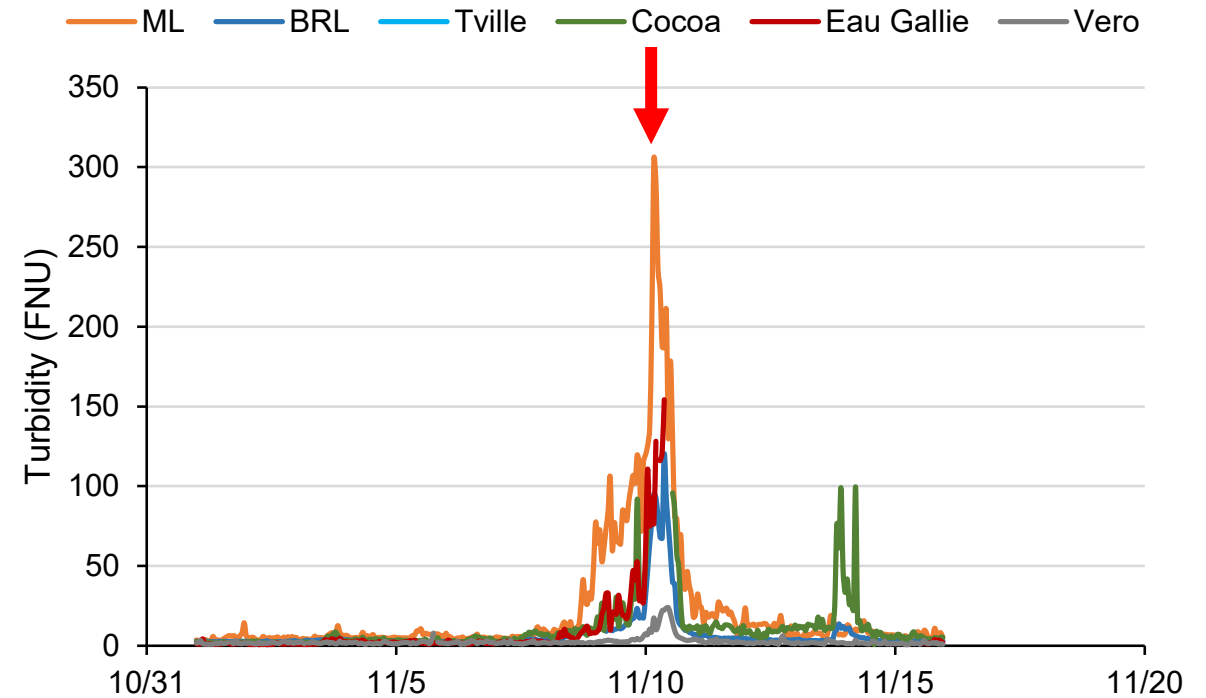
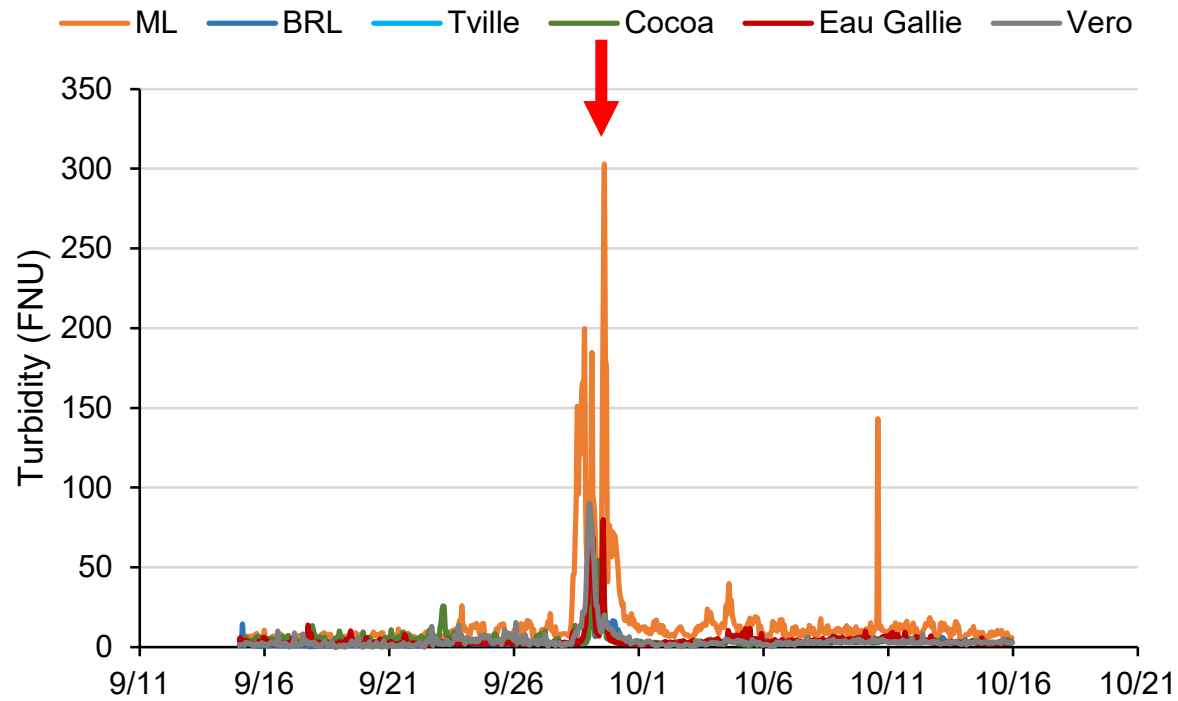
Depth



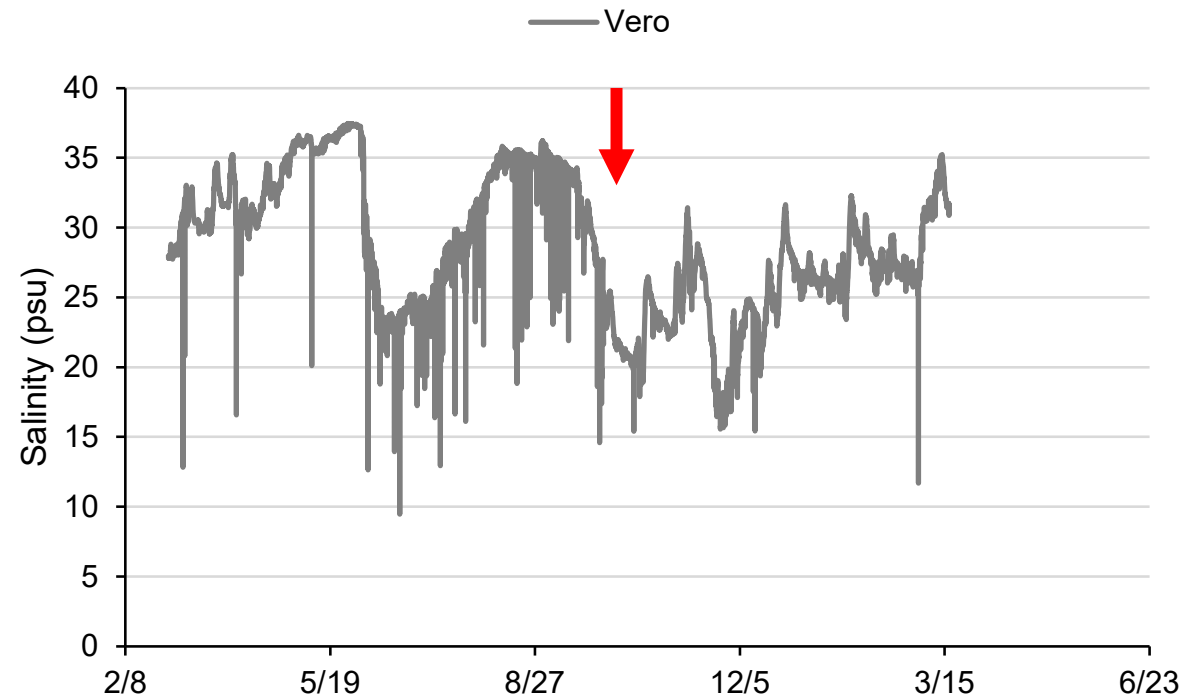
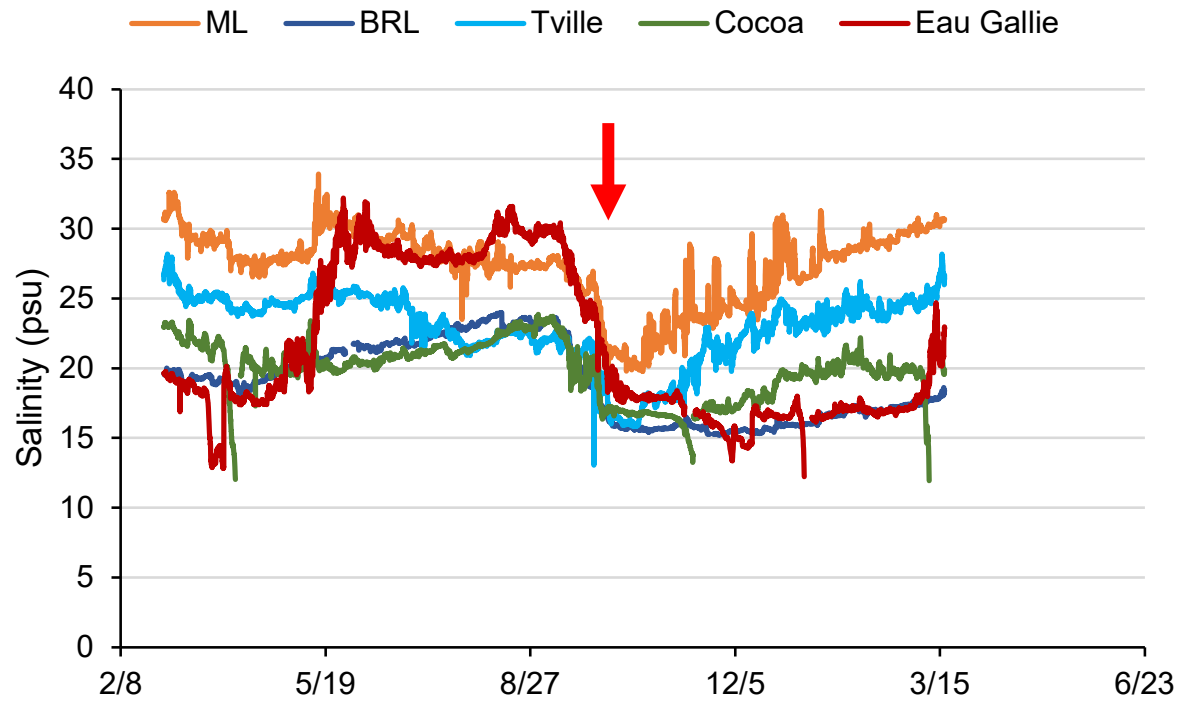
Depth



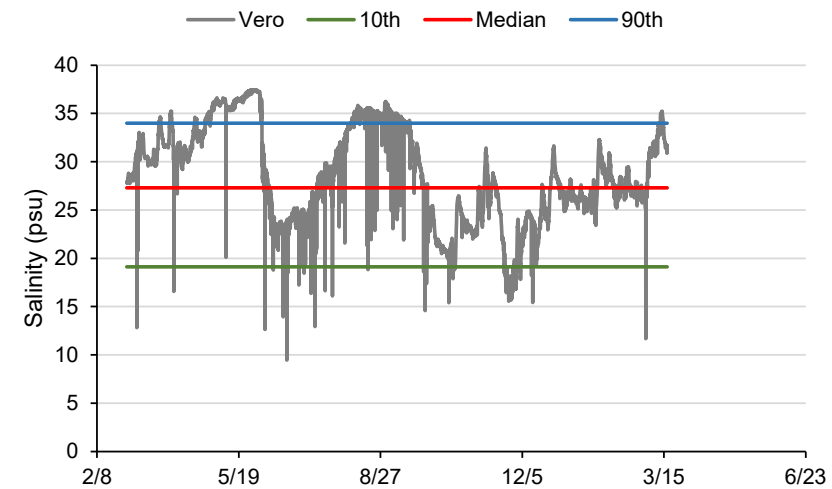
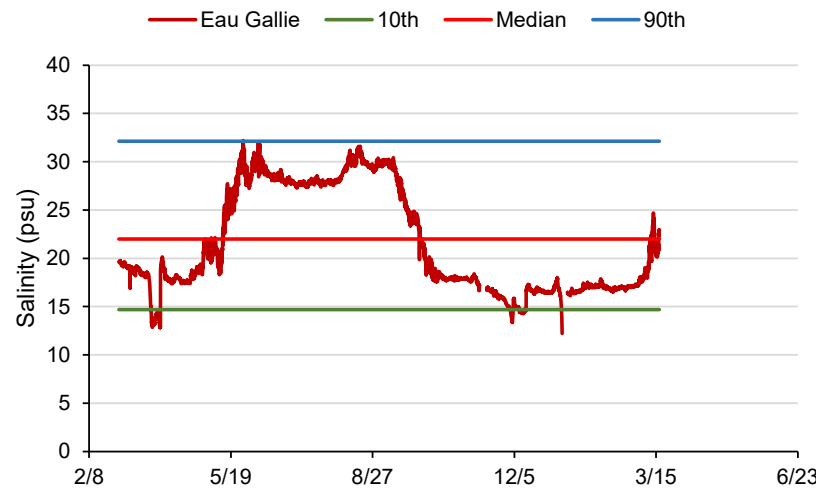
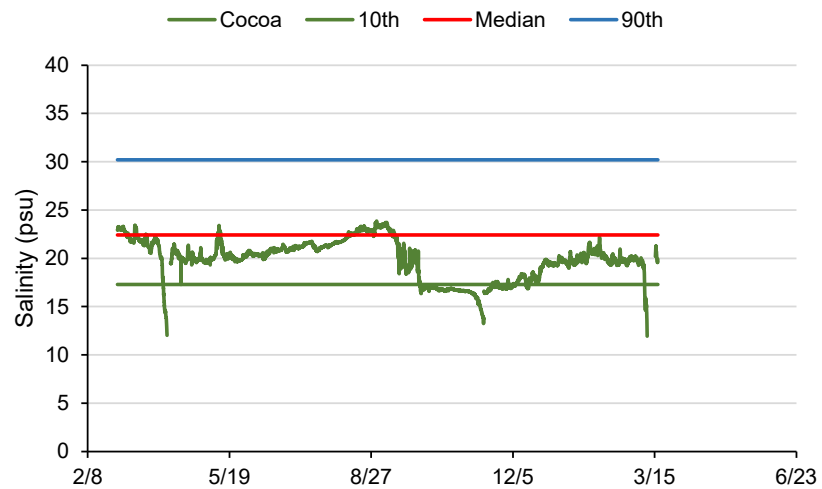
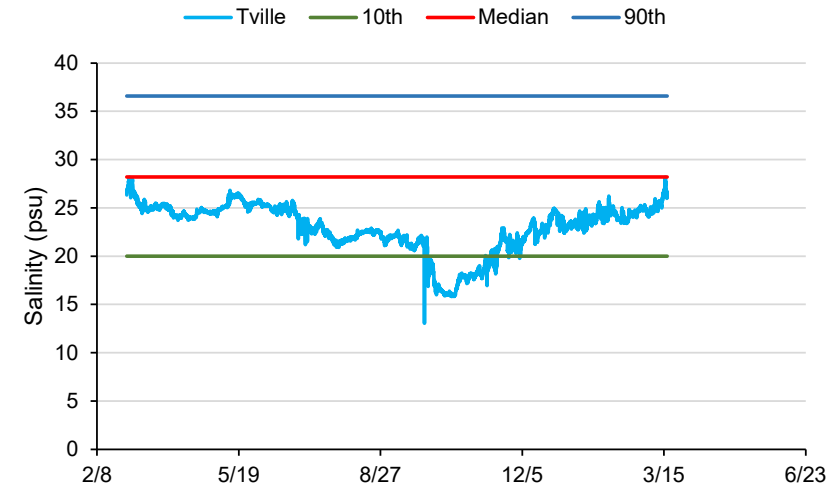
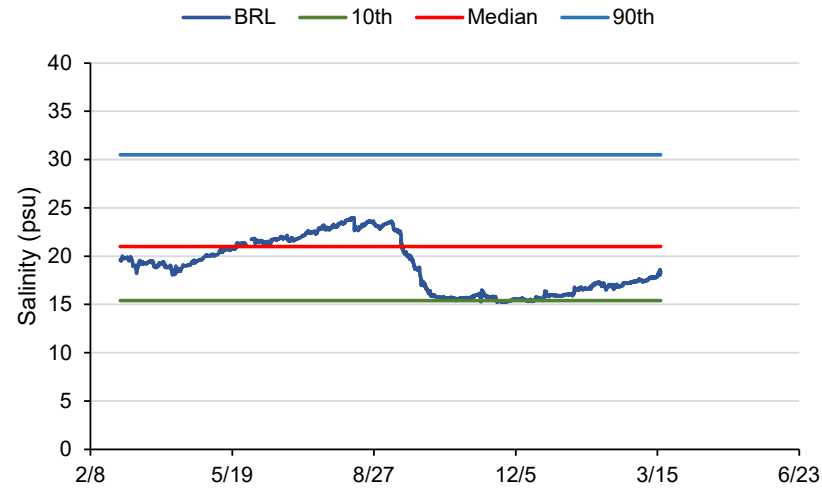
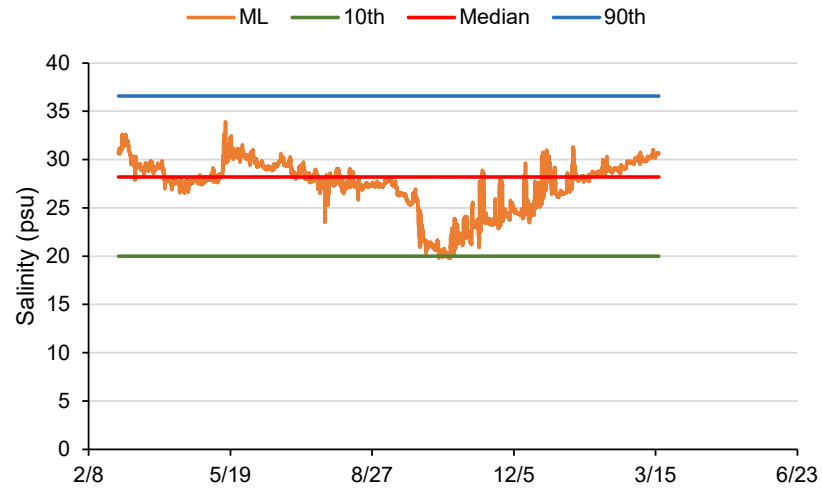
Turbidity



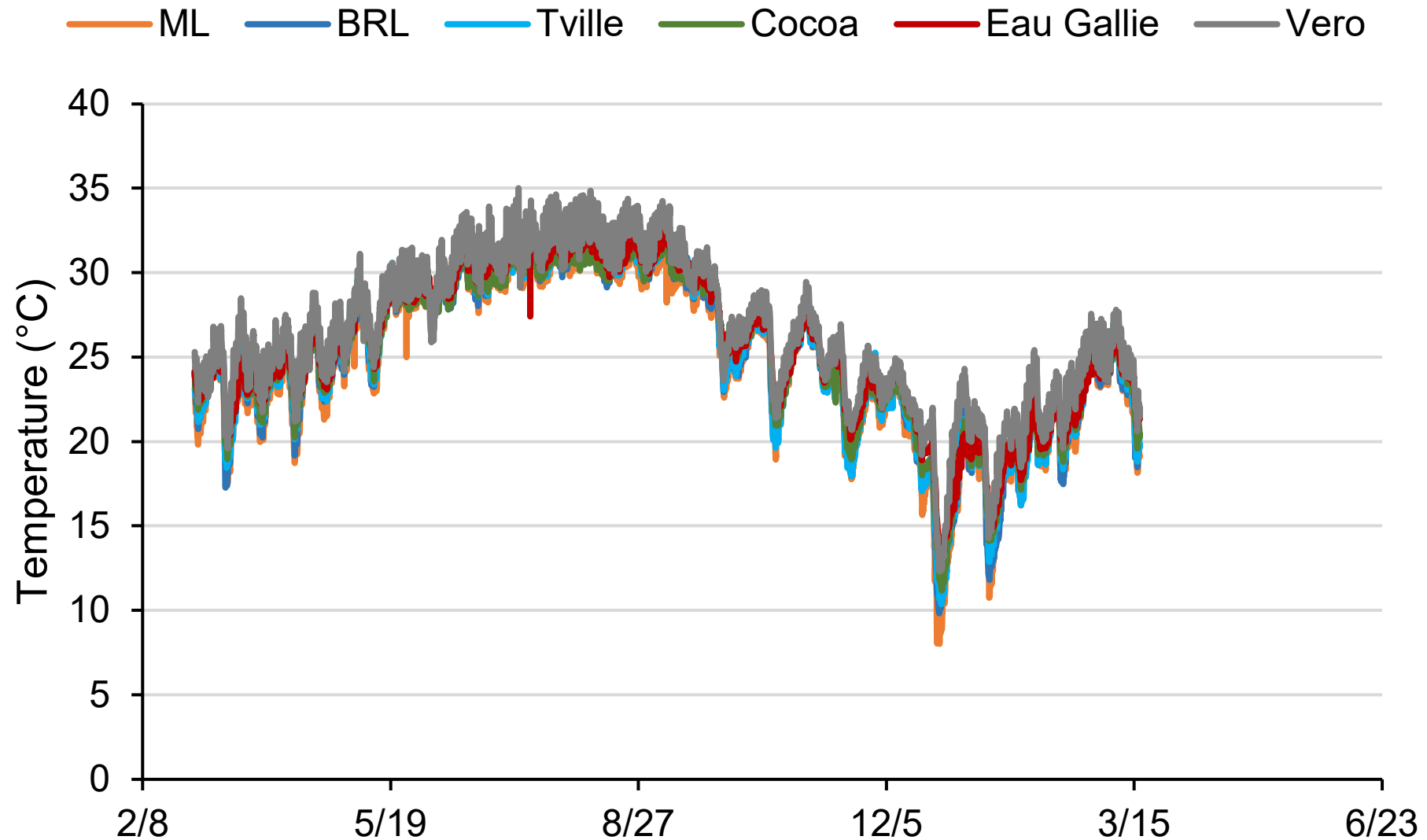
Salinity



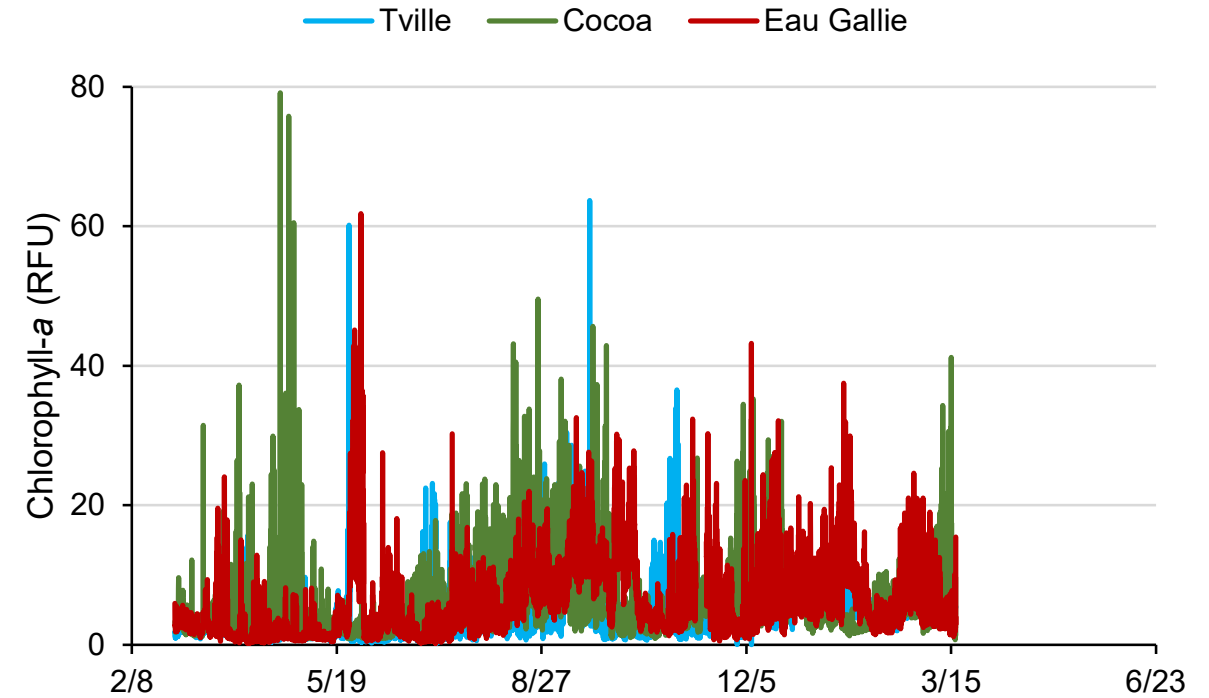
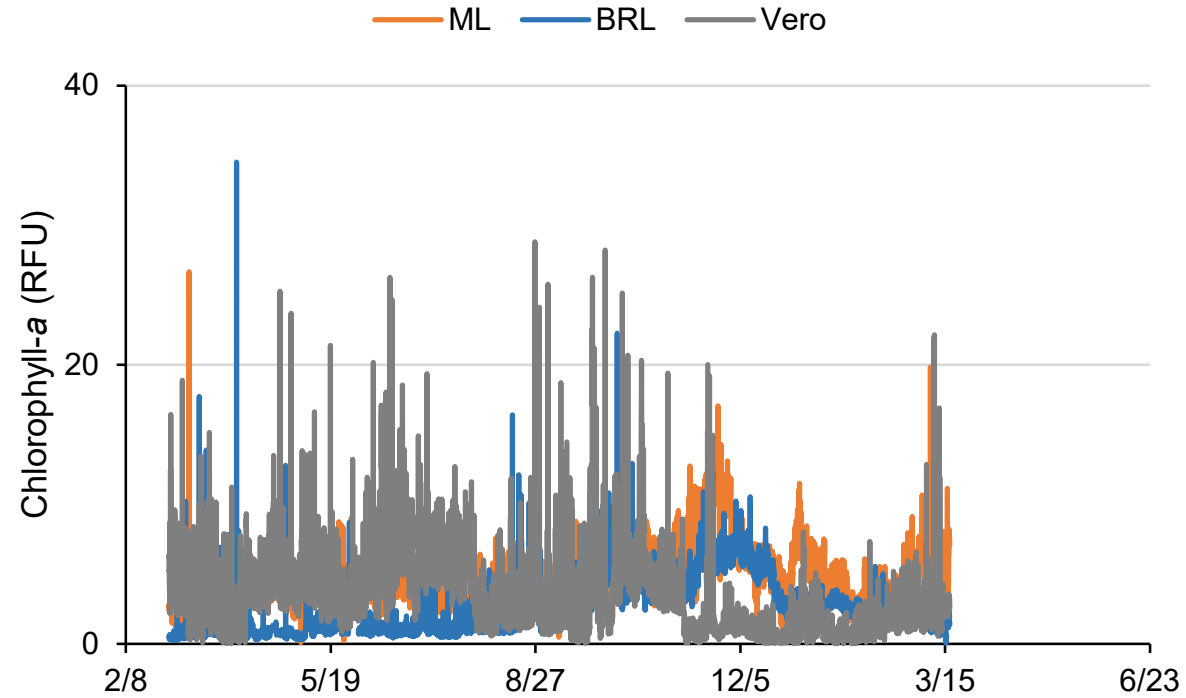
Salinity



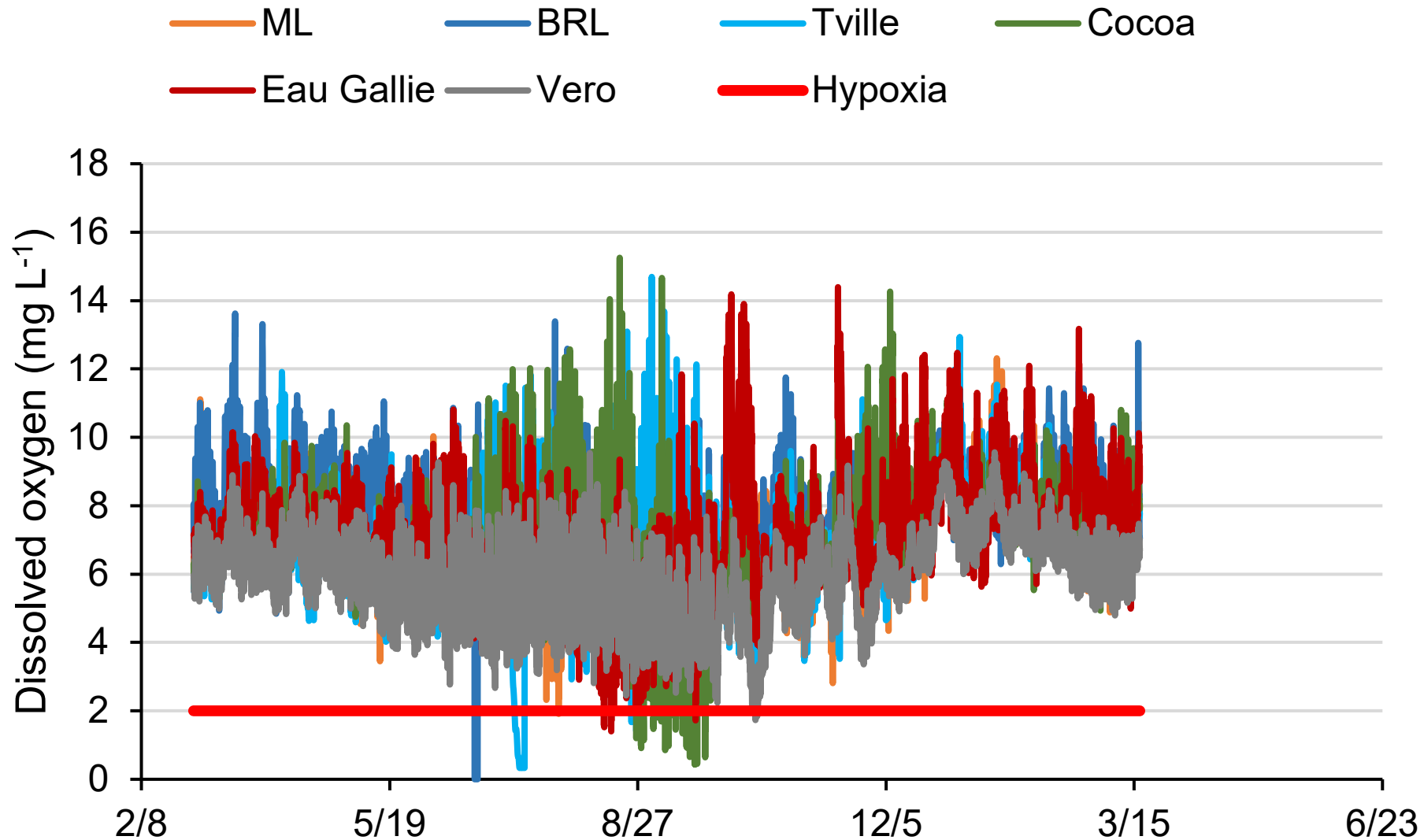
Temperature



Chlorophyll-a



Dissolved oxygen



Topobathymetry (completed in May)

Item	Deliverable	Status	Item	Deliverable	Status	Item	Deliverable	Status
#1	Pre-Acquisition Imagery and Lidar		#4	Stereo Imagery and Ground Surveys		# 6	Lidar Deliverables	
1.1	Camera Boresight Calibration Report		4.1	RGB/NIR Stereo Imagery		6.1	Cleaned, classified point clouds in a LAS 1.2 format	
1.2	Lidar Boresight and Calibration Report		4.2	RGB/NIR Stereo Imagery metadata		6.2	Lidar point cloud metadata	
1.3	Shapefiles identifying imagery acquisition flight lines		4.3	Exterior Orientation (EO) Files (*.txt)		6.3	Topographic/Bathymetric DEM	
1.4	Shapefiles identifying imagery acquisition footprints		4.4	Ground Survey Report for Imagery		6.4	Topographic/Bathymetric DEM metadata	
1.5	Shapefiles identifying lidar acquisition flight lines		4.5	Ground Survey Shapefile and Images for Imagery		6.5	Finalized Lidar Trajectory	
			4.6	Ground Survey Report for lidar		6.6	TPU Raster and metadata	
#2	Post-Acquisition Files		4.7	Ground Survey Shapefile and Images for lidar		6.7	Normalized Intensity Raster and metadata	
2.1	Shapefiles depicting footprint		4.8	Airborne Positioning and Orientation Report (APOR)				
2.2	Photographic Flight Reports		4.9	Acquisition Summary		# 7	Shoreline and Reports	
2.3	Lidar Flight Reports					7.1	Geographic Cell Shoreline (interim format)	
2.4	Data coverage images of the lidar		# 5	Imagery/Pilot Shorelines		7.2	Chart Evaluation Files (CEF)	
2.5	The raw data delivery package		5.1	Exterior Orientation (EO) Files (*.txt) (Post AT)		7.3	Geographic Cell Shoreline (final format)	
			5.2	Aerotriangulation Report (95% CC computed)		7.4	Geographic Cell Shoreline metadata	
#3	Pilot Data Processing		5.3	GeoTiff RGB/NIR Ortho-mosaic imagery		7.5	Project Completion Report (PCR)	
3.1	Lidar Data Pilot		5.4	GeoTiff RGB/NIR Ortho-mosaic imagery metadata		7.6	Quality Assurance Report	
3.2	Imagery Data Pilot		5.5	Pilot Area Geographic Cell Shoreline				



Seagrass mapping update



Mapping process

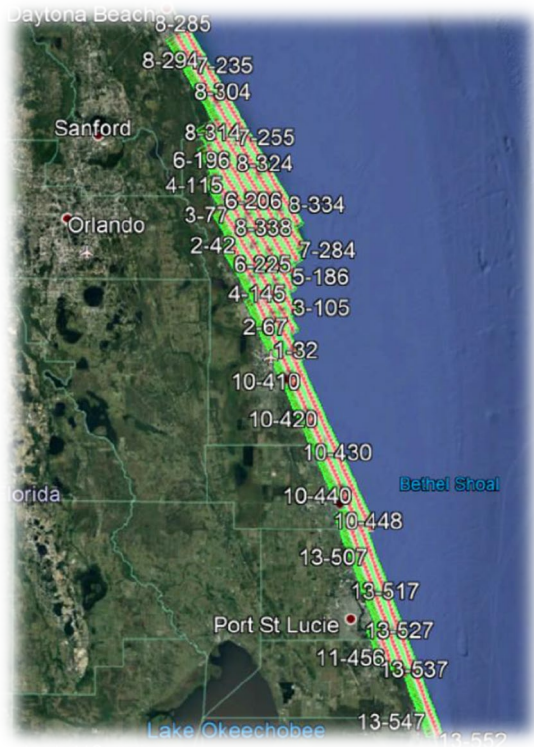


Photo acquisition



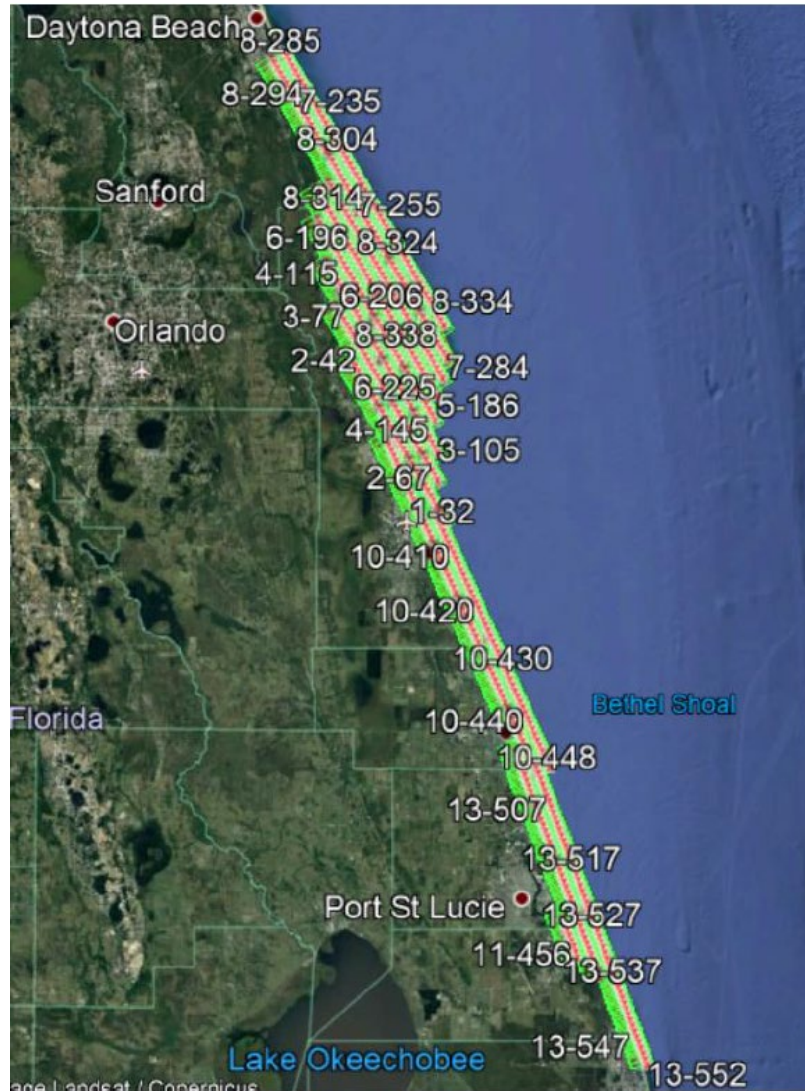
Photointerpretation



Field verification



Mapping process – Photo acquisition and ortho production



Flight plan

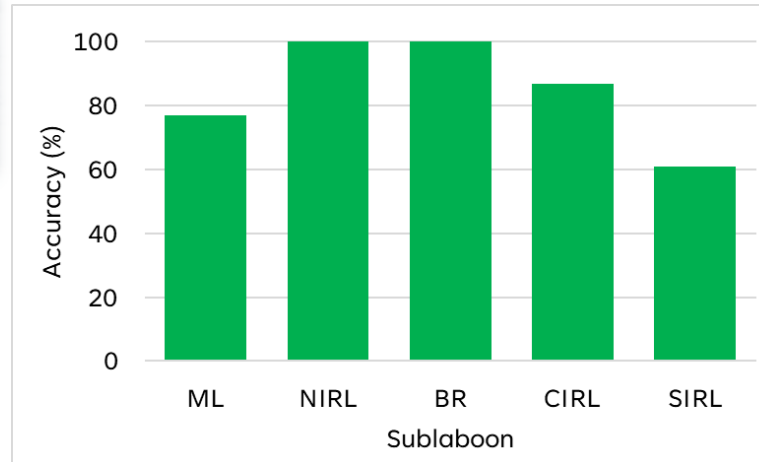
- 13 flight lines
- Piper Navajo equipped with an UltraCam Eagle F100
- 0.3m GSD (resolution)
- 4-band imagery (RGB, and NIR)
- Stereo collection
- Completed within 1 week

Complicated time-sensitive

- 156 miles
- Sun angle
- Tides
- Weather (clouds, wind, haze)
- Biomass of seagrass
- Water clarity (blooms, turbidity, color)
- Secure airspace



Mapping process – Field work



Accuracy assessment



Groundtruthing

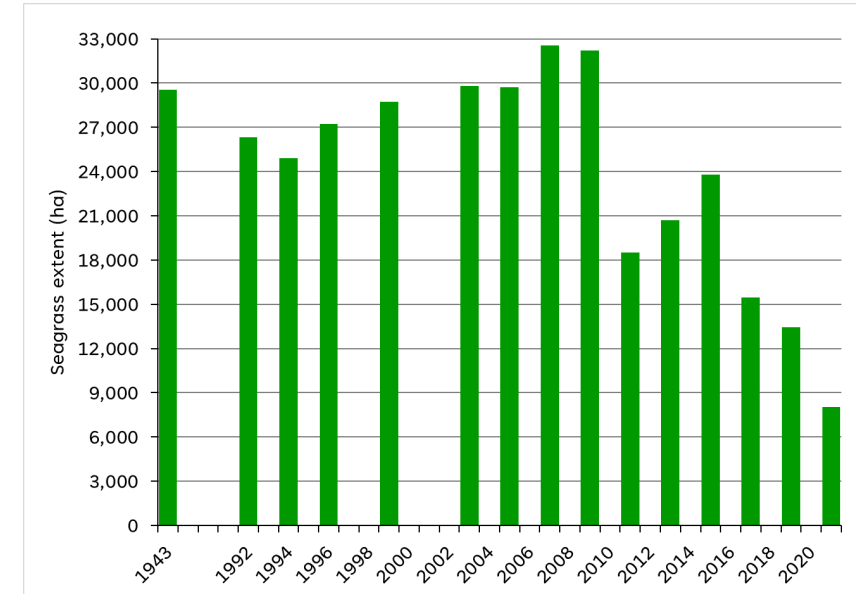
Mapping process - Photointerpretation



Seagrass delineation



Edge confidence



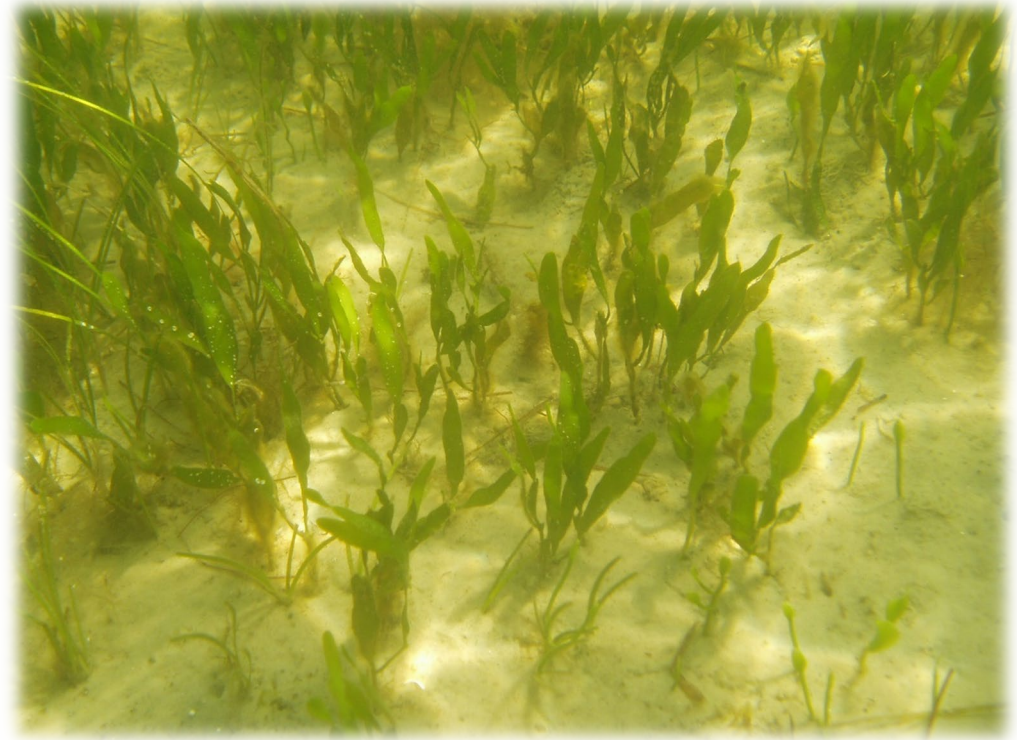
Change analysis

Deliverable schedule

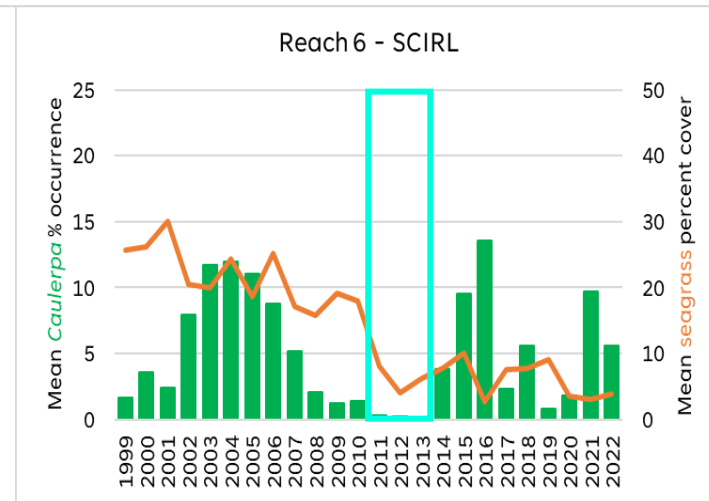
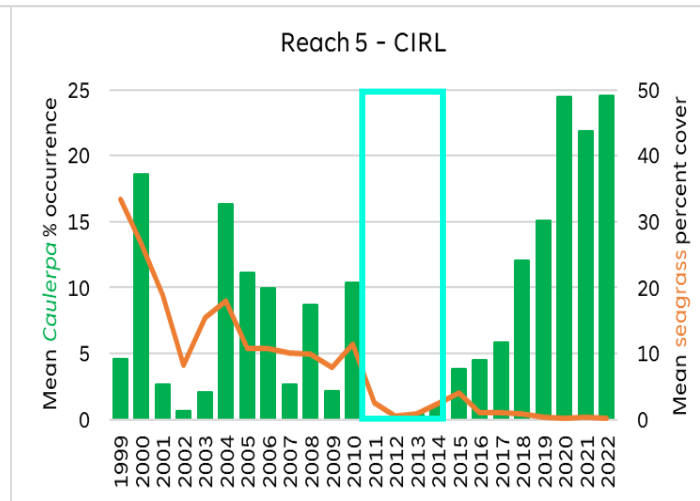
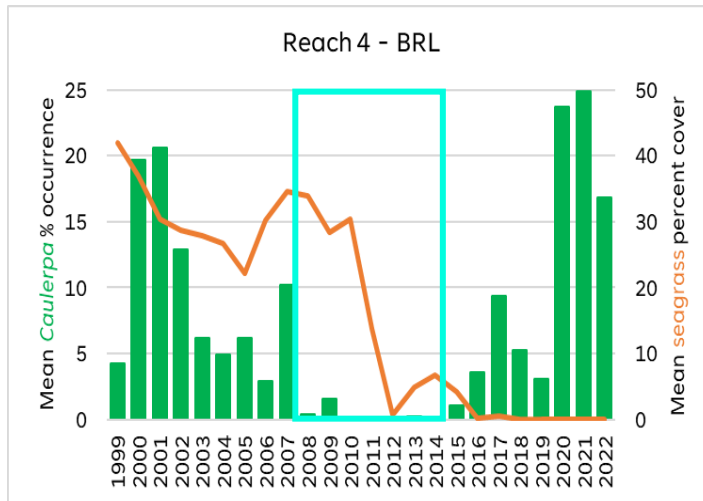
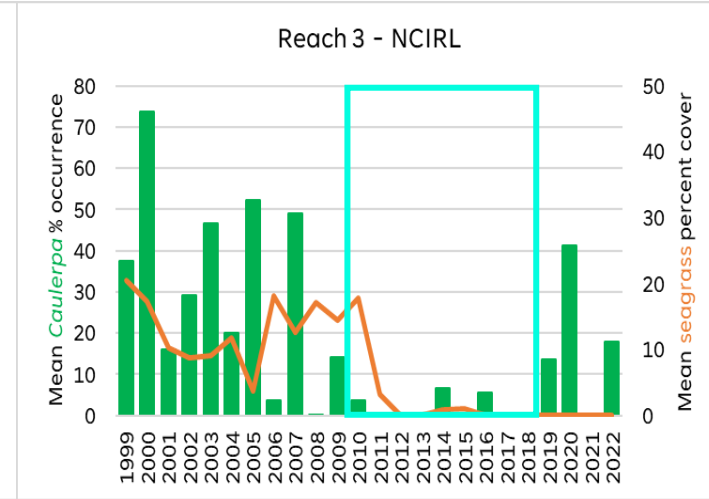
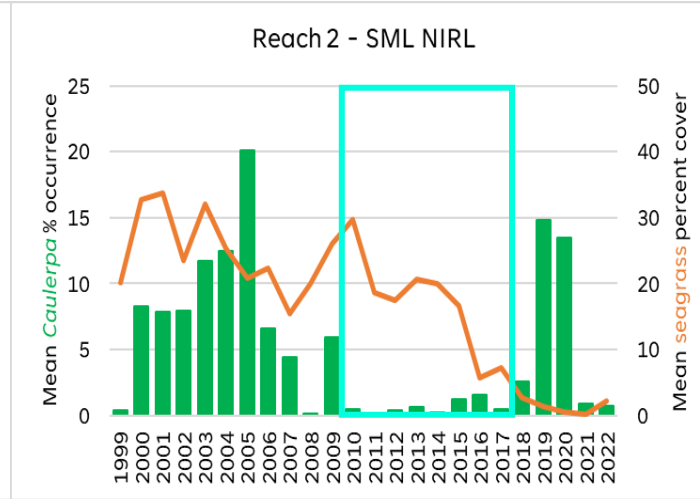
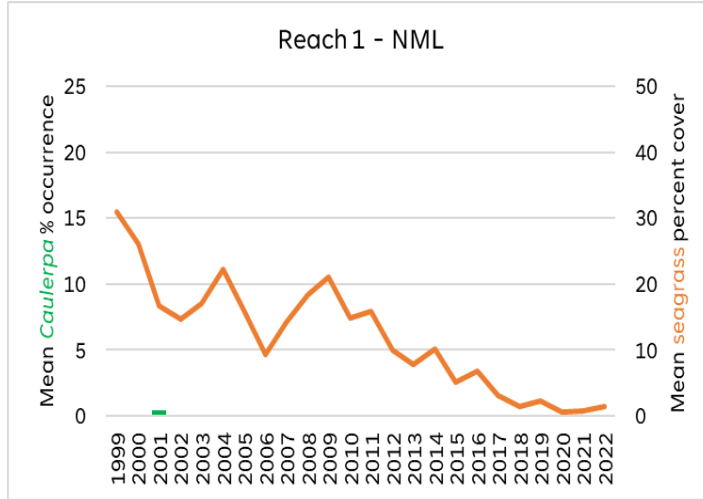
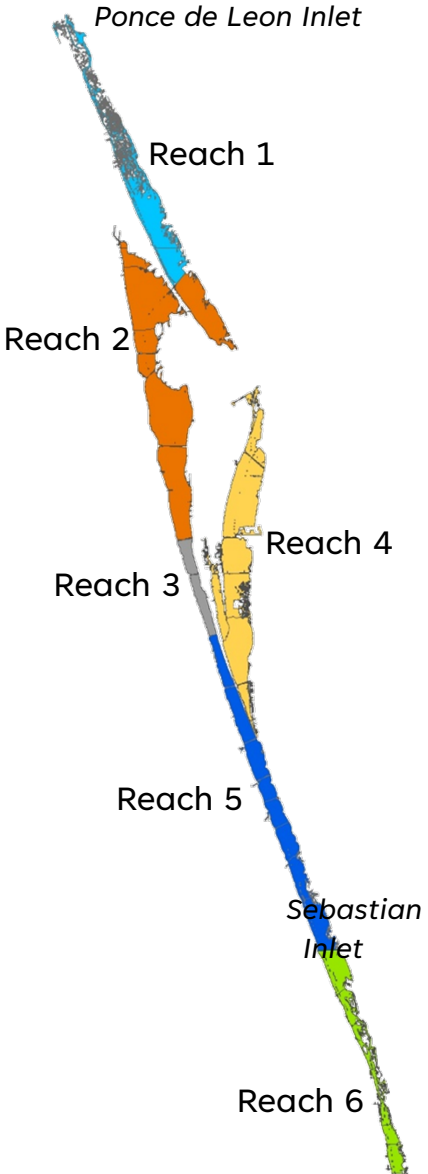
Task	Deliverable	Anticipated Timeline
1	Preliminary Conference and Study Plan	March - April
2	Acquisition of Lagoon-wide Digital Aerial Photos	April - June
3	Pre-Photointerpretation Field Work	May - August
4	Triangulation and Orthophotography	July - Sept
5	Positional Accuracy Assessment	July - Sept
6	Photointerpretation Key	August - Oct
7	Photo-Interpretation	Oct - January
8	During Interpretation Field Work	Oct - January
9	Seagrass Edge Confidence Analysis	Dec - March
10	Draft Map	January
11	Final Map	Feb - March
12	Final Report	April



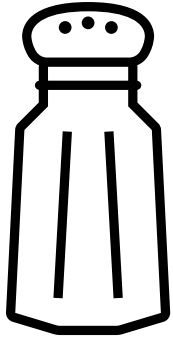
Interactions between *Caulerpa prolifera* and seagrass



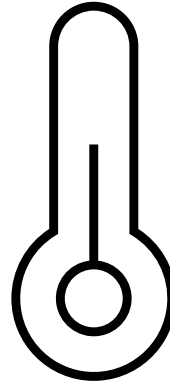
Interactions between *Caulerpa* and seagrass



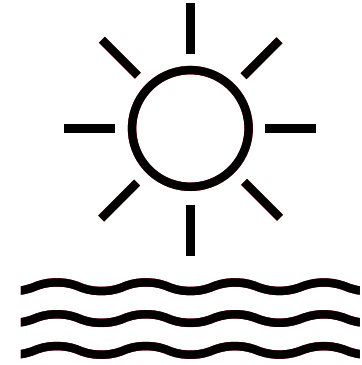
Stressors



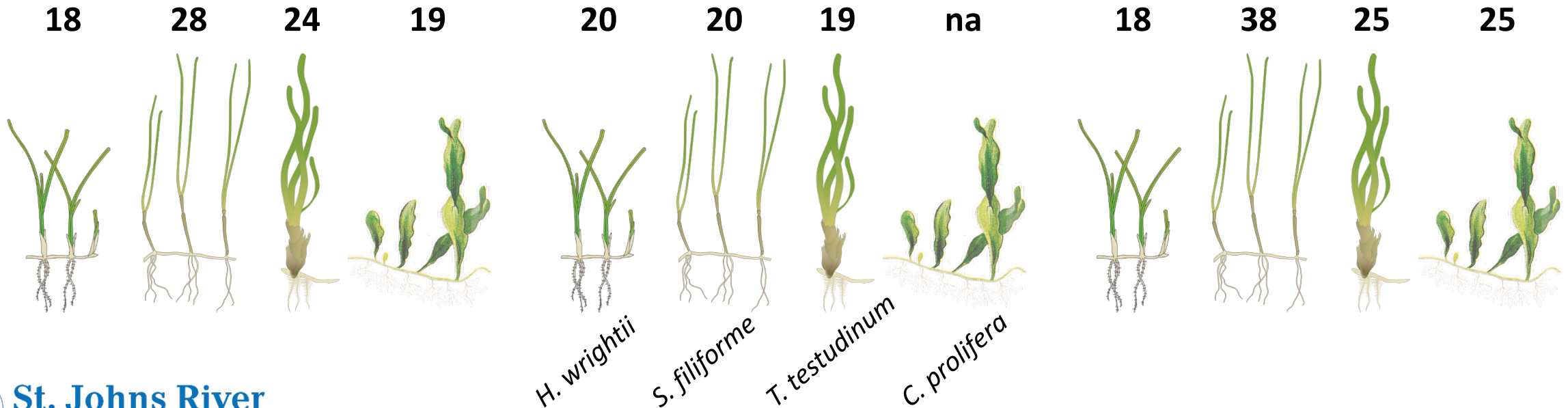
Low salinity (psu)



Low temp (°C)



Low light at 0.9 m (%)



Take homes

- *Caulerpa* and seagrasses need light (18–38% at 0.9 m)
- Low salinity and temperature may be secondary drivers
- *Caulerpa* co-exists with seagrasses
- *Caulerpa* is opportunistic
- Efforts to improve water clarity will help both *Caulerpa* and seagrasses



SHORELINE STABILIZATION PROJECT CREDIT

FUNDED BY THE US SPACE FORCE - SLD 45

**FY21 Environmental Program
Support**



April 2022



PRESENTATION OUTLINE

- Review of the Shoreline Stabilization TMDL Credit History
- Describe Implemented Sampling and Analysis Methods
- Highlight Key Findings from the Shoreline Stabilization Memorandum
- Summarize Received TMDL Credit Received
- Provide Recommendations

BACKGROUND

- Shoreline stabilization and/or restoration projects undergoing for over a decade at PSFB/CCSFS in an effort to protect against erosion and preserve the habitat
- No TMDL credit has been provided for these types of projects to USSF (or other stakeholder in the BMAP until 2022!)
- Shoreline Stabilization Protocol development led by USSF in 2018
 - Purpose: evaluate the nutrient reduction benefit from these types of projects
 - Chesapeake Bay shoreline stabilization protocol used as basis
- Shoreline Stabilization Protocol approved in September 2019 by FDEP
- USSF initiated the implementation of this approved protocol in Spring 2020 at two representative stabilized shorelines
- Two years of data collected (July 2020- April 2022) and data report produced (September 2022)

ORIGINAL SAMPLING PROTOCOL

- Three sampling protocols
 - **Protocol 1** – Prevented Sediment
Provides a mass reduction credit for prevented sediment (erosion prevention).
 - **Protocol 2** – Denitrification
Estimates planting pollutant load reduction through denitrification capabilities of the marsh sediment
 - **Protocol 3** – Marsh Redfield Ratio
Determines representative pollutant load reduction from marsh plantings
- Two representative shorelines both at Patrick Space Force Base
 - Fuel Farm
 - Runway 11

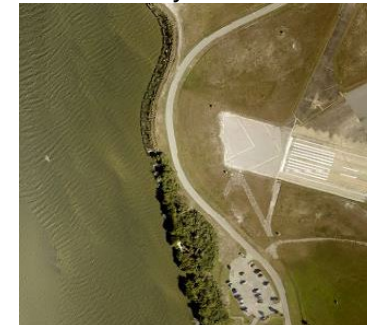


SAMPLING AND ANALYSIS – PROTOCOL I

- Two soil samples collected each quarter on a reach basis from the average high-water depth of 6-12 inches below the ground surface
 - Sent to Intertek Professional Service Industries, Inc. (PSI) to analyze soil bulk density and grain size and Environmental Conservation Laboratory (ENCO) for analysis of TN and TP
- Estimated shoreline erosion rates by historical photo analysis
- Calculated and converted the volume of prevented sediment (ft³/yr) to pounds
 - The critical angle of repose was not addressed, so calculated values were reduced by 50% (Drescher and Stack, 2015)
- Submerged aquatic vegetation survey at both locations



Runway 11 - 1999



Runway 11 - 2021

PROTOCOL I – PREVENTED SEDIMENT

- Fine sediment erosion prevented is determined by the mass of total prevented erosion multiplied by the percent of bulk sediment less than Sieve No. 200 / 75µm grain size (fines, not fine-sand)

Percent of Sample as Fines (Below Sieve No.200 / 75µm grain size)		
Date	Fuel Farm	Runway 11
7/28/2020	0	0
10/20/2020	0	0.1
1/19/2021	0.1	0.2
4/22/2021	6	3.6
7/27/2021	0.2	0.2
10/19/2021	1.7	1.9
1/31/2022	2	4
4/18/2022	3.9	5.6
Average	1.7375	1.95

PROTOCOL I CONCLUSIONS

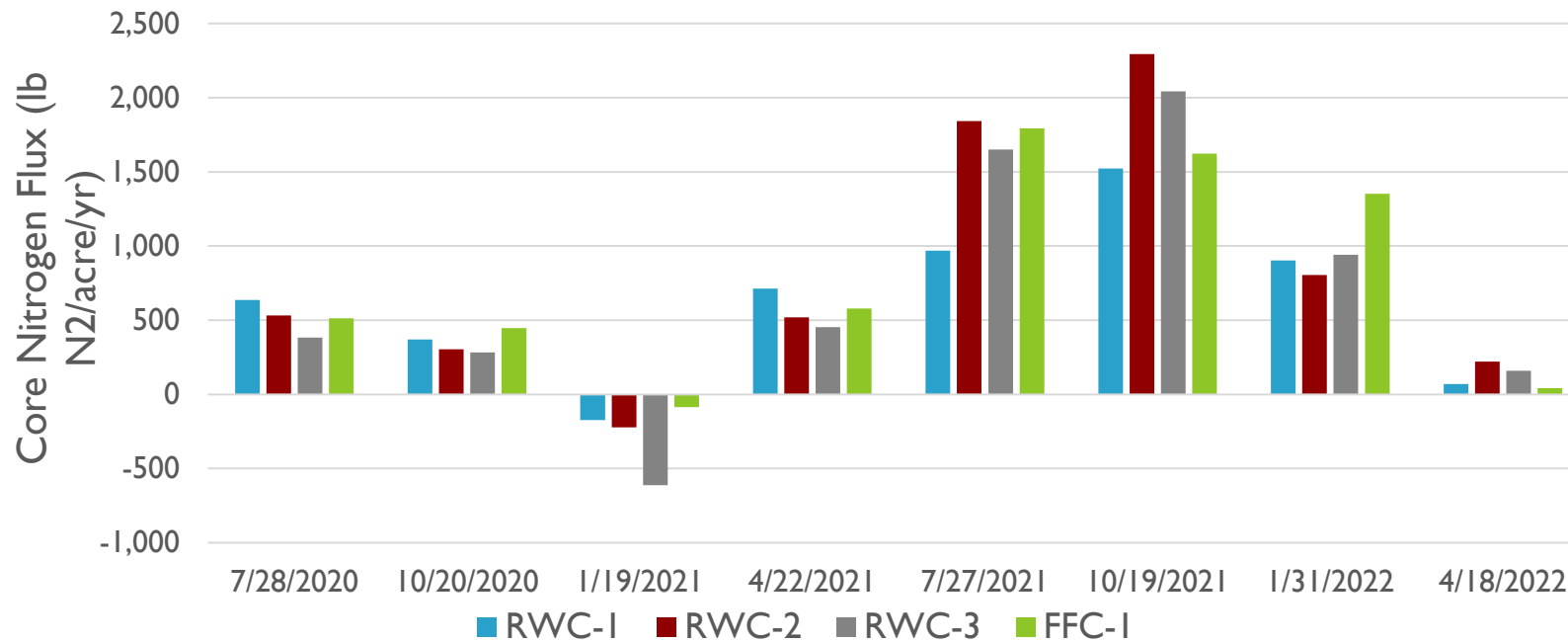
- Historical rate of erosion was more than 4X higher at Runway II than Fuel Farm, thus higher nutrient prevention at Runway II
- Successful recruitment of mangroves, particularly at Fuel Farm
- SAV presence (*Caulerpa*) and sandy substrate; substrate can promote future recruitment of seagrass if water quality conditions are suitable
- **TN reductions: 3.41 lbs Fuel Farm and 17.55 lbs Runway II**
- **TP reductions: 2.98 lbs Fuel Farm and 9.58 lbs Runway II**
- Projects with higher erosion rates yield greater benefits
- Bank Instability reduction through grading and stabilization will enhance the credit

SAMPLING AND ANALYSIS – PROTOCOL 2

- Four water samples and four core samples of marsh sediment (8 inches sediment with 8 inches of overlying water) were collected each quarter
 - Samples were shipped to the University of Florida for denitrification analysis using membrane inlet mass spectrometry
 - The provided denitrification rate ($\mu\text{mol N}_2/\text{hr}/\text{m}^2$) was multiplied by the total acreage of marsh plants to calculate the nitrogen reduction credit per year



PROTOCOL 2 – MARSH DENITRIFICATION RATES



- Determination of movement of nitrogen from sediment to the water column
- Positive flux found at 6 of the 7 sampling events
- Significant temporal variability (temperature)

PROTOCOL 2 CONCLUSIONS

- Marsh denitrification (Protocol 2) provided the highest TN nutrient reduction
- Not targeting TP reductions
- **TN reductions: 532 lbs Fuel Farm and 498 lbs Runway I I**
- Collecting temperature, salinity, DO, and vegetation dominance would assist in targeting areas with highest denitrification potential
- Aim for projects with higher denitrification potential:
 - Abundant dense vegetation
 - No or limited shoreline hardening

SAMPLING AND ANALYSIS – PROTOCOL 3

- Four samples of marsh plantings were collected each quarter for every 0.25 acres of planting
 - Three samples at Runway 11, one sample at Fuel Farm
 - Samples were sent to DB Environmental Laboratories Inc. for analysis of TN and TP in the plant tissues and the total wet weight, dry weight and percent moisture
- Data were used to calculate Marsh Redfield Nitrogen to Phosphorus (N:P) mass ratio
 - Used average carbon to nitrogen ratio and average marsh biomass from the Chesapeake Bay and annualized over 30 years to determine the nutrient reduction rate (lbs/acre/yr)
 - Multiplied the reduction rate by the acres of marsh plantings

PROTOCOL 3 – MARSH REDFIELD RATIO

Vegetation Nutrient Uptake

- Redfield Ratio between TN and TP in plant tissues
- One time credit (**not annual**)
 - How about increases in marsh recruitment?
- Assumed 30 year expected life of marsh
 - 0.34 acres of marsh at Fuel Farm
 - 0.39 acres of marsh at Runway 11
- Fuel Farm **does not include mangrove nutrient sequestration**



PROTOCOL 3 CONCLUSIONS

- Limited vegetative uptake according to current adopted Protocol 3
- **TN reductions: 0.90 lbs Fuel Farm and 1.30 lbs Runway II**
- **TP reductions: 0.12 lbs Fuel Farm and 0.23 lbs Runway II**
- Likely due to limited planting and types of vegetation sampled
 - How can mangrove uptake be included?
 - Redfield ratio numbers used Chesapeake data
- Recommend revisiting Protocol 3

RECEIVED TMDL CREDIT (2022)

- Received credit for the 2 monitored shorelines:
 - Fuel Farm = 537 lbs TN and 3.1 lbs.TP
 - Runway 11 = 517 lbs TN and 9.8 lbs.TP

	Nutrient reduction from erosion prevention		Nutrient reduction from denitrification	Nutrient reduction from redfield ratios		Total Verified Reduction (in lbs)	
Sites	TN Reduced (lb./year)	TP Reduced (lb./year)	TN reduced (lb./year)	TN Reduced (lb./year)	TP Reduced (lb./year)	Sum TN credit lbs./year	Sum TP credit lbs./year
Fuel Farm	3.41	2.98	532	0.90	0.12	536.65	3.10
Runway 11	17.55	9.58	498	1.30	0.23	516.92	9.81
Total projects	21	13	1030	2	0	1,054	13



RECOMMENDATIONS & NEXT STEPS

PROPOSED SHORELINE PROTOCOL REFINEMENT

Protocol 1 – Prevented Sediment

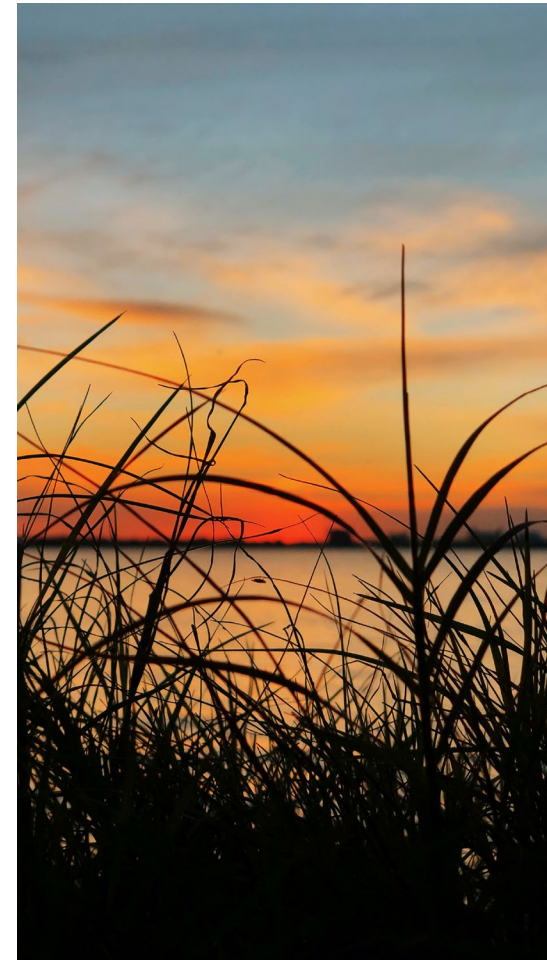
- Standardized calculation for the shoreline erosion rate
- Sand reduction factor (weight of fines divided by the total weight of the sample)
- Clearly define and establish “fines”

Protocol 2 – Denitrification

- Simplify the denitrification rate laboratory method to allow cheaper/faster results (and other labs)

Protocol 3 – Marsh Redfield Ratio

- Use values associated with Florida rather than the Chesapeake Bay by conducting an extensive literature review (productivity above ground/below ground)
- Measure C along with N and P in samples



A photograph of a sunset over a body of water. The sky is filled with orange and yellow clouds, with the sun low on the horizon. A wooden pier extends from the left side into the water, ending in a small covered structure. The water reflects the warm colors of the sunset. In the distance, a city skyline is visible under the twilight sky.

Questions?

Thank you!

Brevard County's
Save
our
LAGOON

Indian River Lagoon
Basin Management Action Plan
Annual Meeting
April 3, 2023
Terri Breeden
Terri.Breeden@BrevardFL.gov



County-wide 1/2 Cent Infrastructure Sales Tax

MISSION: ***RESTORING** the Indian River Lagoon through collaborative, science-based projects which **REDUCE** and **REMOVE** pollution to benefit our community, economy, and natural resources.*



HOW DO WE GET TO A HEALTHY LAGOON?

48

REDUCE Excess Nitrogen & Phosphorus Inputs by 25%

- Fertilizer management through public education and outreach
- Septic system removal
- Septic system upgrades
- Wastewater treatment plant upgrades to improve reclaimed water quality
- Stormwater treatment

RESTORE 20 Miles of Oyster Bars and Living Ecosystem Services

Create long, narrow oyster bars throughout the lagoon to increase filtration and decrease shoreline erosion.

REMOVE Detrimental Muck to Reduce Flux by 25%

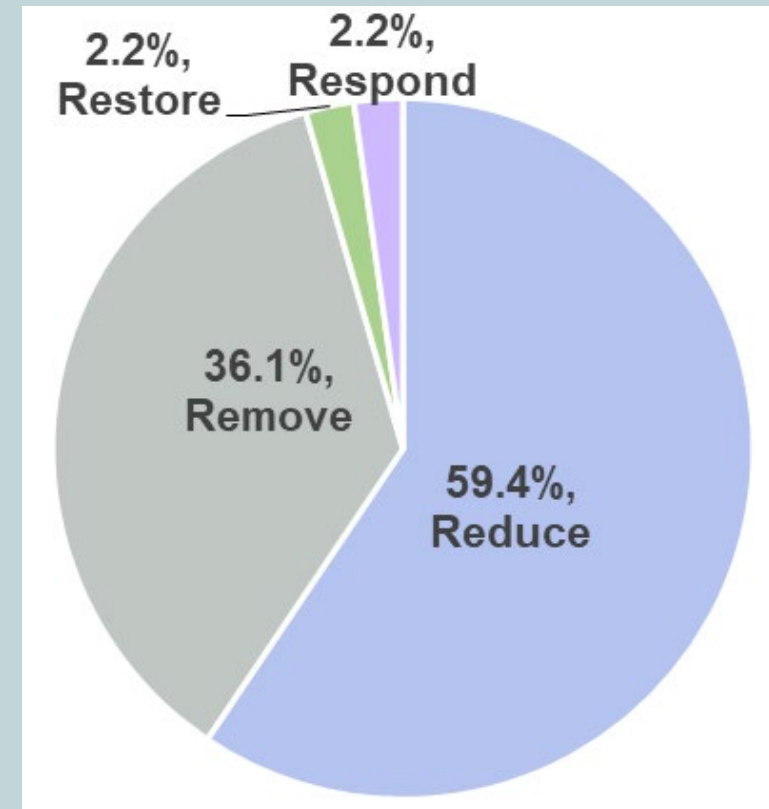
Remove muck through environmental dredging. Muck contributes to turbidity, inhibits seagrass growth, consumes oxygen, stores and releases nutrients, smothers the natural bottom, and destroys healthy communities of benthic organisms.

RESPOND to New Information

Measure progress annually, evaluate changing needs and conditions, consider technological opportunities, and respond by amending the plan accordingly.

Decision Science

- Use best available data and experts
- Address major sources of pollution
- Schedule parallel and in series
- Optimize Return on Investment
- Foster innovation and adaptation
- Minimize cost and risk





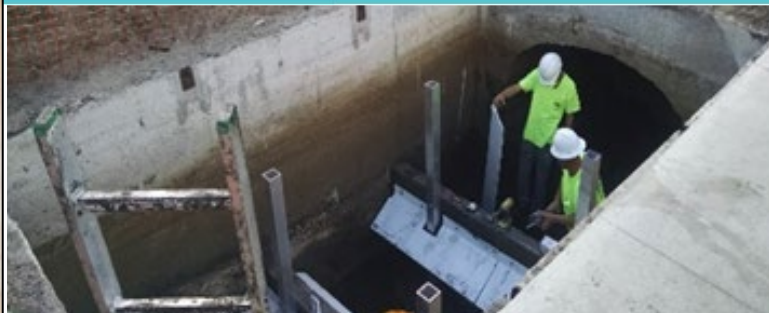
Brevard County's

Save *our* LAGOON

Celebrating



March 16, 2023



Save Our Indian River Lagoon Project Plan 2023 Update for Brevard County, Florida



Prepared by:
Tetra Tech, Inc.


Prepared for:
Brevard County, Natural Resources Management Department



February 7, 2023



Project Delivery

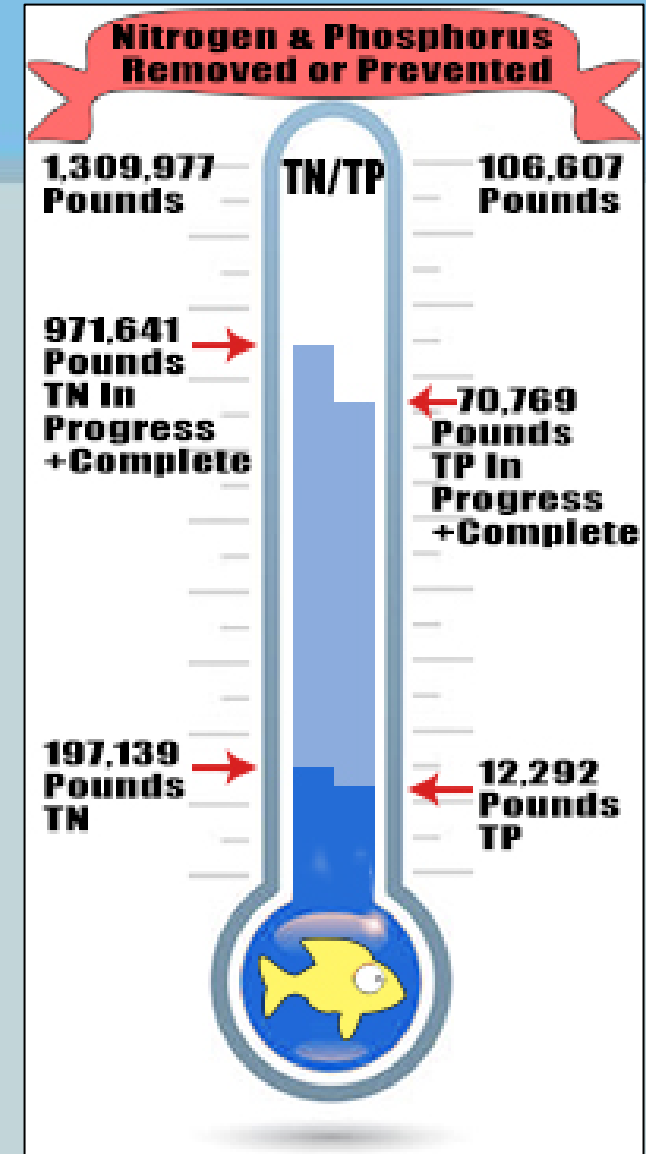
75 Projects Completed
27 Under Construction
42 In Design or Permitting
496 Homeowner Projects

46 Quick Connects to Sewer
118 Septic Upgrades
332 Leaky Lateral Repairs

18 Performance Evaluations

- ✓ Quantify Nutrient Removal
- ✓ Update Cost-Effectiveness

5 Public Information Campaigns





Project Delivery Partnerships

75 Completed Projects

11 Titusville
10 Brevard Zoo
6 Cocoa Beach
5 Marine Resources Council
4 Melbourne
3 City of Cocoa
2 Indian Harbour Beach
2 Palm Bay
2 West Melbourne

1 Cape Canaveral
1 Indialantic
1 Merritt Island
.... Redevelopment Agency
1 Private Mobile Home Park
1 Rockledge
1 Satellite Beach

24 Brevard County Projects
• 446 Homeowner Projects



Package Plant Connections

Oak Point Mobile Home Park

- \$350,000 SJRWMD
- \$279,000 SOIRL



Project Delivery Partnerships



74+ Projects In Design or Construction

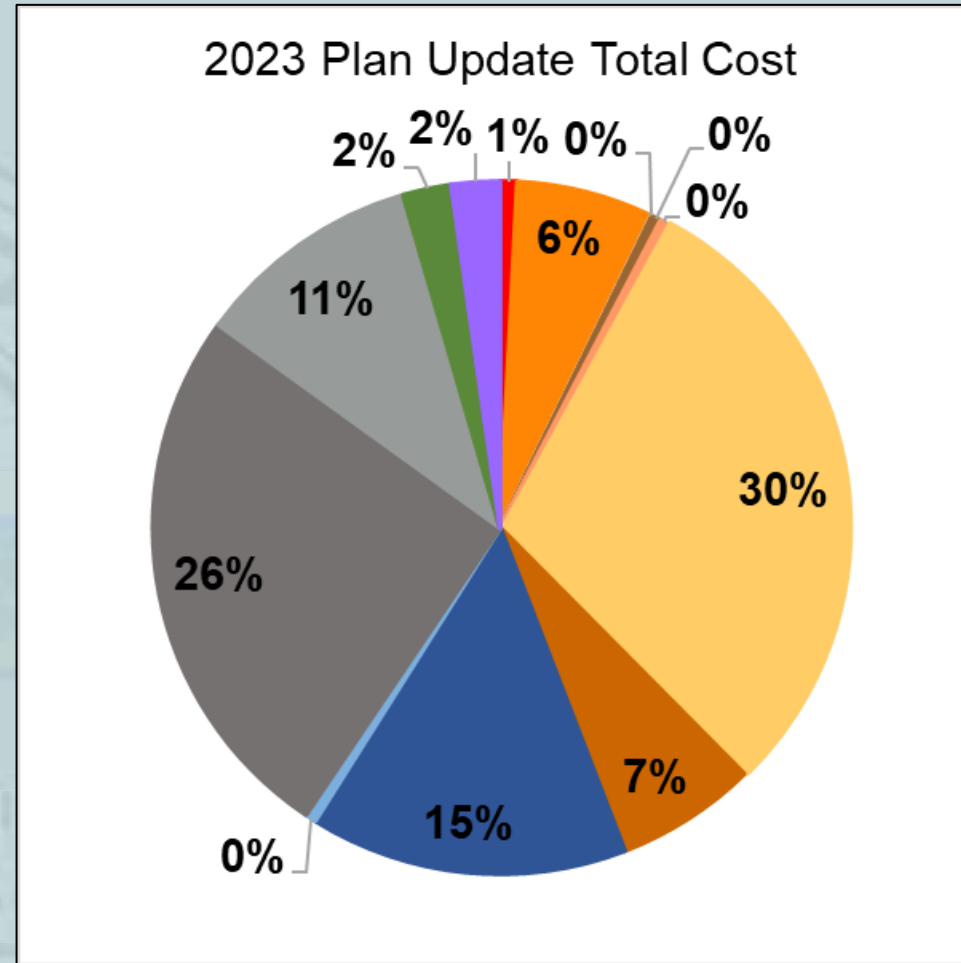
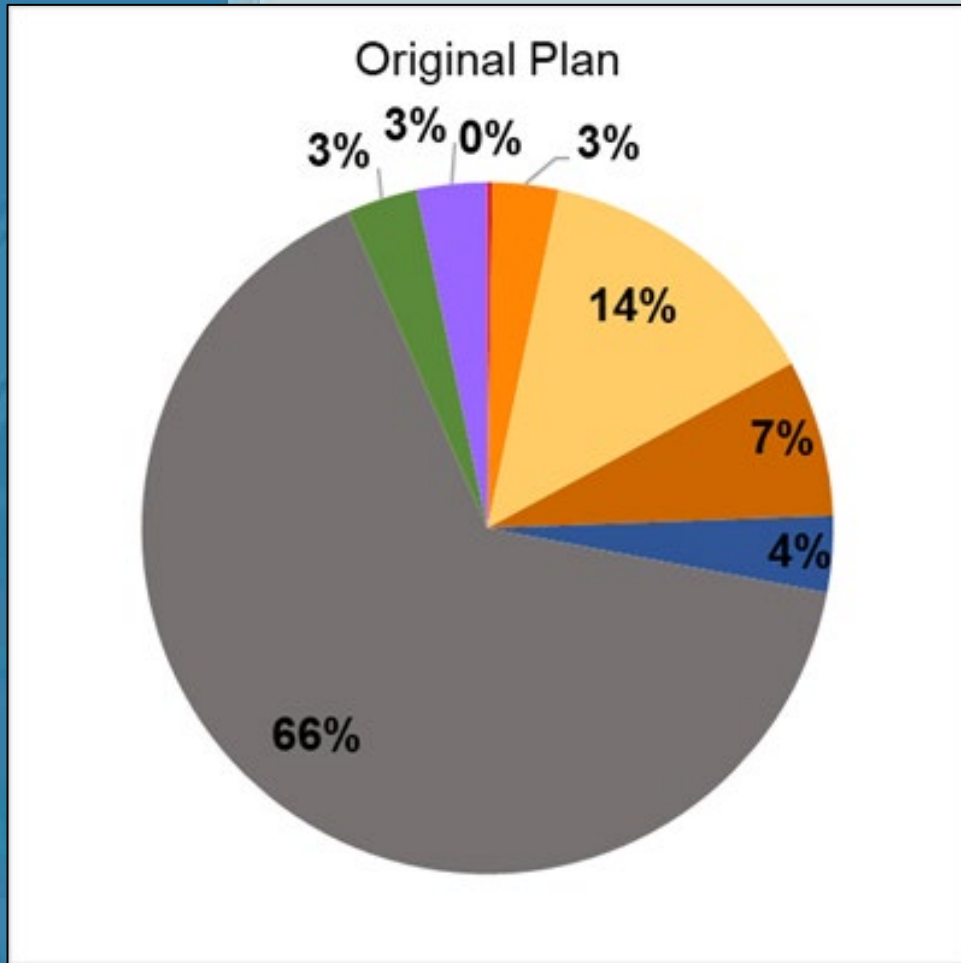
- 9 Melbourne
- 6 Brevard Zoo
- 3 Cocoa Beach
- 3 Satellite Beach
- 3 Titusville
- 3 West Melbourne
- 3 Clam Farmers
- 1 Indian Harbour Beach
- 1 Melbourne Tillman WCD
- 1 Rockledge
- 1 SJRWMD

40 Brevard County Projects

- 150+ Homeowner Projects
- 21 Performance Evaluations
- 3 Public Information Campaigns



Comparison of Fund Allocations



- Public Education
- WWTF Upgrades for Reclaimed Water
- Rapid Infiltration Basin/Sprayfield Upgrades
- Package Plant Connection
- Sewer Laterals
- Septic-to-Sewer
- Septic System Upgrades
- Stormwater Projects
- Vegetation Harvesting
- Muck Removal
- Treatment of Interstitial Water
- Oyster Reef Living Shorelines
- Project Monitoring

Allocations in 2023 Plan Update

Project Type	2023 Allocation
Public Education and Outreach	\$3,530,000
Wastewater	\$193,100,693
Stormwater	\$68,065,209
Muck and Interstitial	\$160,604,114
Restoration	\$10,000,105
Monitoring	\$10,000,000
Contingency and Inflation	\$141,215,460
<i>Total</i>	<i>\$586,515,581</i>

Public Education & Engagement



Budget: \$3,530,000
TN Reduction: 33,709 lbs/yr
Average Cost/lb TN: \$105
7 projects

WWTF Upgrades for Reclaimed Water



Budget: \$27,617,223
TN Reduction: 73,959 lbs/yr
Average Cost/lb TN: \$383
8 projects

Rapid Infiltration Basin/ Sprayfield Upgrades



Budget: \$82,207
TN Reduction: 317 lbs/yr
Average Cost/lb TN: \$259
2 projects

Package Plant Connections



Budget: \$2,016,627
TN Reduction: 1,442 lbs/yr
Average Cost/lb TN: \$1,398
4 projects

Smoke Testing/ Sewer Lateral Repairs



Budget: \$1,454,498
TN Reduction: 5,196 lbs/yr
Average Cost/lb TN: \$235
5 projects

Septic to Sewer by Extension



Budget: \$120,100,160
TN Reduction: 95,381 lbs/yr
Average Cost/lb TN: \$1,256
47 projects

Septic Upgrades



Budget: \$29,243,590
TN Reduction: 37,981 lbs/yr
Average Cost/lb TN: \$770
1,625 projects

Septic to Sewer by Quick Connects



Budget: \$11,200,379
TN Reduction: 21,446 lbs/yr
Average Cost/lb TN: \$522
876 projects

Stormwater Projects



Budget: \$65,721,812
TN Reduction: 282,678 lbs/yr
Average Cost/lb TN: \$242
240 projects

Aquatic Vegetation Harvesting



Budget: \$2,200,496
TN Reduction: 29,691 lbs/yr
Average Cost/lb TN: \$68
10 projects

Muck Removal & Interstitial Treatment



Budget: \$160,387,061
TN Reduction: 702,036 lbs
20 projects

Oyster Bars



Budget: \$9,809,545
TN Reduction: 24,699 lbs/yr
Average Cost/lb TN: \$397
27 projects

Planted Shorelines



Budget: \$130,455
TN Reduction: 544 lbs/yr
Average Cost/lb TN: \$240
11 projects

Clam Restoration



Budget: \$60,000
TN Reduction: 1,000 lbs/yr
Average Cost/lb TN: \$60
10 projects

Public Education

LagoonLoyal.com



The screenshot shows the homepage of LagoonLoyal.com. At the top is a dark blue navigation bar with the LagoonLoyal logo on the left and a menu of links on the right: Home, About, For Residents, For Businesses, Resources, Contact, Sign Up, and a search icon. The main content area has a background image of a lagoon with seagrass and a fish. The headline reads "LET'S BE CLEAR..." in large white letters, followed by "A HEALTHY LAGOON STARTS WITH YOU." in green. Below this is a paragraph of text: "Every year, Brevard County residents contribute thousands of pounds of excess algae-feeding nutrients to the Indian River Lagoon by polluting both groundwater and stormwater. What actions produce these nutrients? How can you reduce your lagoon footprint?" A green button with white text says "REPORT LAGOON LOYAL ACTIONS NOW!". At the bottom, a white banner contains the text "Take Simple Actions Each Day to Protect the Lagoon." followed by a line of smaller text: "Not only will you be helping the lagoon, you'll also be rewarded with exclusive business rewards just for participating! Here's how Lagoon Loyal works:"

LAGOONLOYAL™

Home About For Residents For Businesses Resources Contact Sign Up

LET'S BE CLEAR...

A HEALTHY LAGOON STARTS WITH YOU.

Every year, Brevard County residents contribute thousands of pounds of excess algae-feeding nutrients to the Indian River Lagoon by polluting both groundwater and stormwater. What actions produce these nutrients? How can you reduce your lagoon footprint?

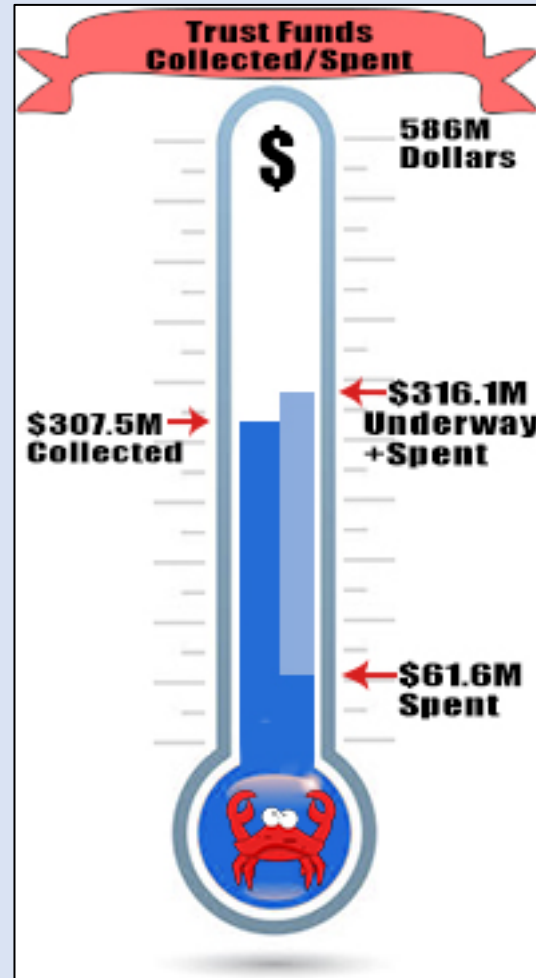
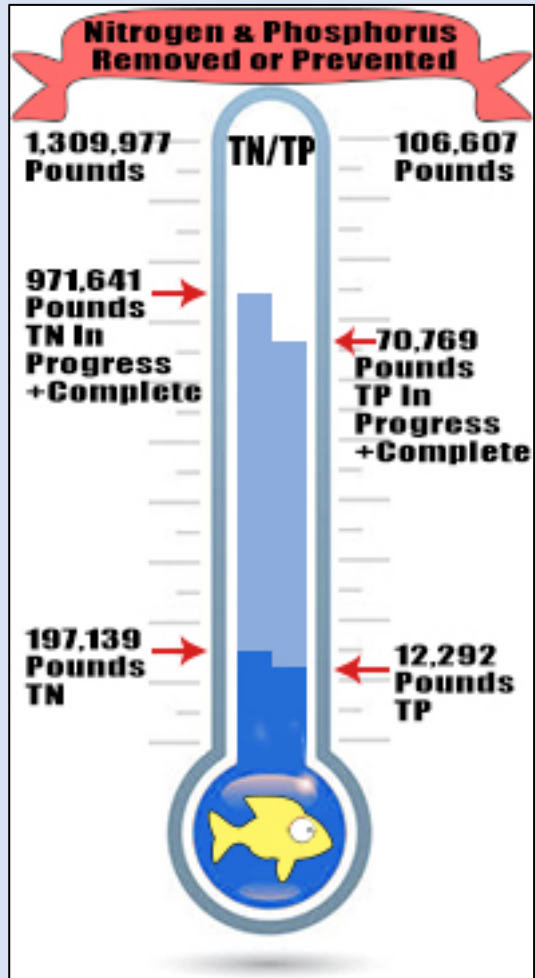
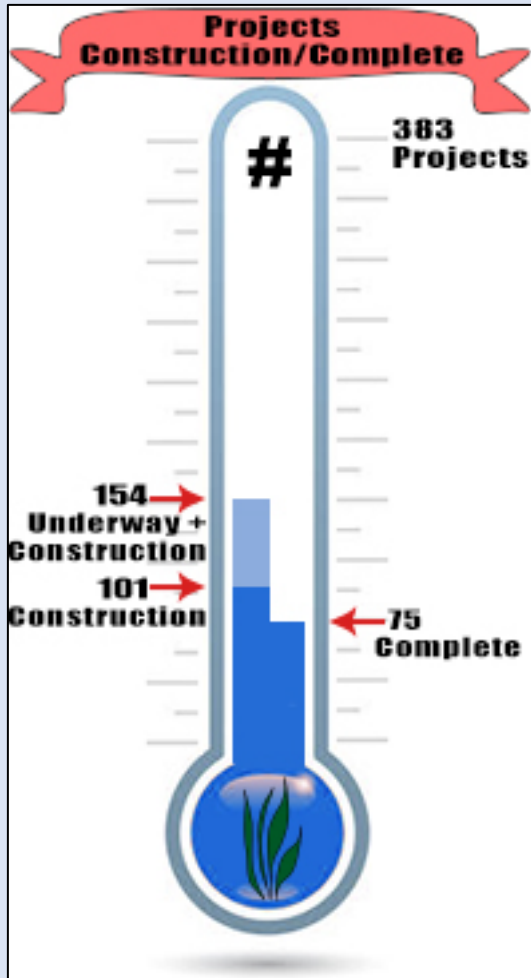
REPORT LAGOON LOYAL ACTIONS NOW!

Take Simple Actions Each Day to Protect the Lagoon.

Not only will you be helping the lagoon, you'll also be rewarded with exclusive business rewards just for participating!
Here's how Lagoon Loyal works:

Overview

www.brevardfl.gov/SaveOurLagoon





IRL BMAP Annual Progress Report



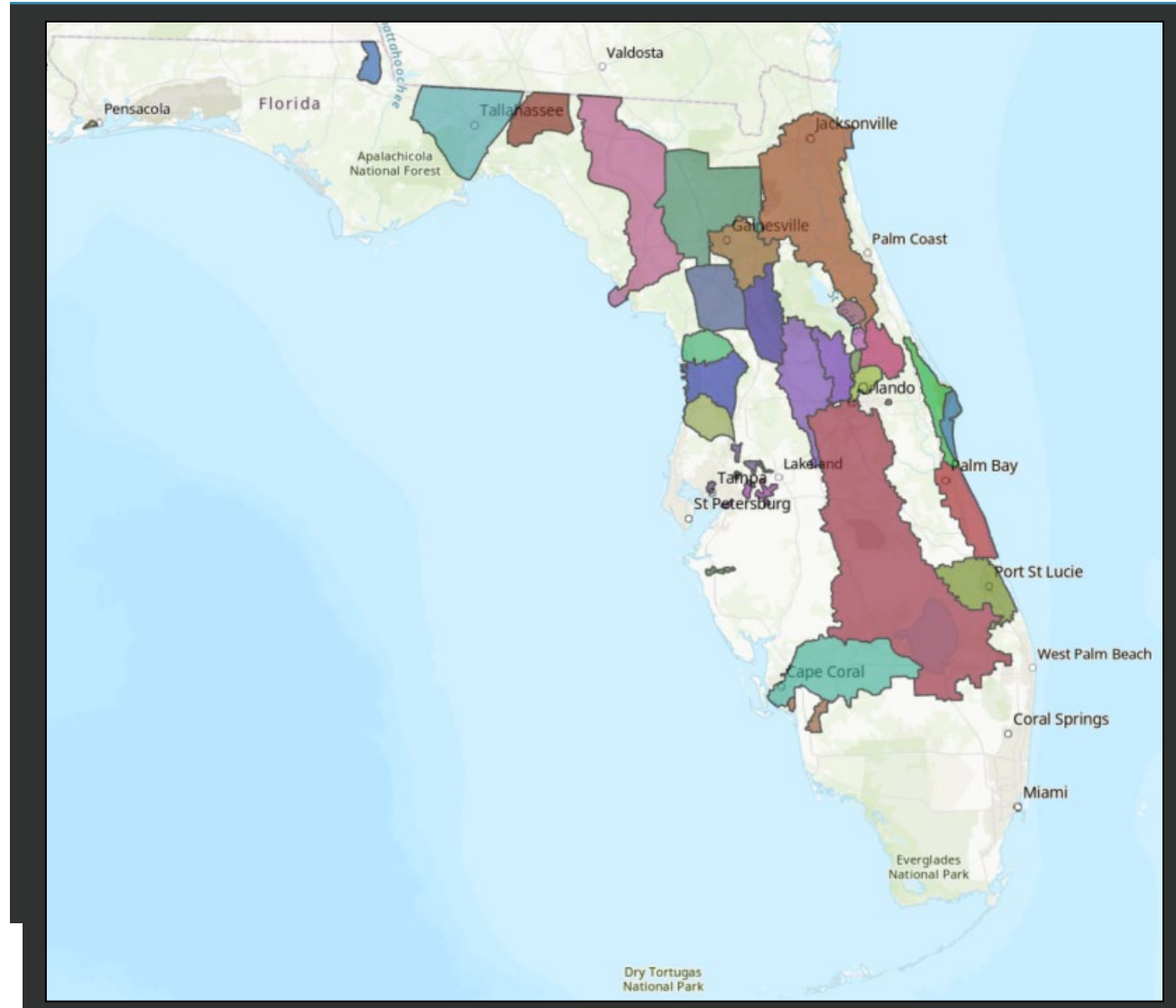
- ❖ What's a BMAP?
- ❖ Semi-biennial seagrass assessment.
 - Median.
 - Distribution.
- ❖ BMAP water quality station assessment.
- ❖ Annual stakeholder participation.
 - Statewide Annual Report (STAR) 2022.



What is BMAP?

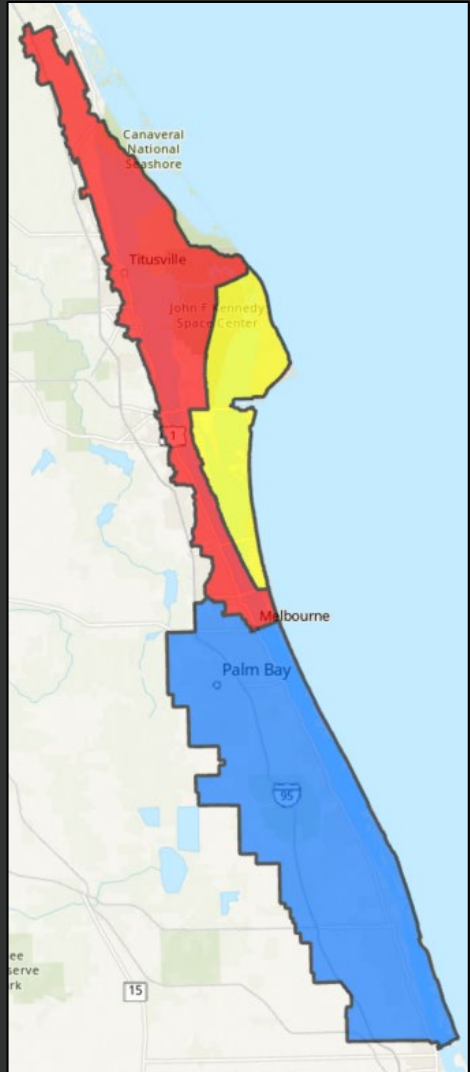
❖ A blueprint to achieve a TMDL.

- Local government, special district, and agency commitments to reduce pollutant loads.
 - Conservation and restoration programs.
 - Urban best management practices (BMPs) to reduce stormwater runoff.
 - Agricultural BMPs to reduce stormwater runoff.
 - Wastewater treatment system improvements.
 - Onsite sewage treatment and disposal system (OSTDS) removal or enhancement.





Indian River Lagoon BMAPs



❖ 2021 IRL BMAPs Updates

- Wastewater limits implemented.
- Allocations developed for all three BMAPs.
- Milestones established.
- Monitoring network solidified.



Seagrass Deep Edge Assessment Data Collection – Aerial Surveys

- ❖ Conducted in seasonal window
 - Spring – Early Summer
- ❖ About every 2-years
- Photographed maps show aerial extent of submerged aquatic vegetation
- Ground truthing of photographs
 - ❖ Field Sampling Transects
 - During aerial surveys
 - Additional independent collection in season and off season



Photo Source: <https://www.bluesky-world.com/aerial-survey-overview>



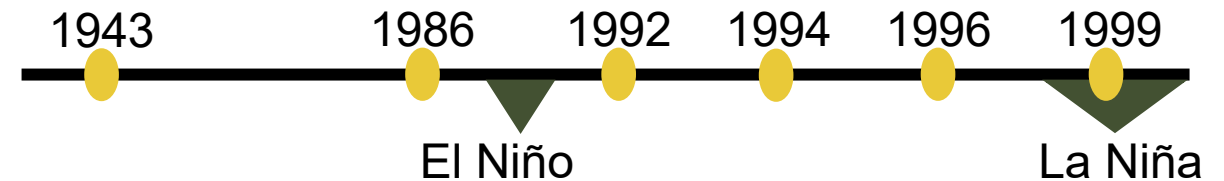
Seagrass Deep Edge Assessment

TMDL – Targets 2009



Image Source: https://onelagoon.net/wp-content/uploads/seagrass_v2.jpg

- ❖ Depth targets based on coverage from:



- ❖ Focus on 90% of the seagrass recovery estimate
- ❖ 2-step evaluation process
 - If the project zone is compliant with both steps, the project zone is achieving the TMDL depth target

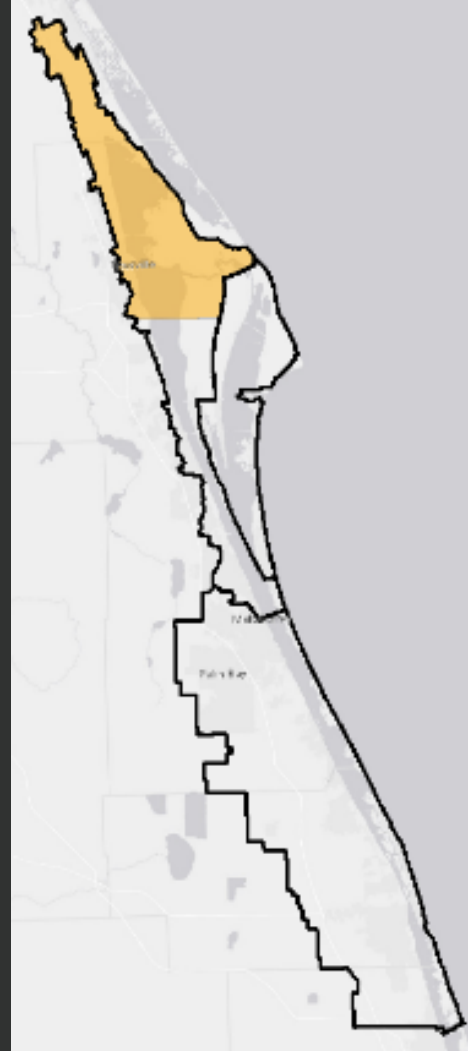
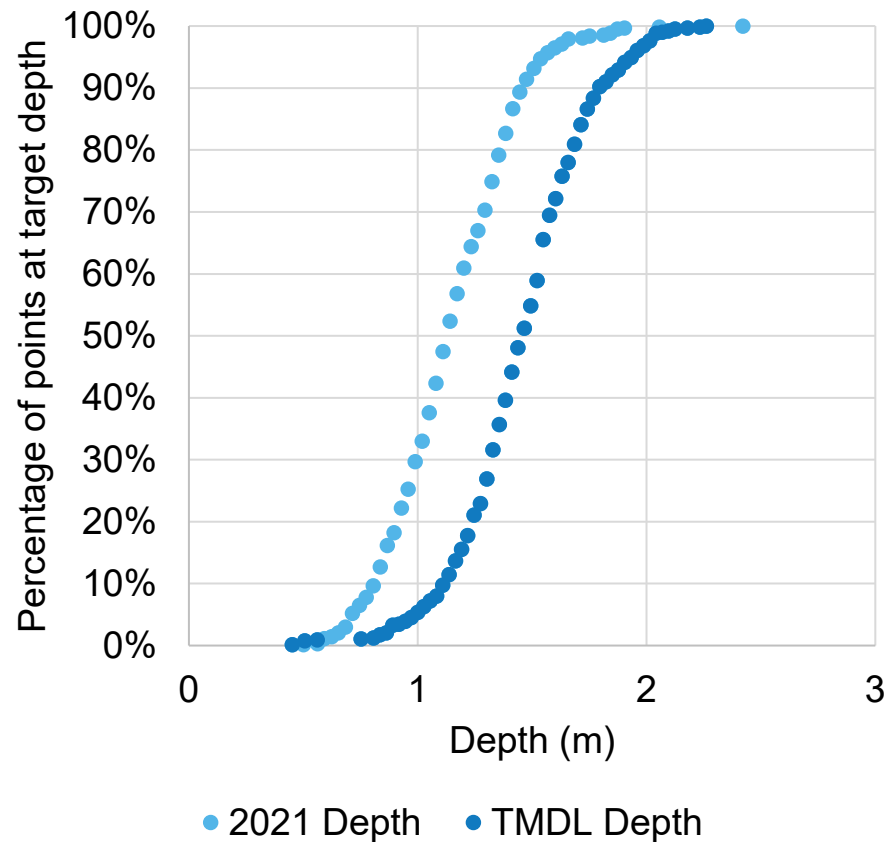
Climate Data: https://origin.cpc.ncep.noaa.gov/products/analysis_monitoring/ensostuff/ONI_v5.php



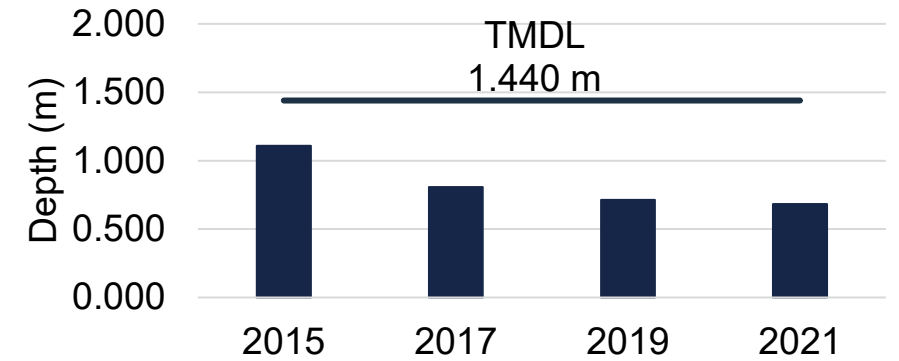
Seagrass Deep Edge Assessment

North IRL Project Zone A

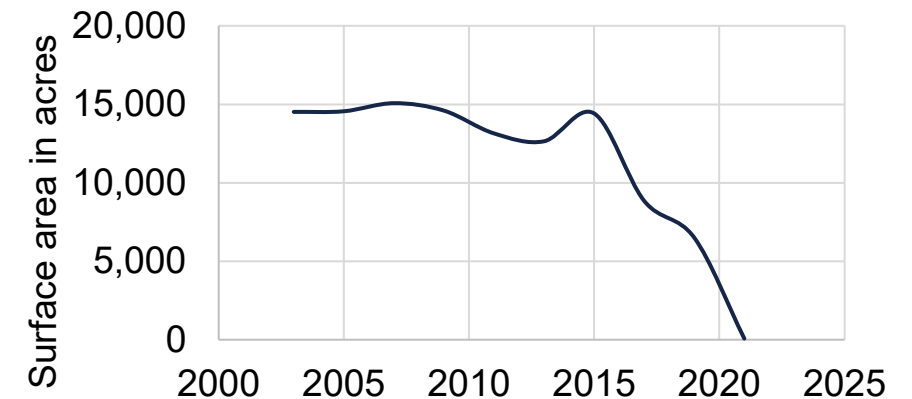
Step 1
**2015 – 2021 Cumulative
Distribution of Deep Edge Points**



Step 2
2015 - 2021 Median Deep Edge



Areal Cover Over Time

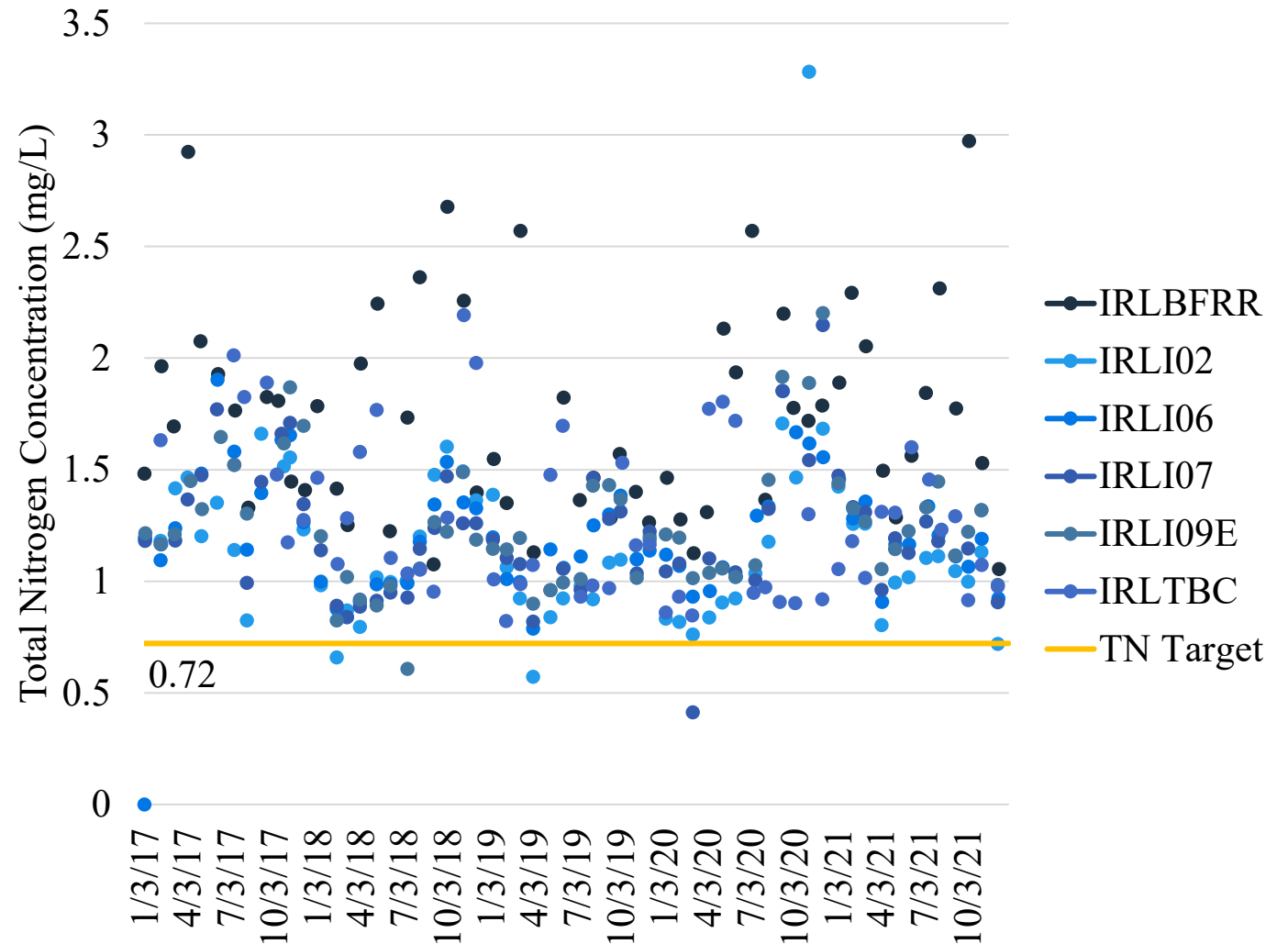
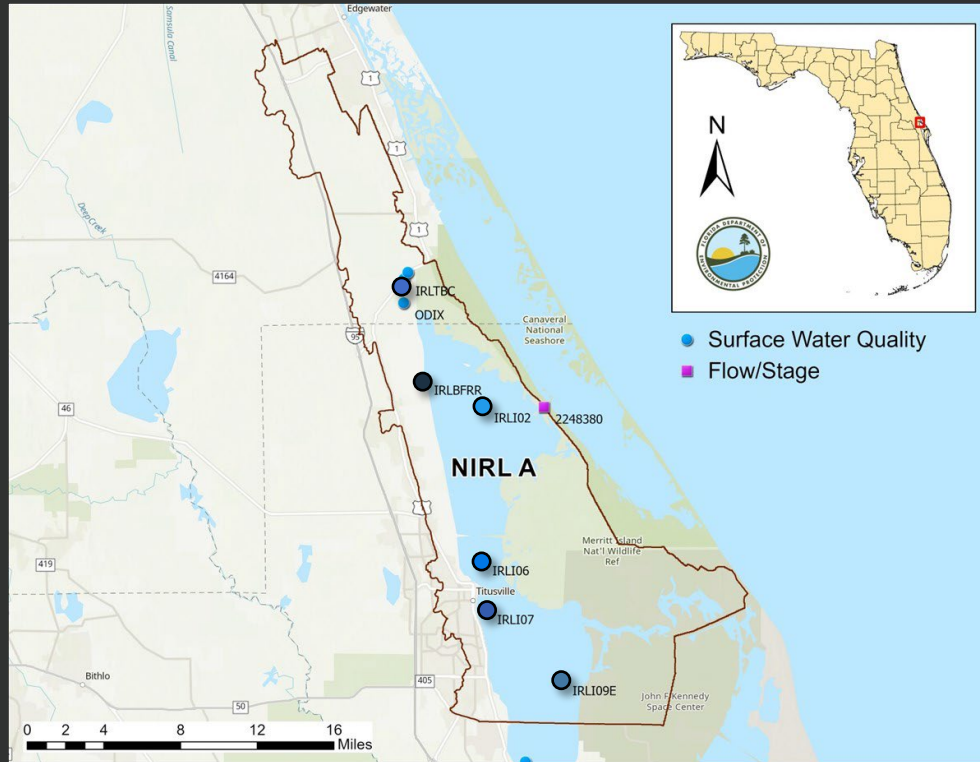




BMAP Water Quality Assessment

North IRL Project Zone A

Total Nitrogen 2017 to 2021

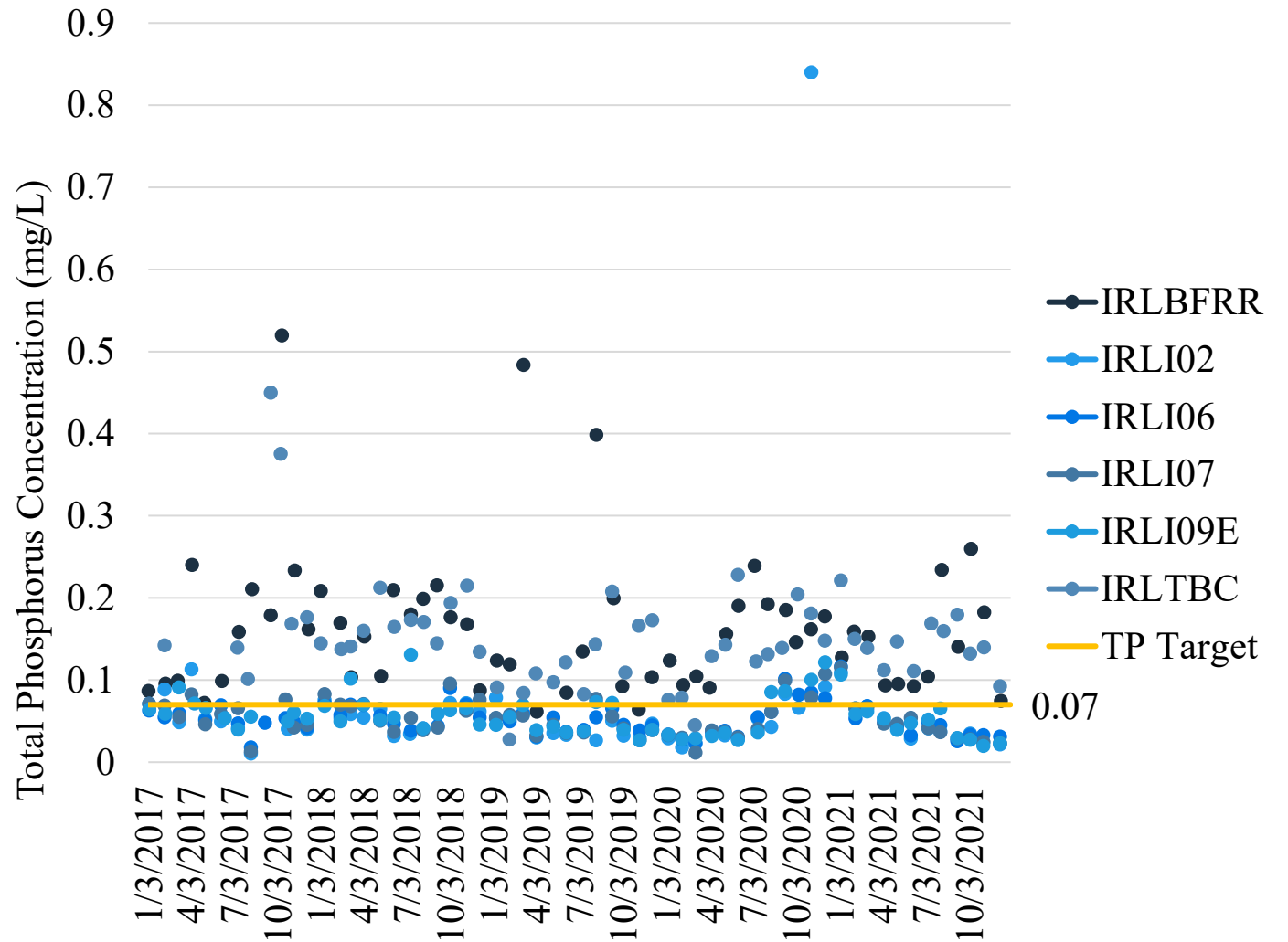
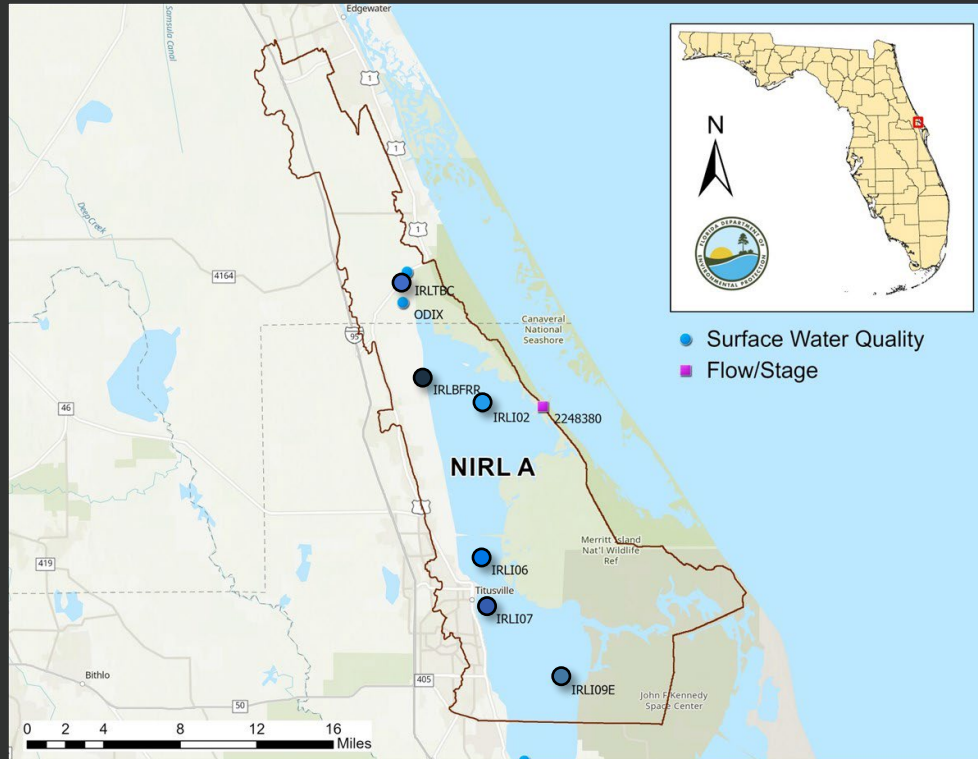




BMAP Water Quality Assessment

North IRL Project Zone A

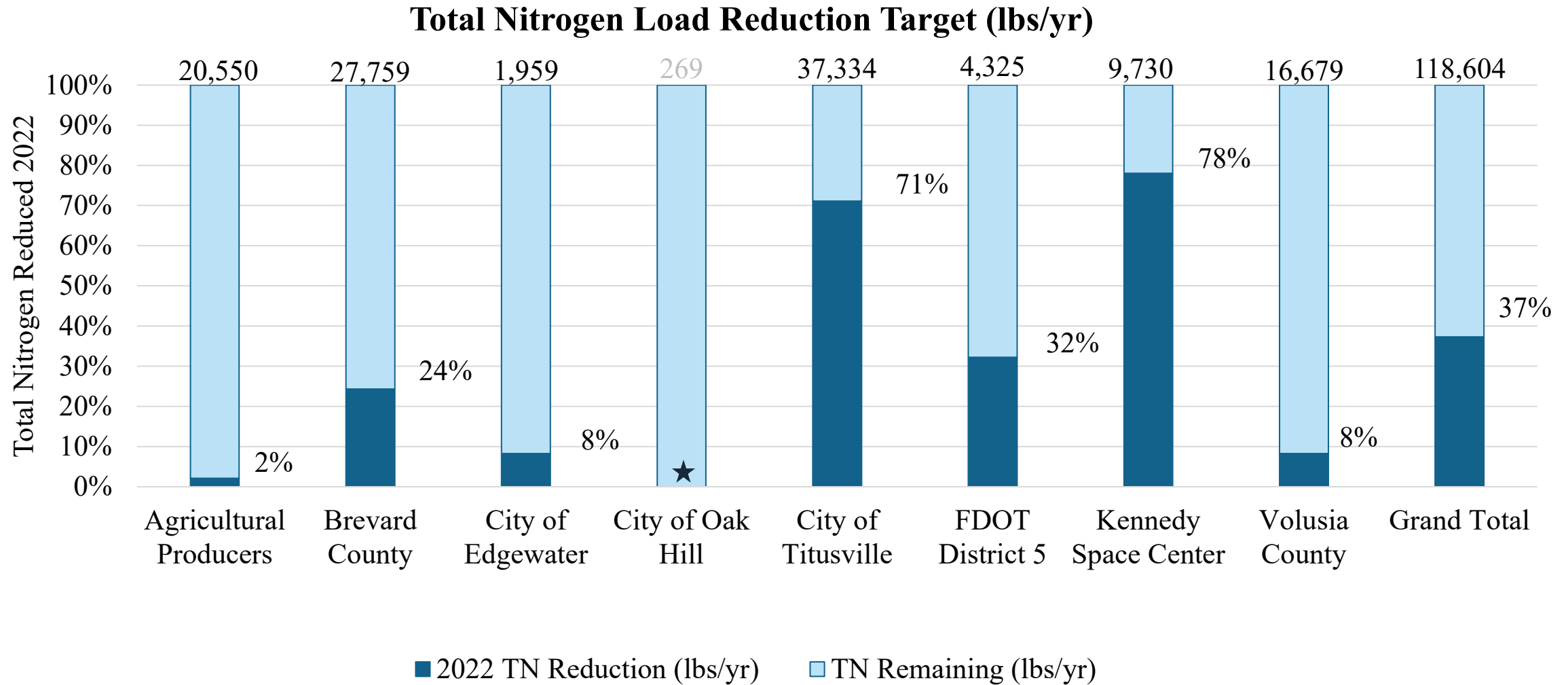
Total Phosphorus 2017 to 2021





Stakeholder Individual Allocation Progress

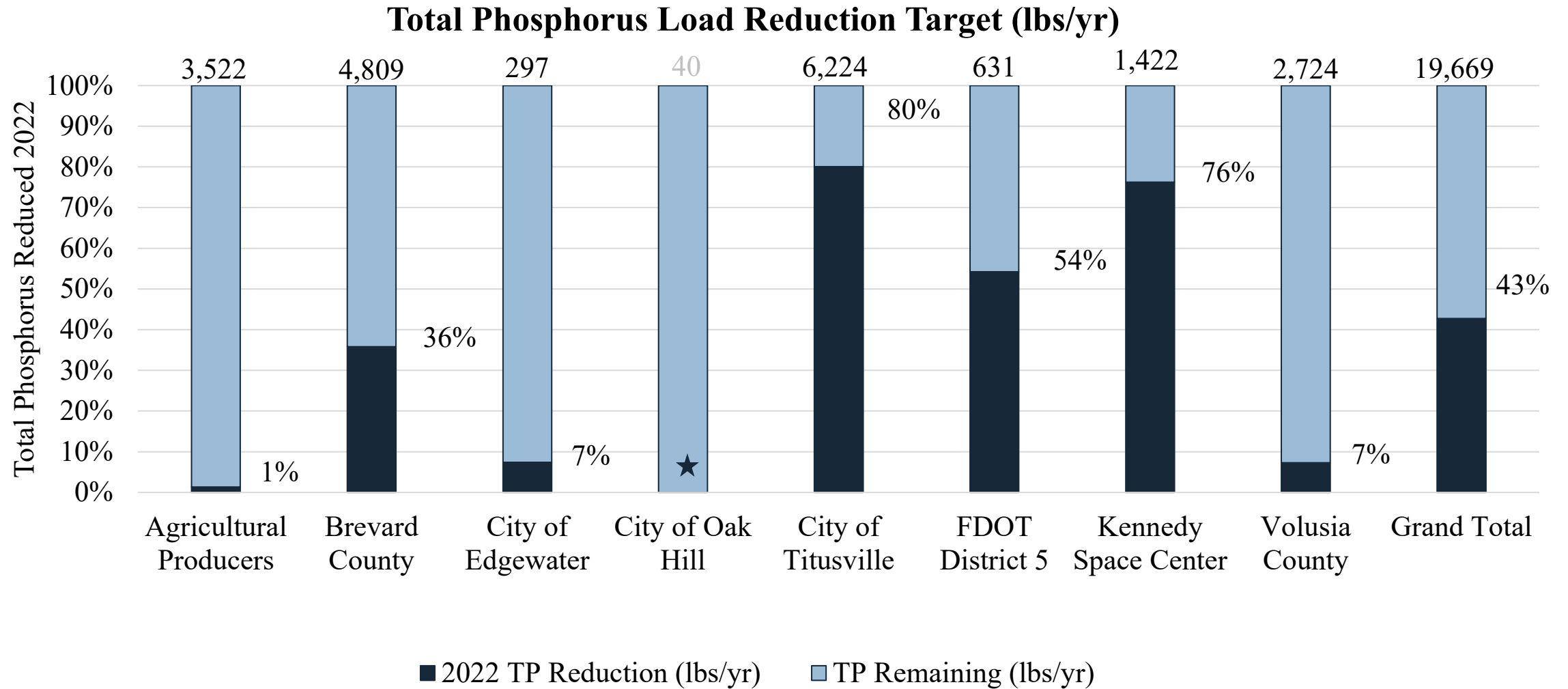
North IRL Project Zone A – DRAFT 2022





Stakeholder Individual Allocation Progress

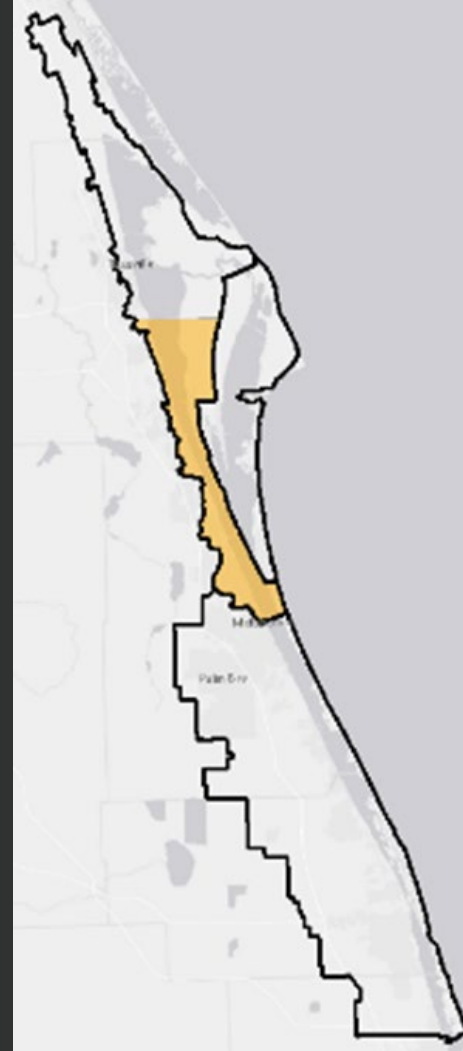
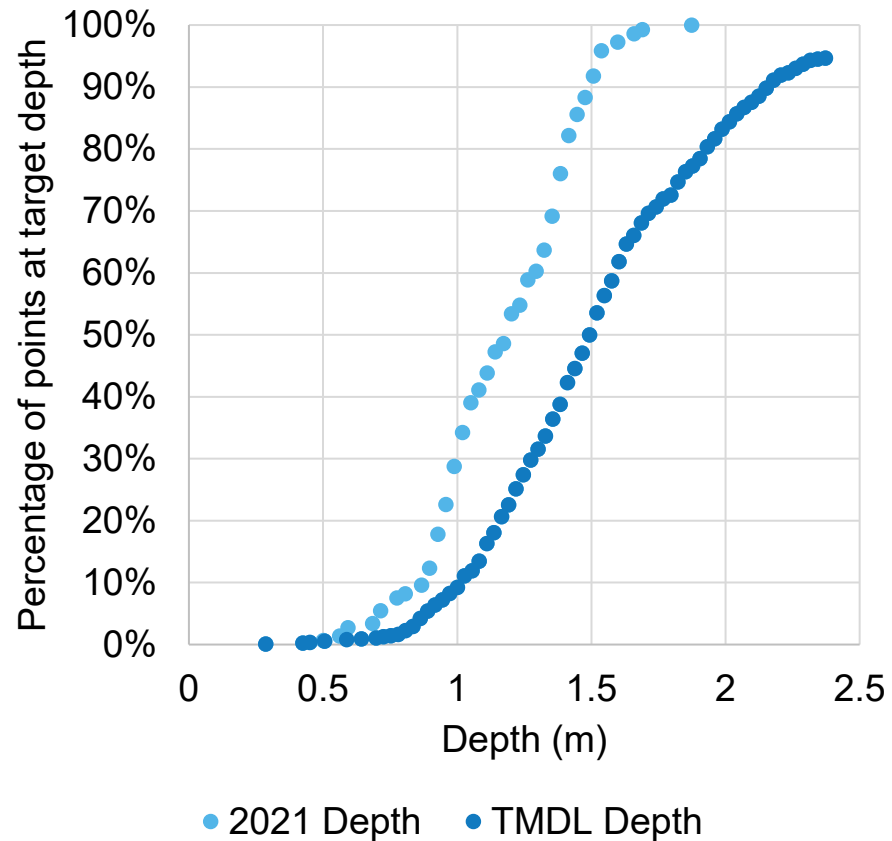
North IRL Project Zone A – DRAFT 2022



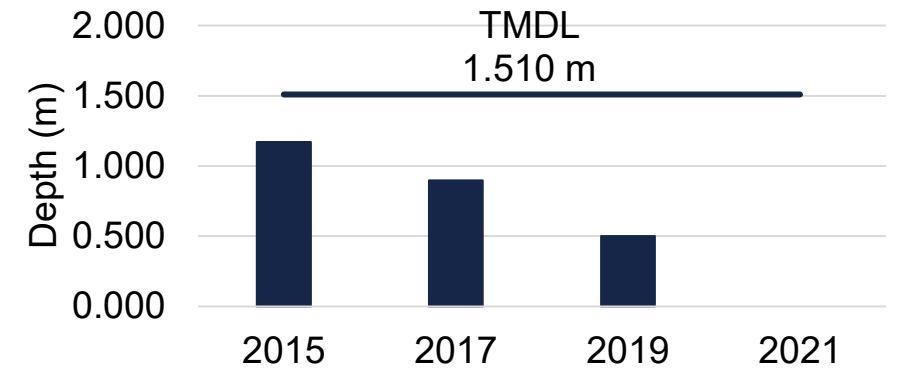


Seagrass Deep Edge Assessment North IRL Project Zone B

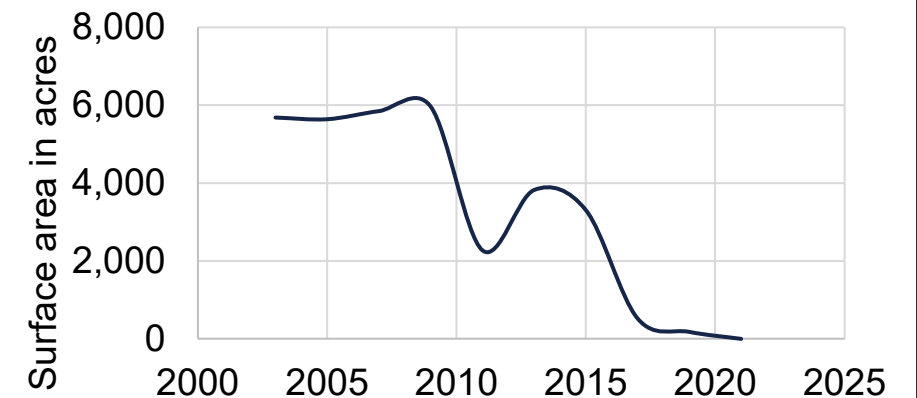
Step 1
**2015 – 2021 Cumulative
Distribution of Deep Edge Points**



Step 2
2015 - 2021 Median Deep Edge



Areal Cover Over Time

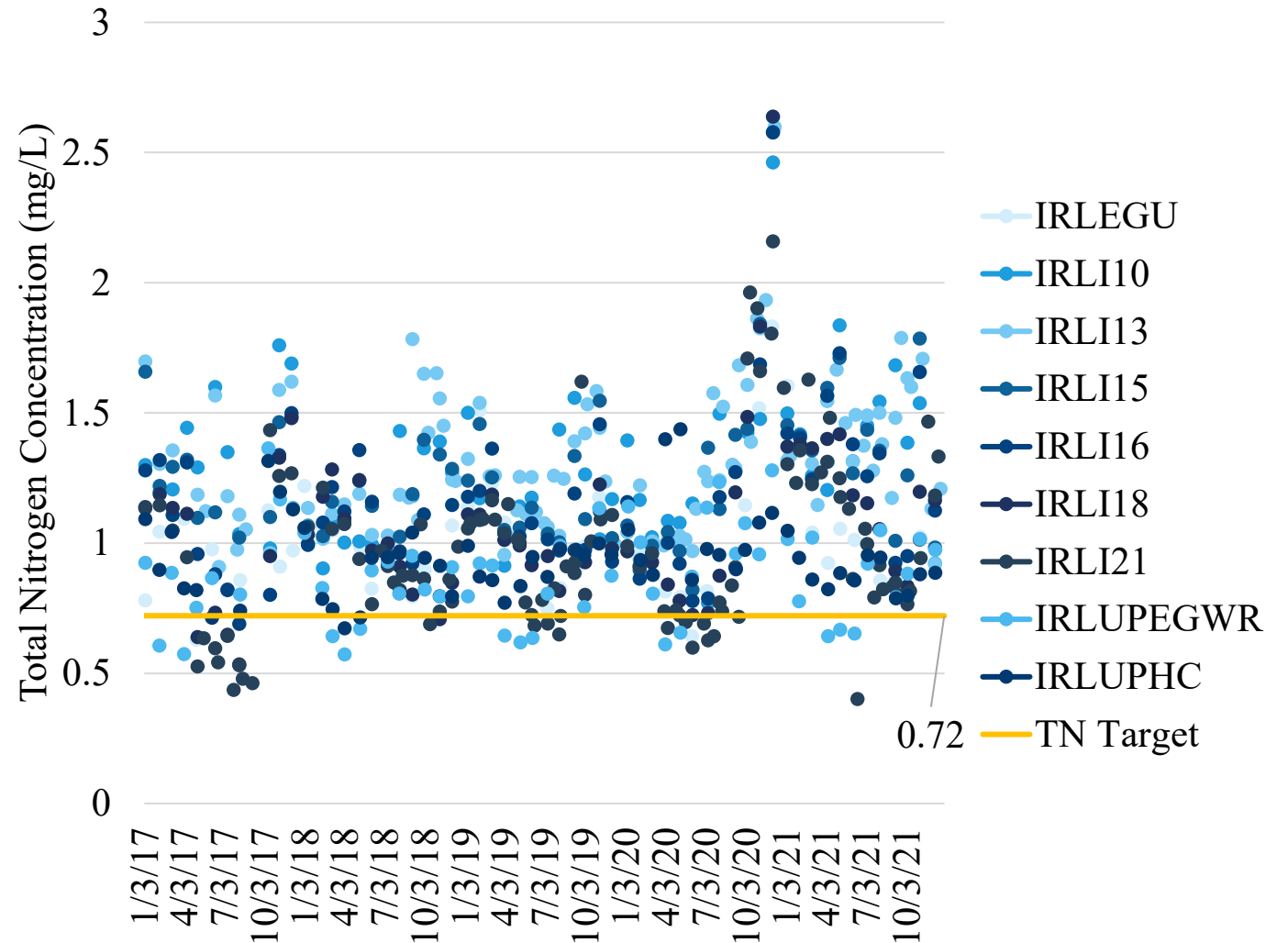
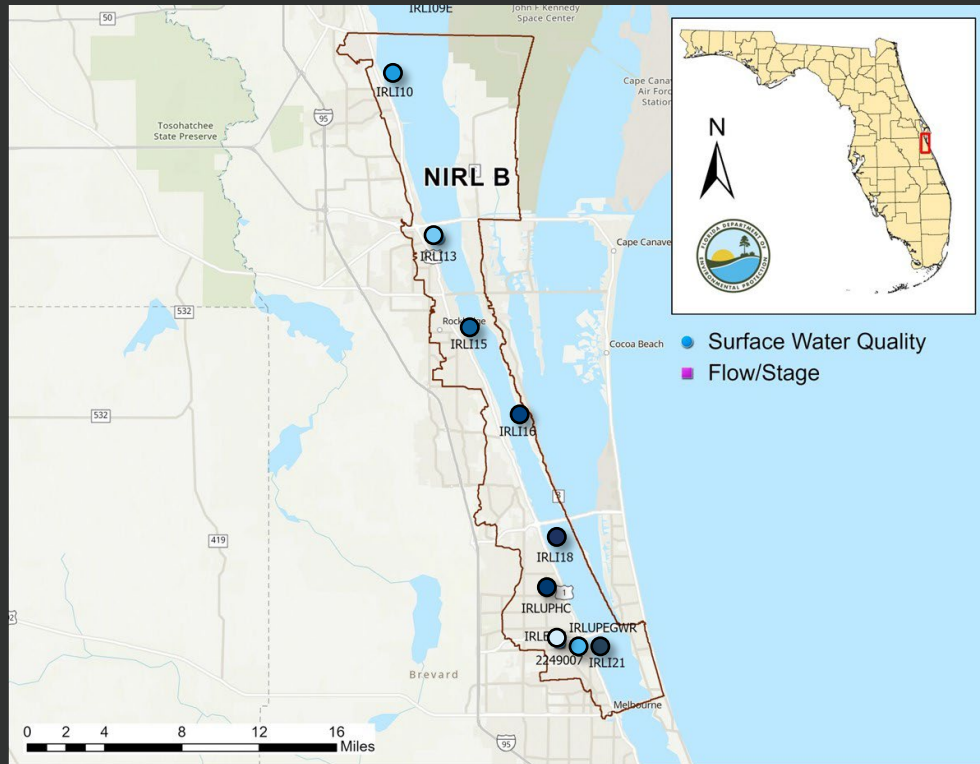




BMAP Water Quality Assessment

North IRL Project Zone B

Total Nitrogen 2017 to 2021

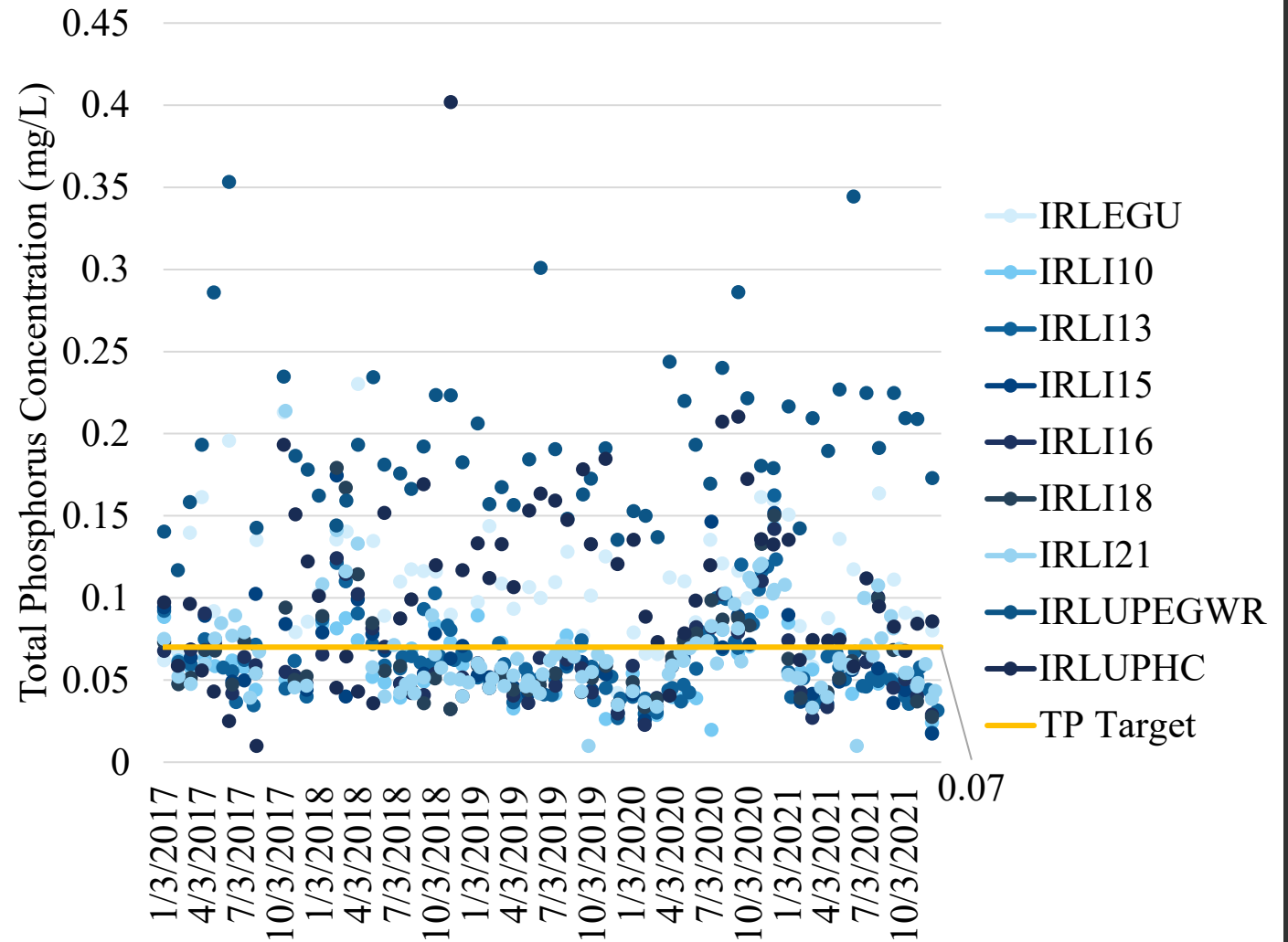
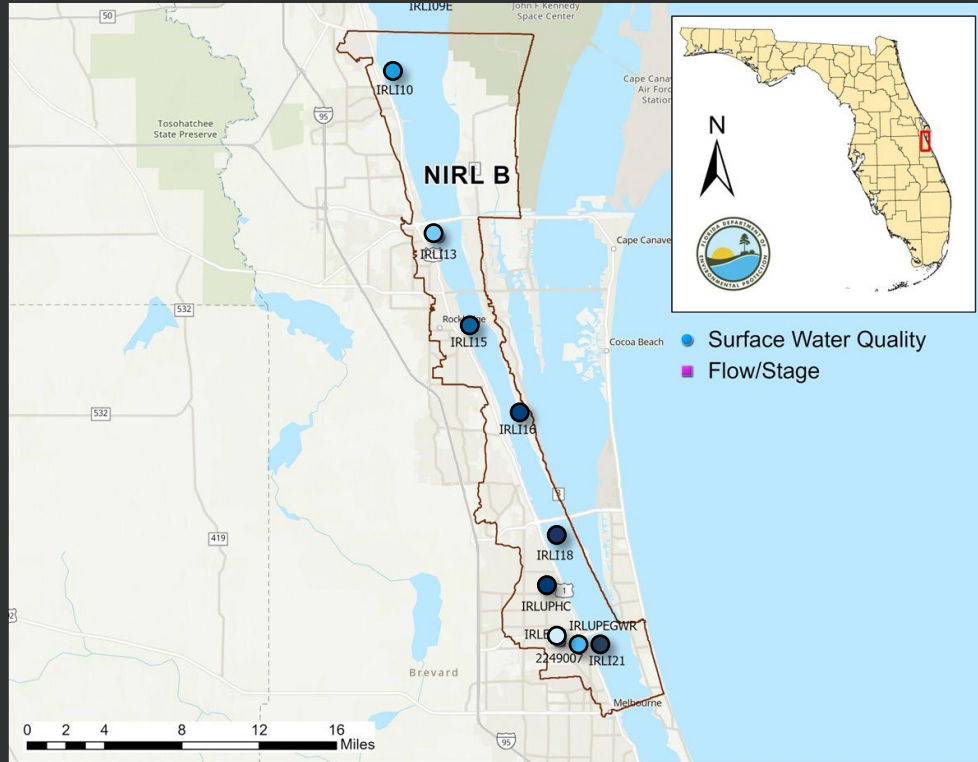




BMAP Water Quality Assessment

North IRL Project Zone B

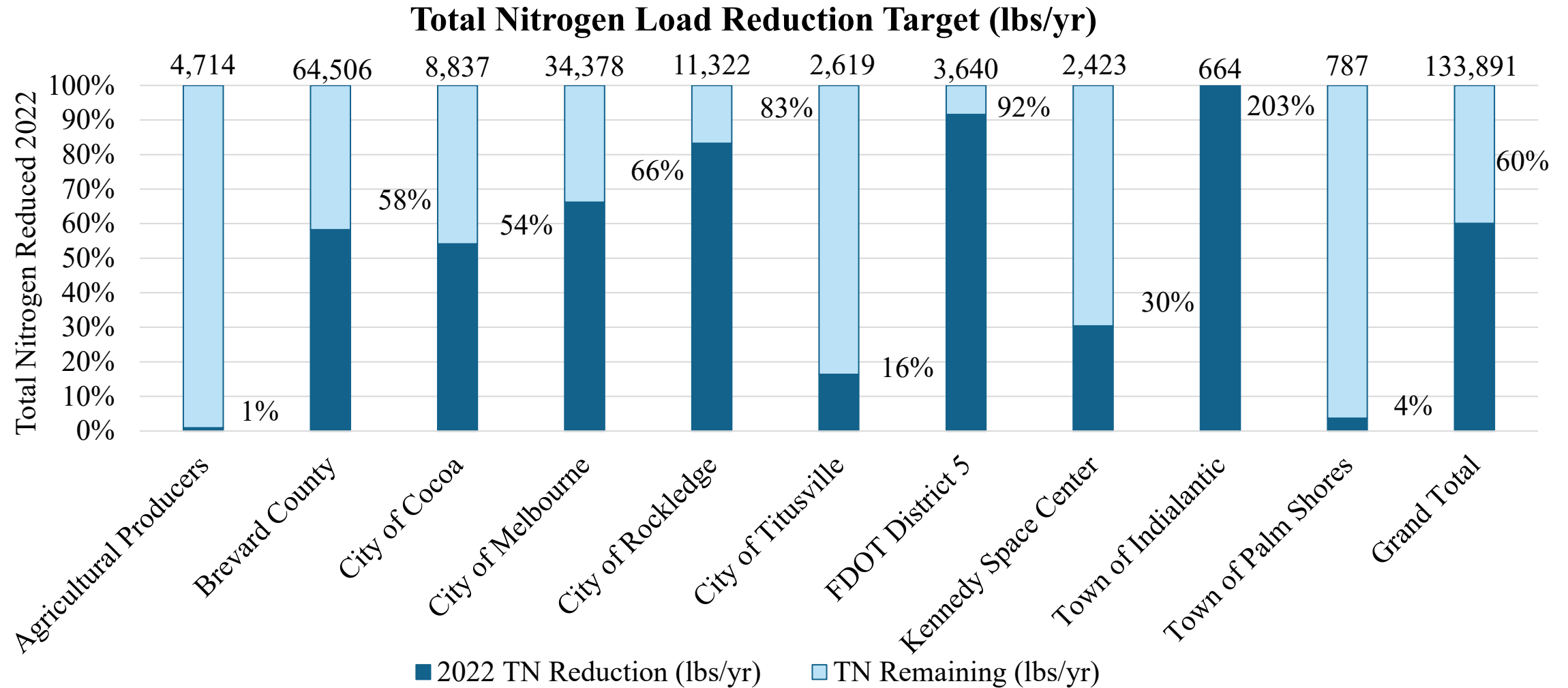
Total Phosphorus 2017 to 2021





Stakeholder Individual Allocation Progress

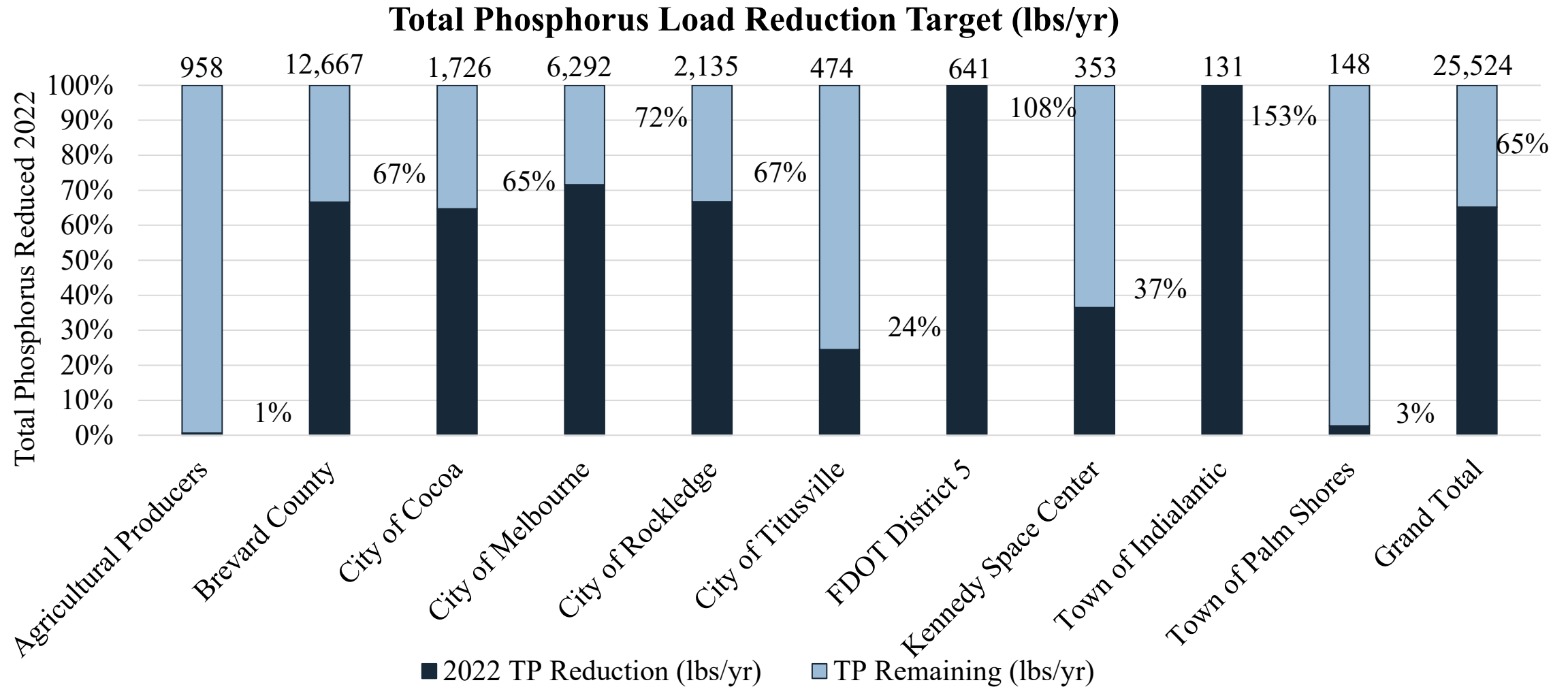
North IRL Project Zone B – DRAFT 2022





Stakeholder Individual Allocation Progress

North IRL Project Zone B – DRAFT 2022

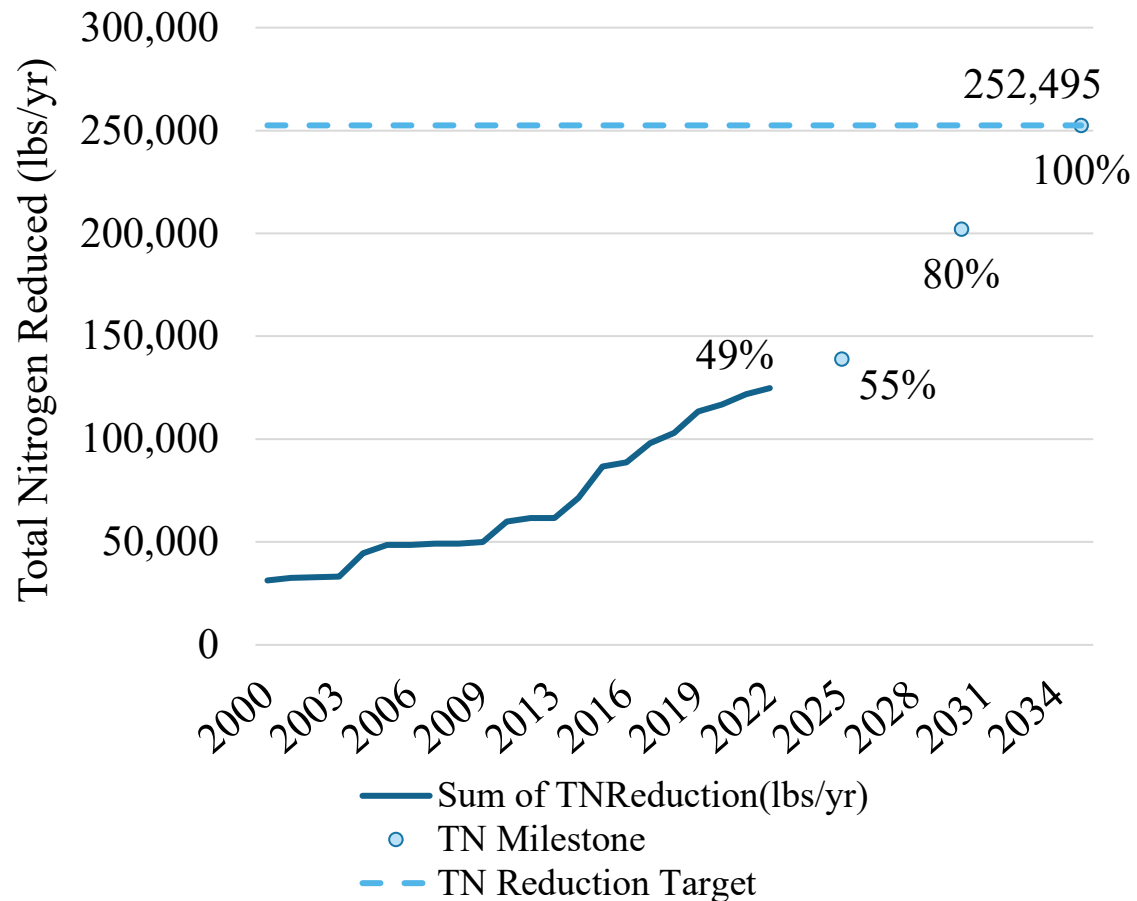




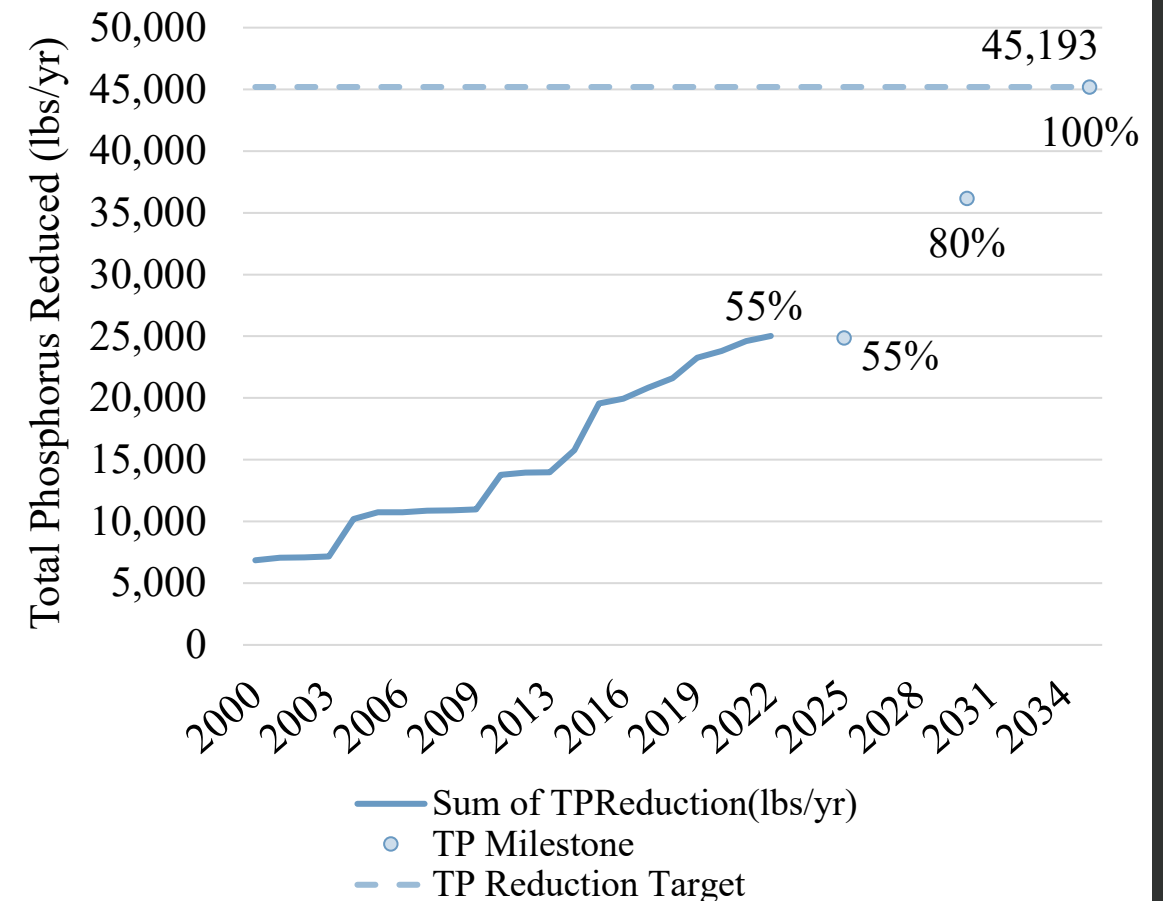
BMAP Project Nutrient Reduction Progress

North IRL – DRAFT 2022

North Indian River Lagoon 2022 Total Nitrogen Reductions from Projects



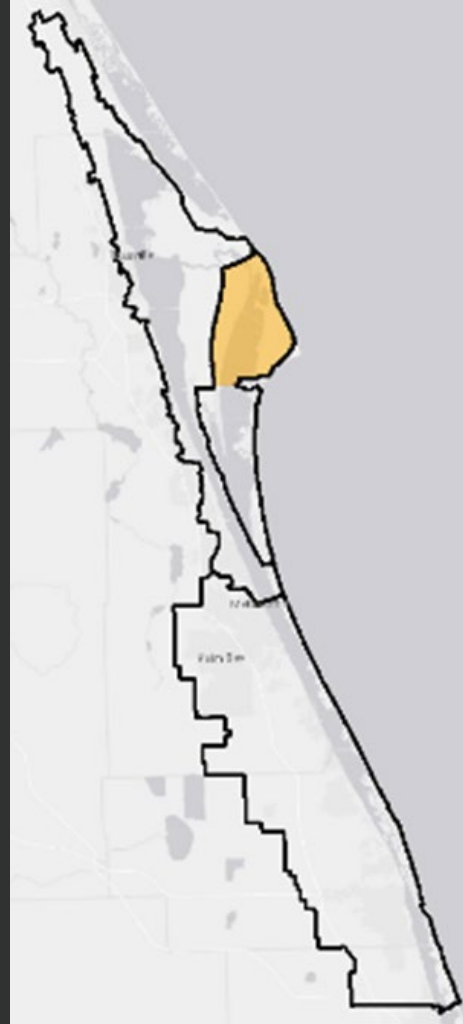
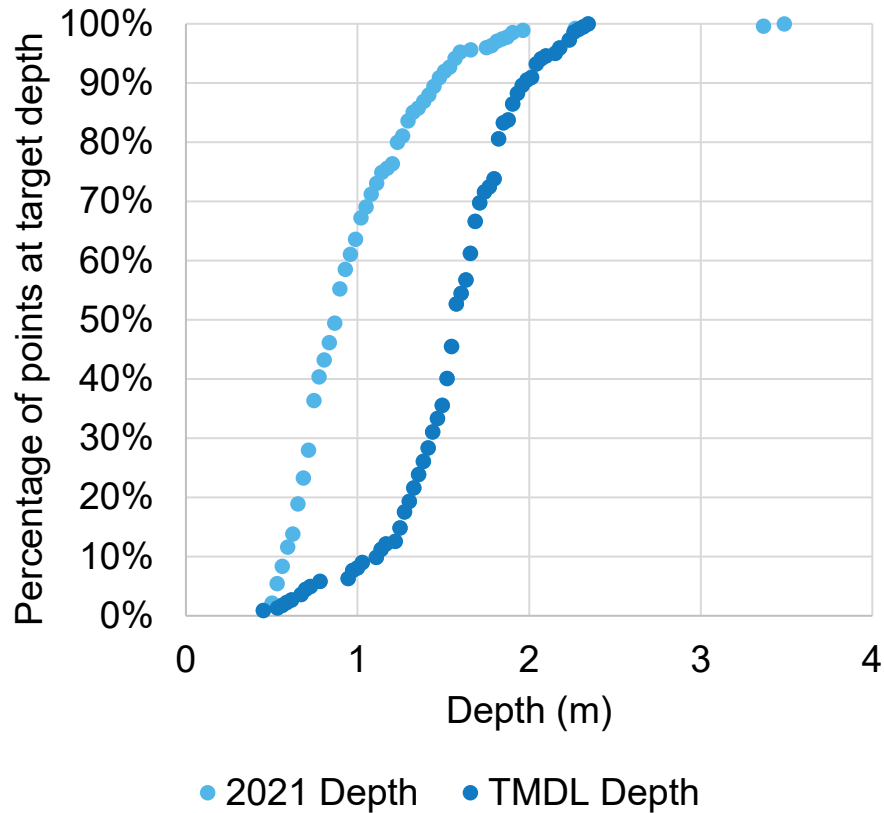
North Indian River Lagoon 2022 Total Phosphorus Reductions from Projects



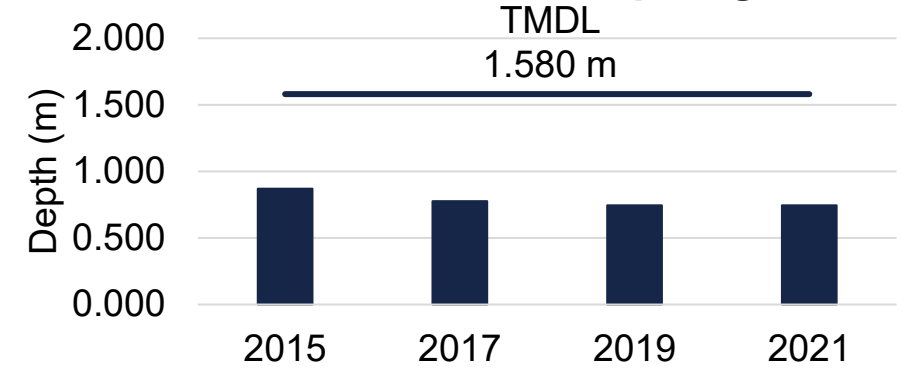


Seagrass Deep Edge Assessment Banana River Project Zone A

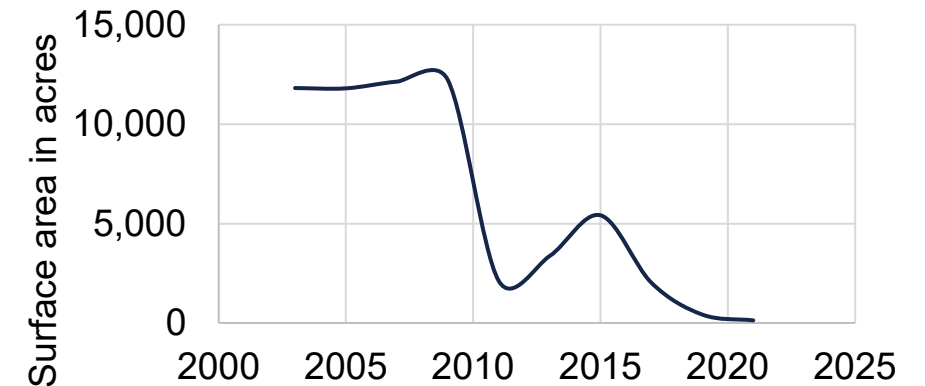
Step 1
**2015 – 2021 Cumulative
Distribution of Deep Edge Points**



Step 2
**2015 - 2021 Median Deep Edge
TMDL**



Areal Cover Over Time

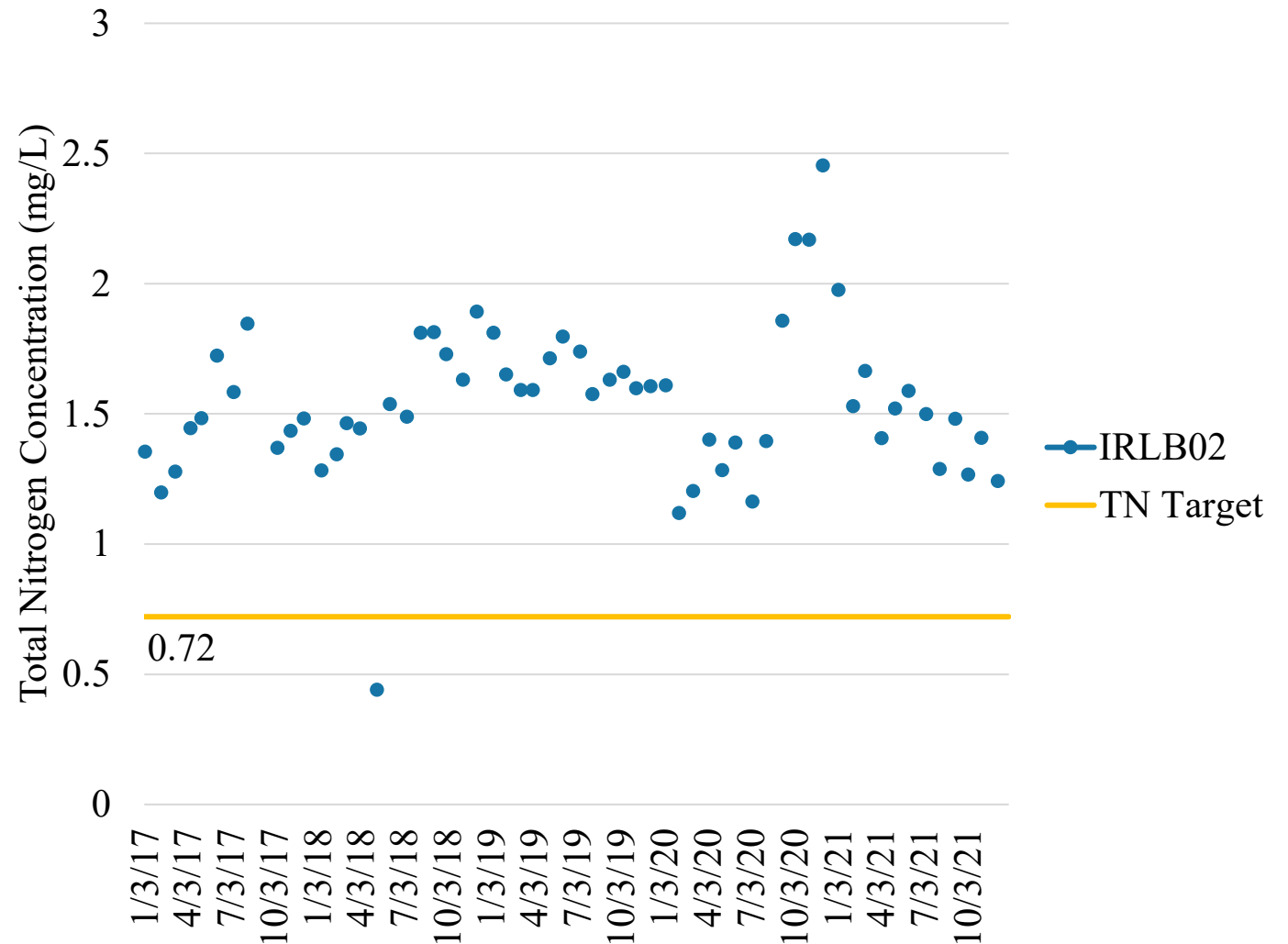
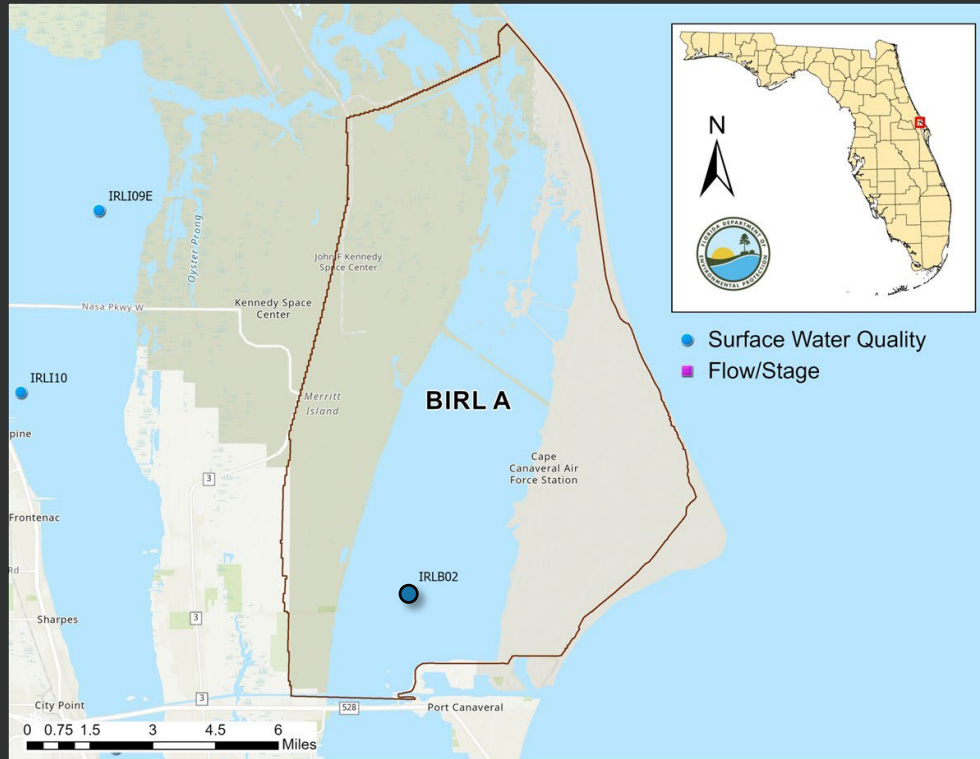




BMAP Water Quality Assessment

Banana River Lagoon Project Zone B

Total Nitrogen 2017 to 2021

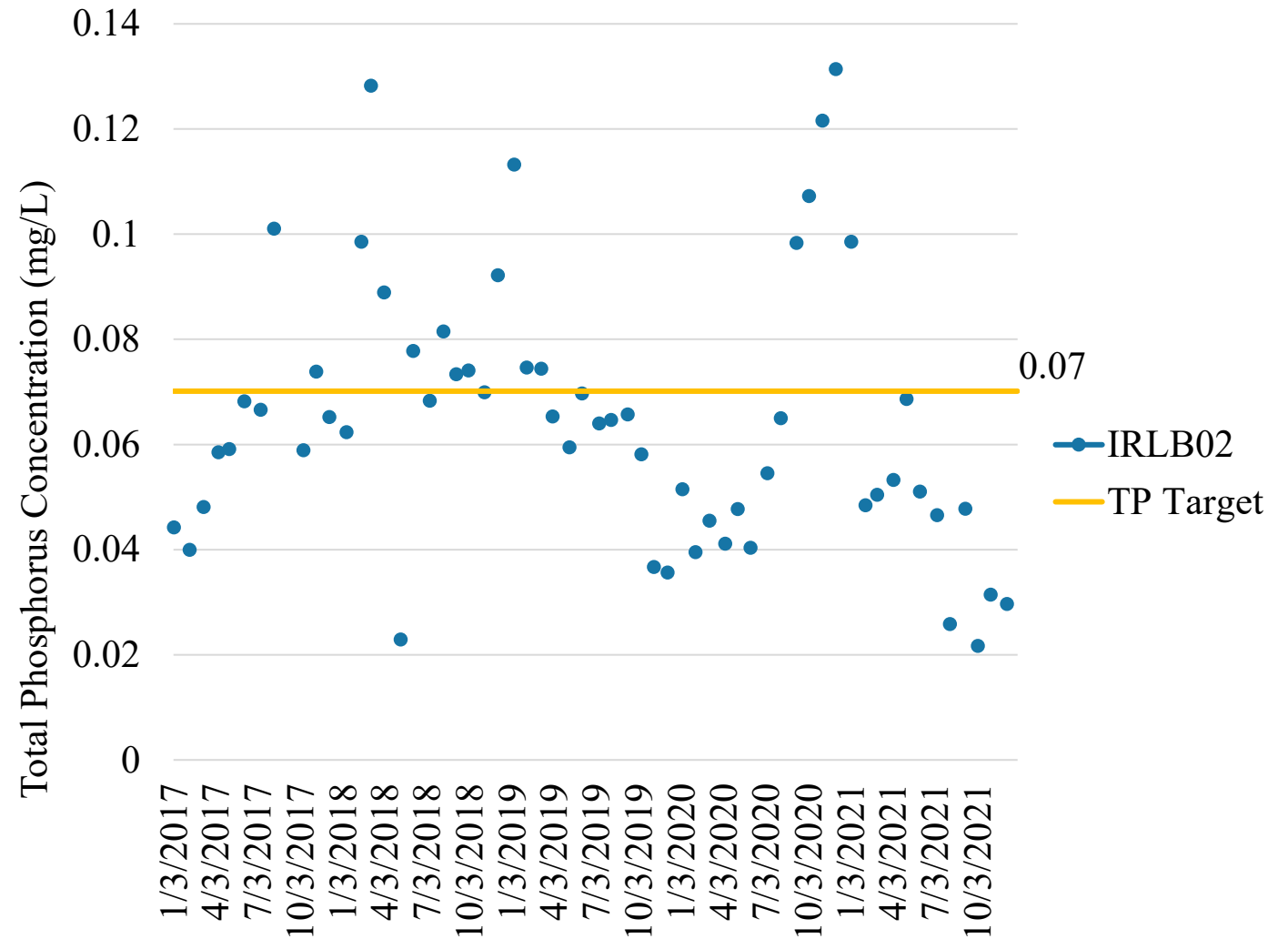
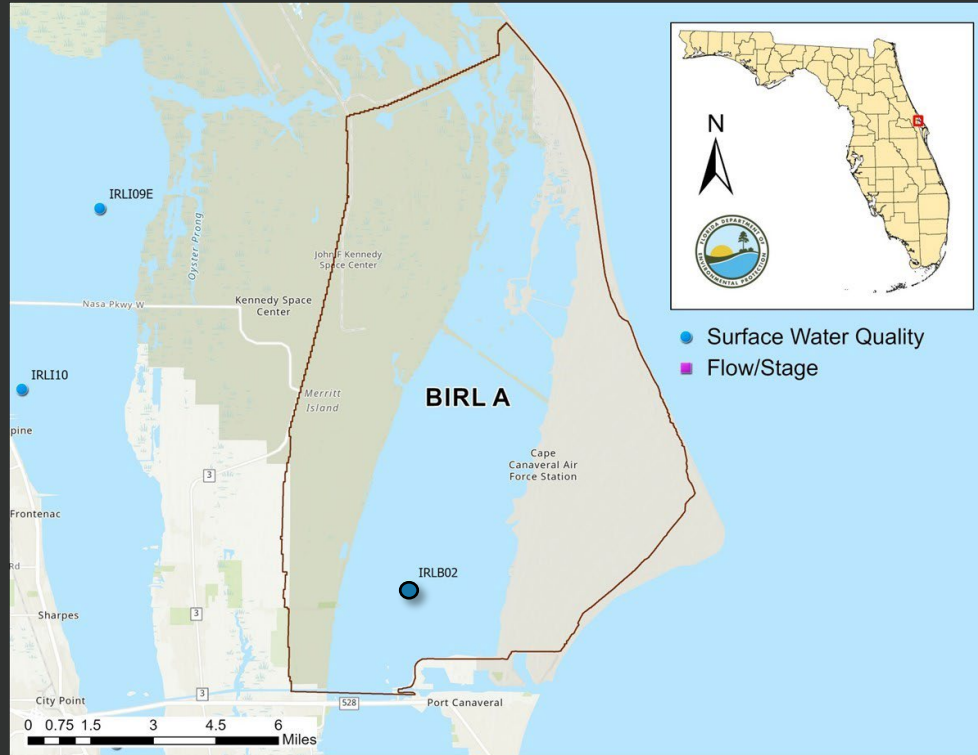




BMAP Water Quality Assessment

Banana River Lagoon Project Zone A

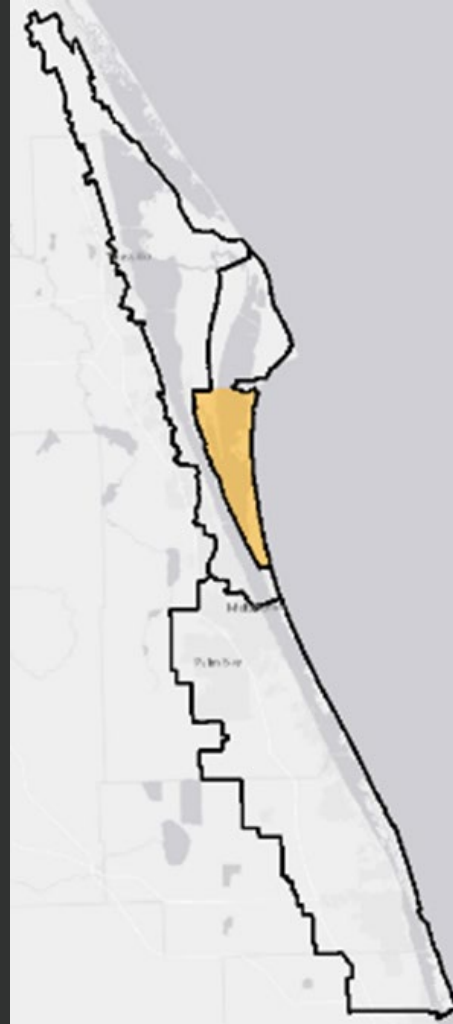
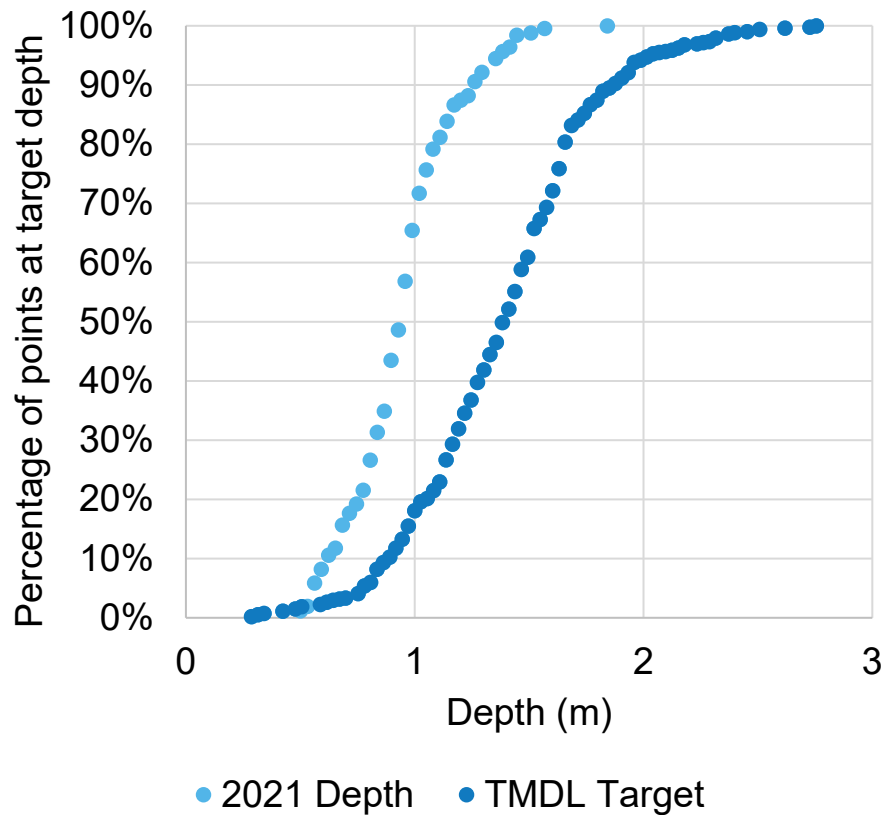
Total Phosphorus 2017 to 2021



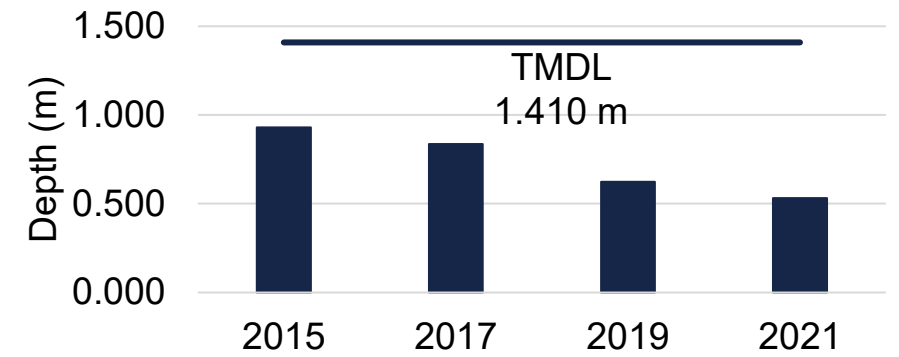


Seagrass Deep Edge Assessment Banana River Project Zone B

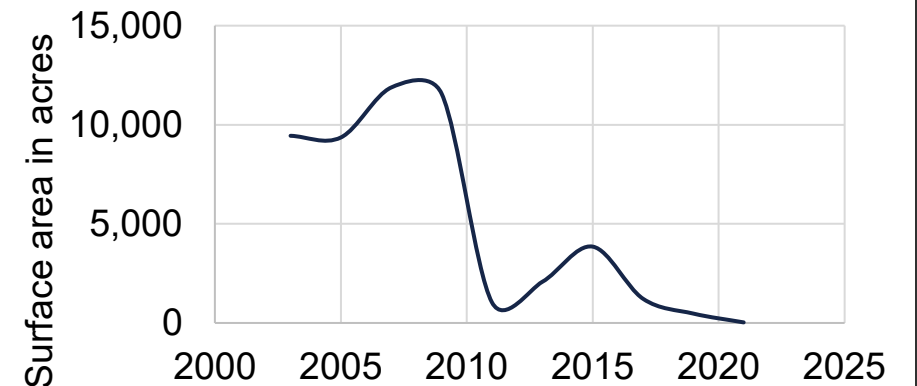
Step 1
**2015 – 2021 Cumulative
Distribution of Deep Edge Points**



Step 2
2015 - 2021 Median Deep Edge

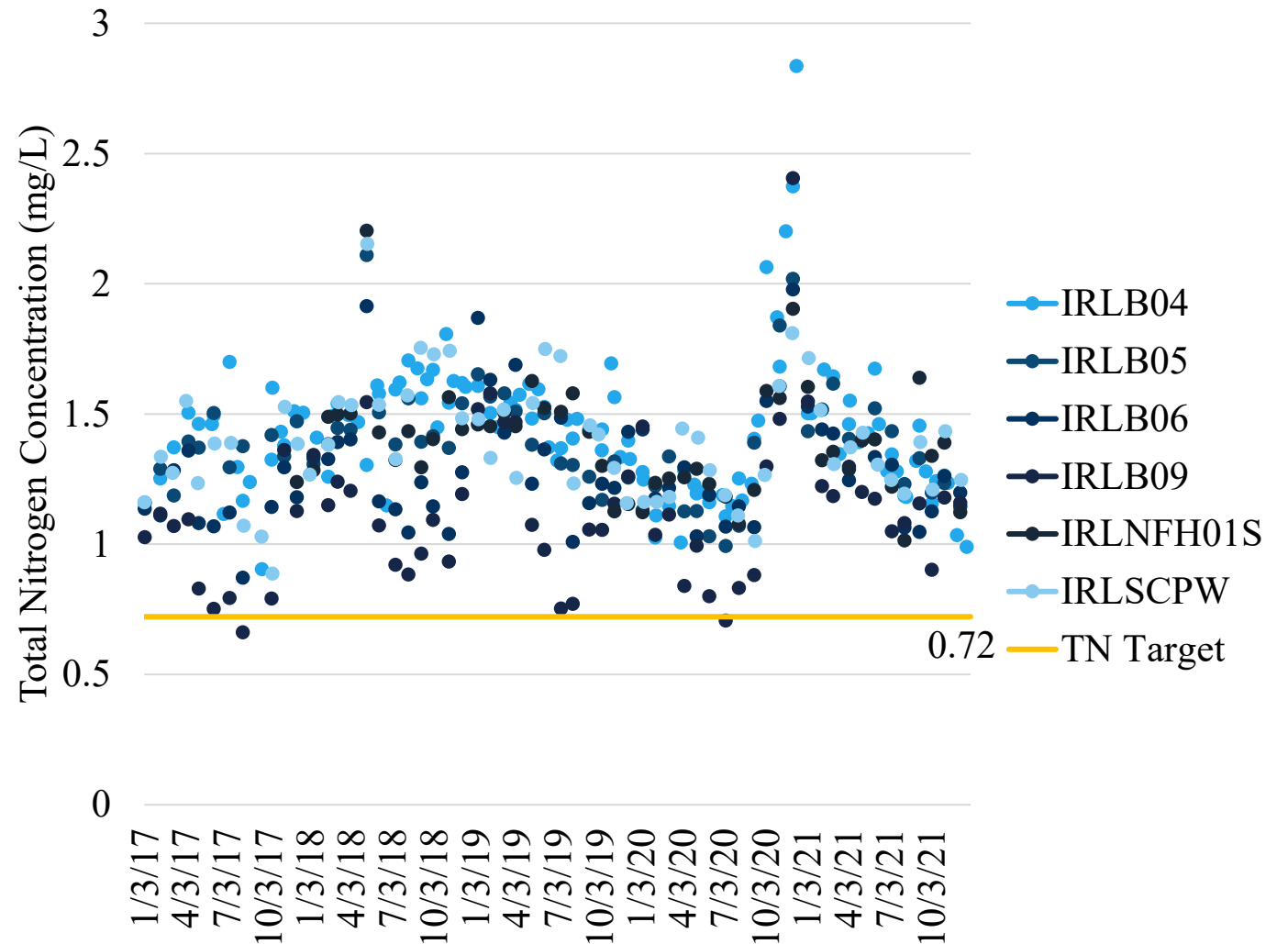


Areal Cover Over Time





The map displays the BIRL B region in Brevard County, Florida, with various monitoring points. The legend indicates that blue circles represent Surface Water Quality and pink squares represent Flow/Stage. The map includes a north arrow and a scale bar from 0 to 8 miles. Key locations shown include Merritt Island, Cocoa, Rockledge, Viera, South Patrick, and Satellite Beach. Monitoring points are labeled with codes: IRLSCPW, IRLB04, IRLNFH01S, IRLB05, IRLB06, and IRLB09. The map also shows major roads like SR 520, SR 502, and SR 9, and water bodies like Indian River Lagoon and Cocoa Bay.

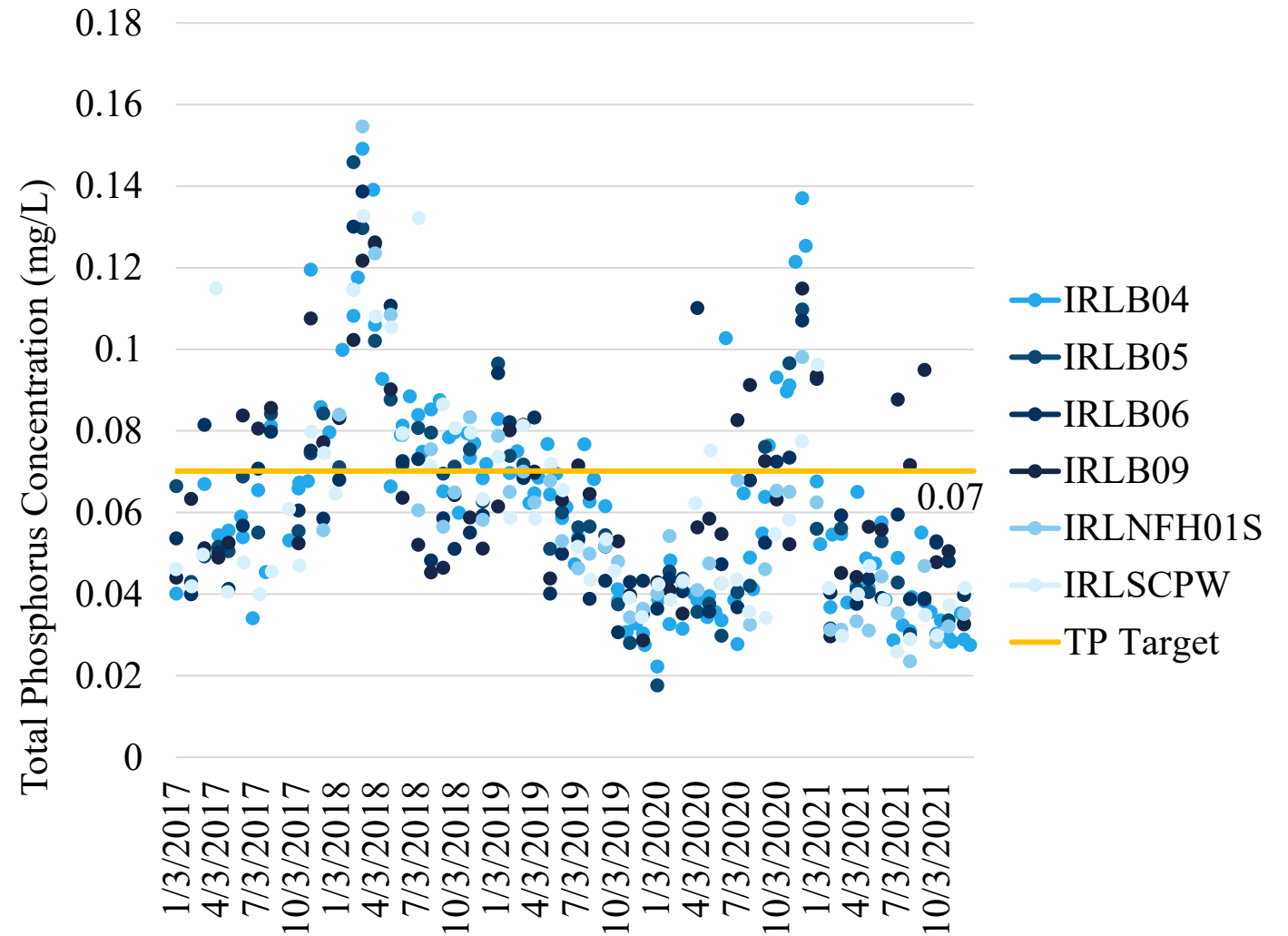
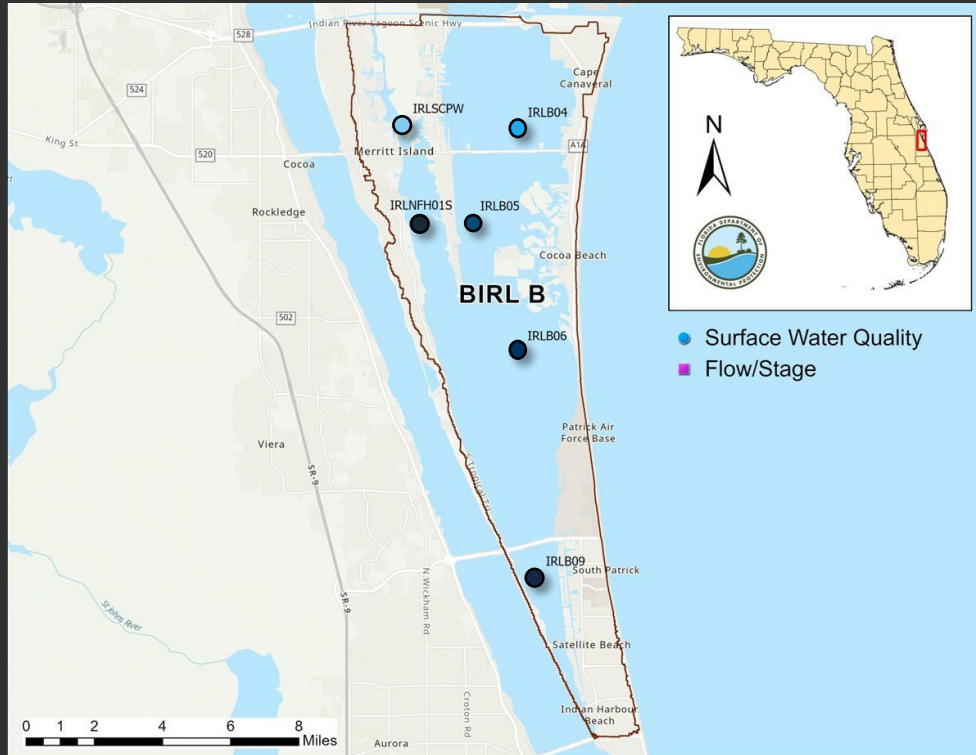




BMAP Water Quality Assessment

Banana River Lagoon Project Zone B

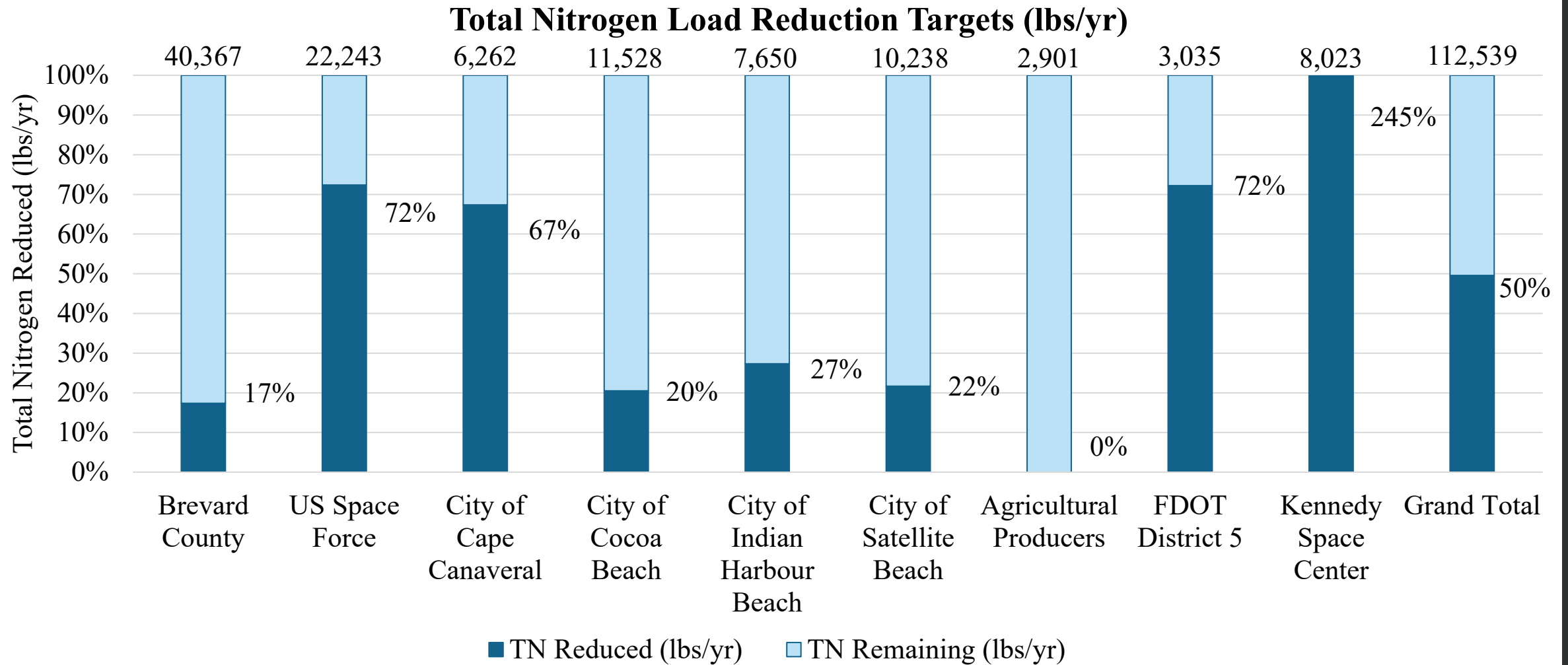
Total Phosphorus 2017 to 2021





Stakeholder Individual Allocation Progress

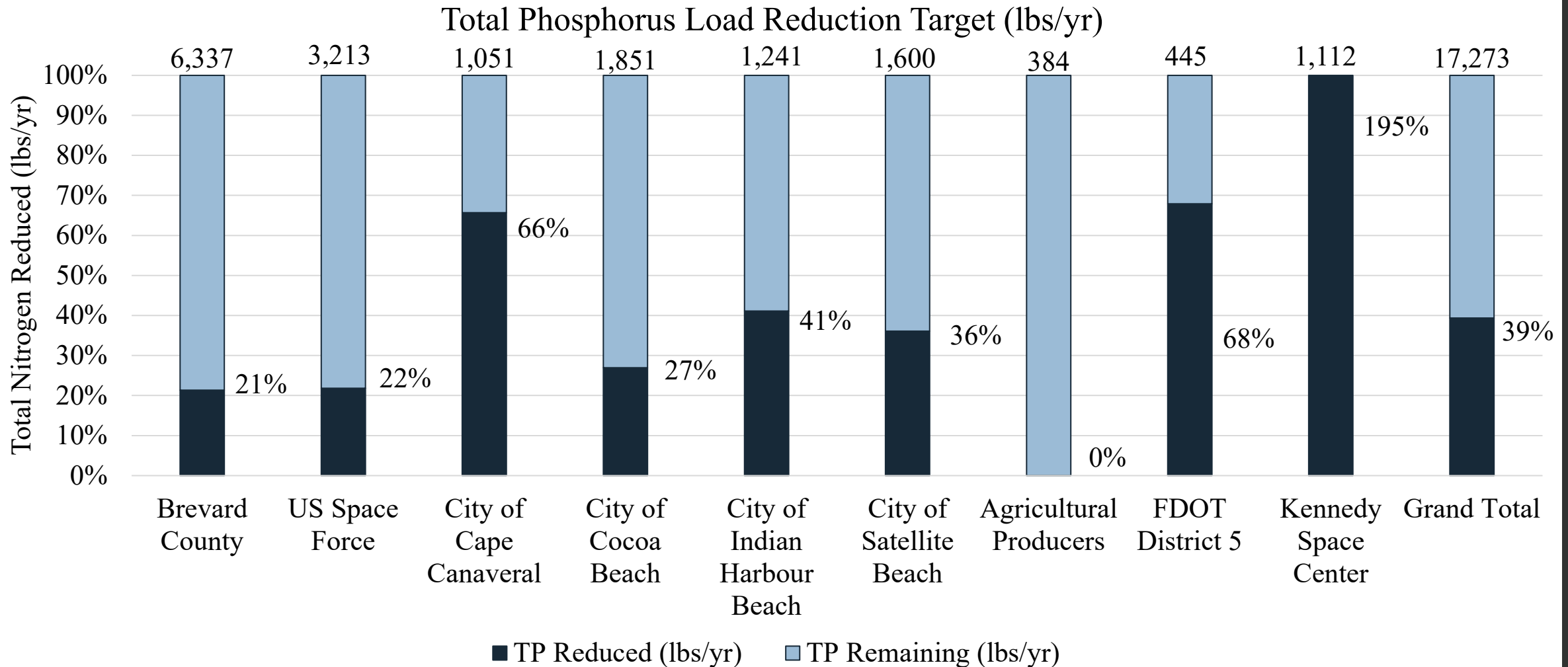
Banana River Lagoon – DRAFT 2022





Stakeholder Individual Allocation Progress

Banana River Lagoon – DRAFT 2022

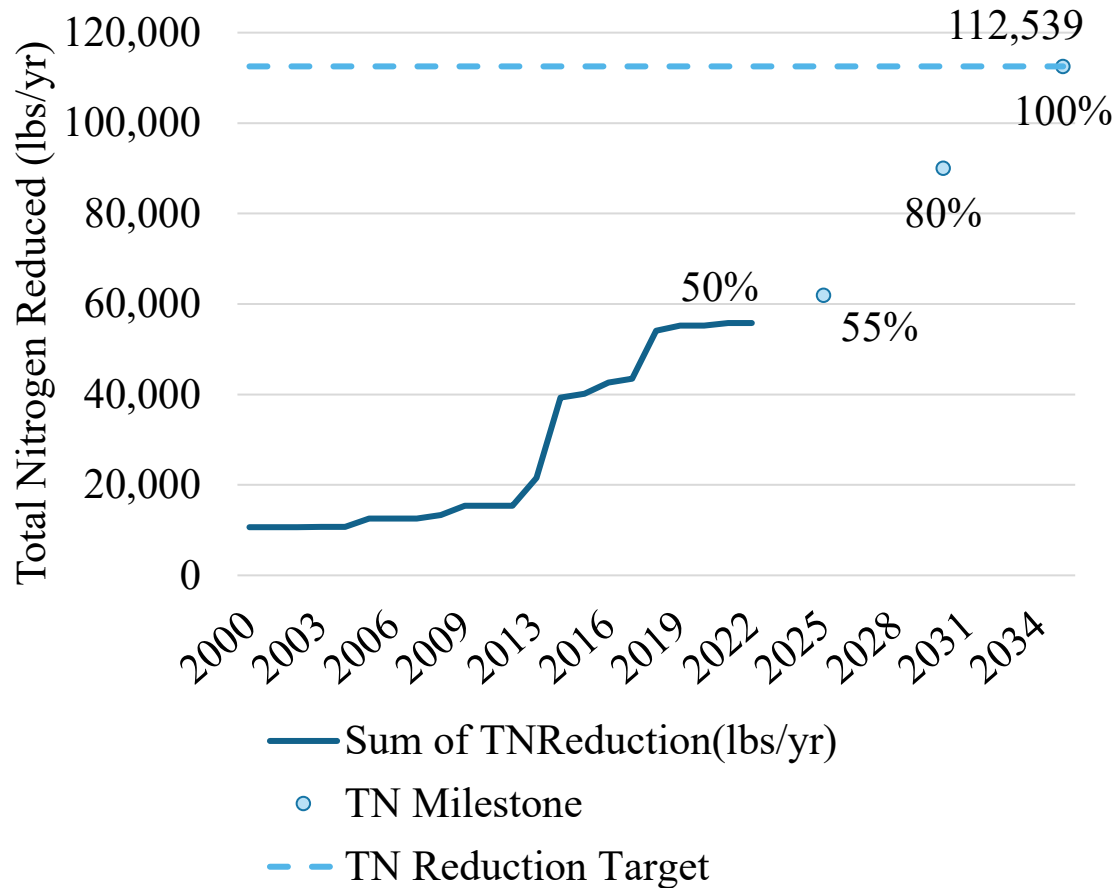




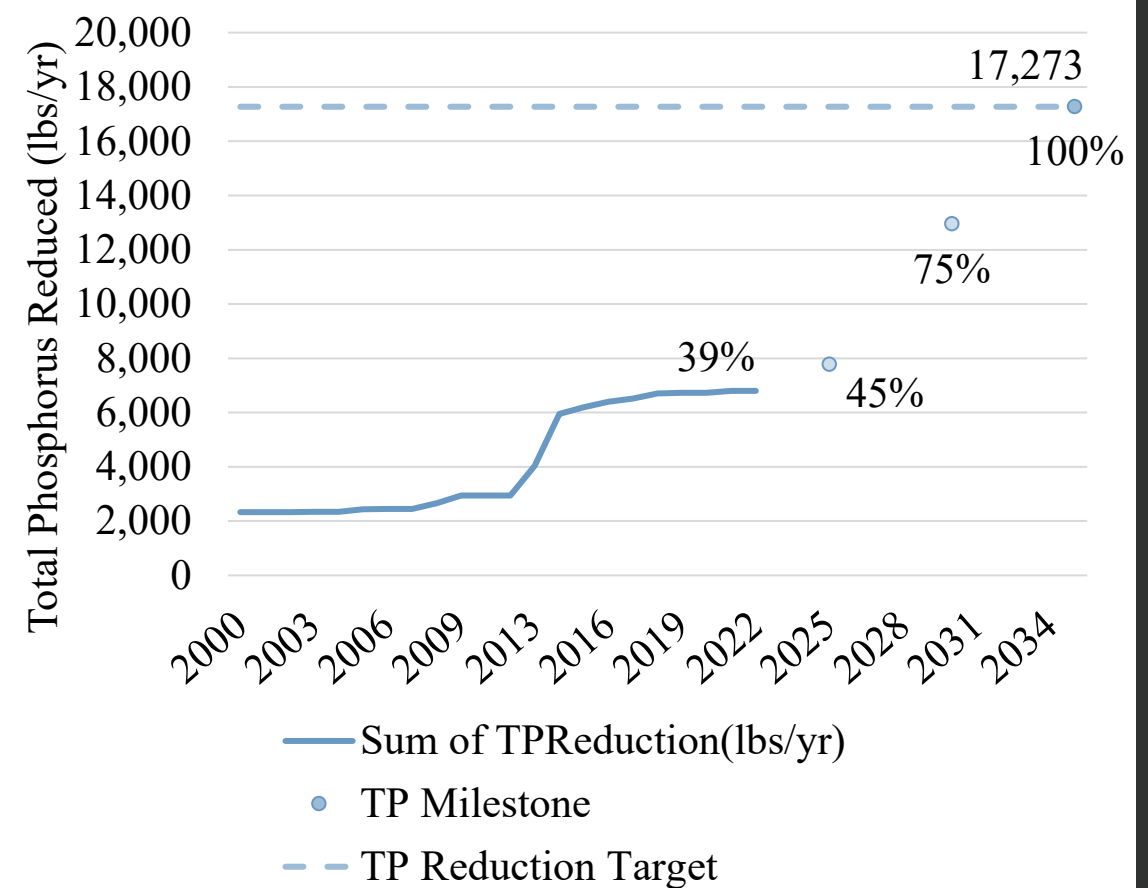
BMAP Project Nutrient Reduction Progress

Banana River Lagoon – DRAFT 2022

Banana River Lagoon 2022 Total Nitrogen Reductions from Projects



Banana River Lagoon 2022 Total Phosphorus Reductions from Projects

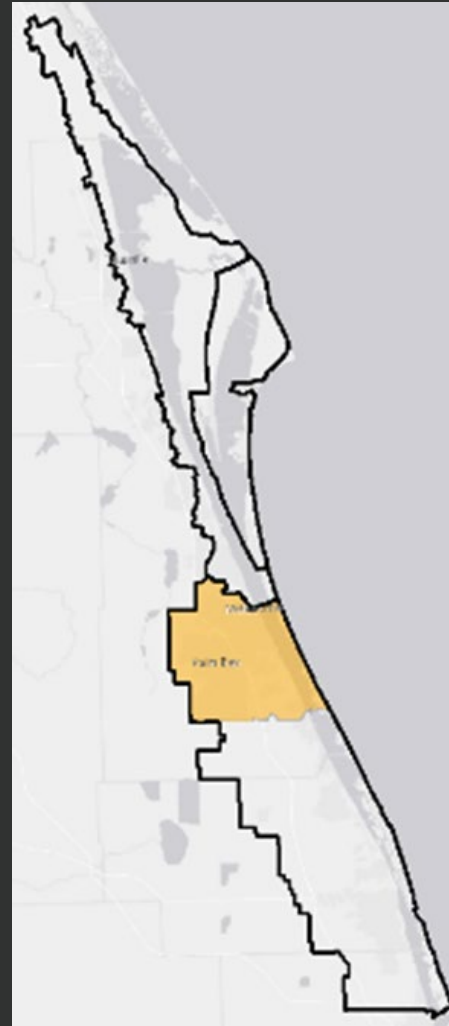
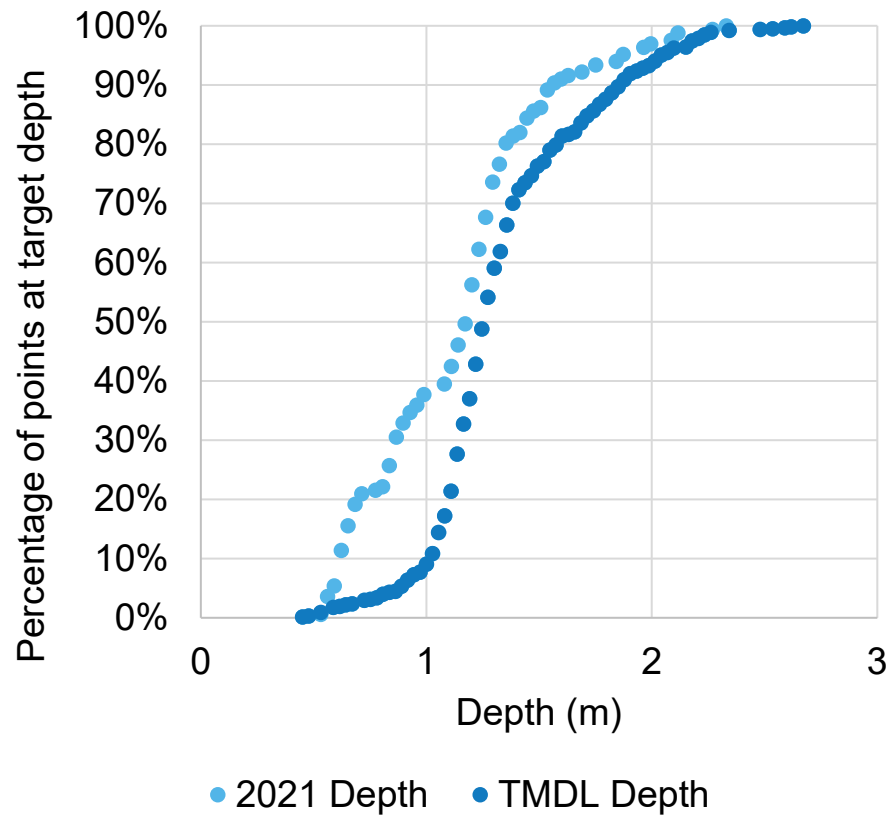




Seagrass Deep Edge Assessment Central IRL Project Zone A

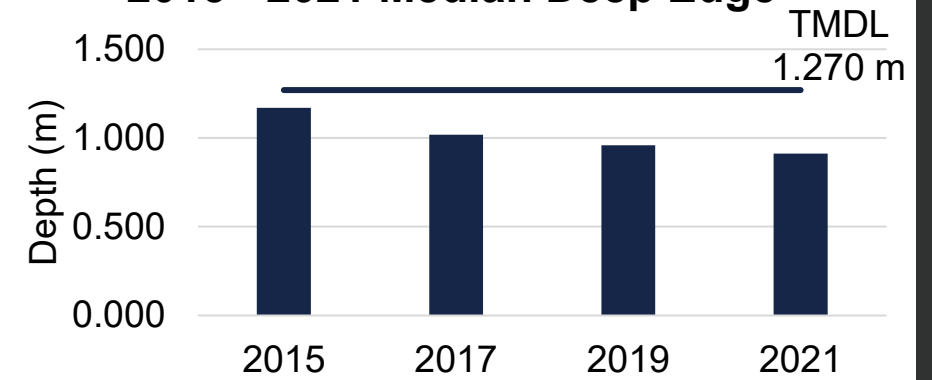
Step 1

2015 – 2021 Cumulative Distribution of Deep Edge Points

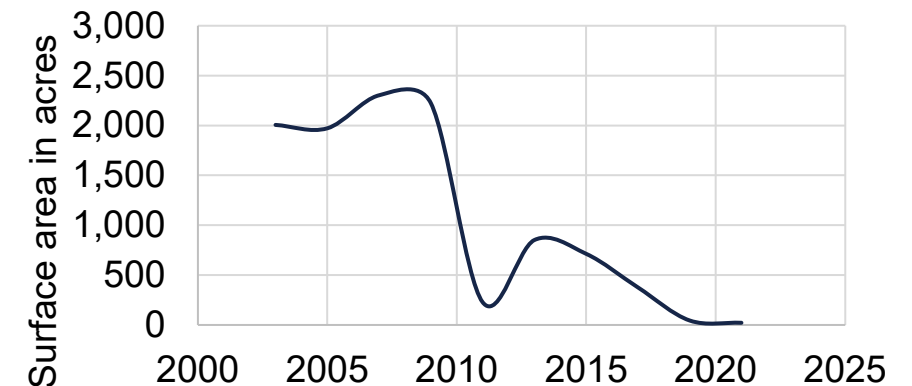


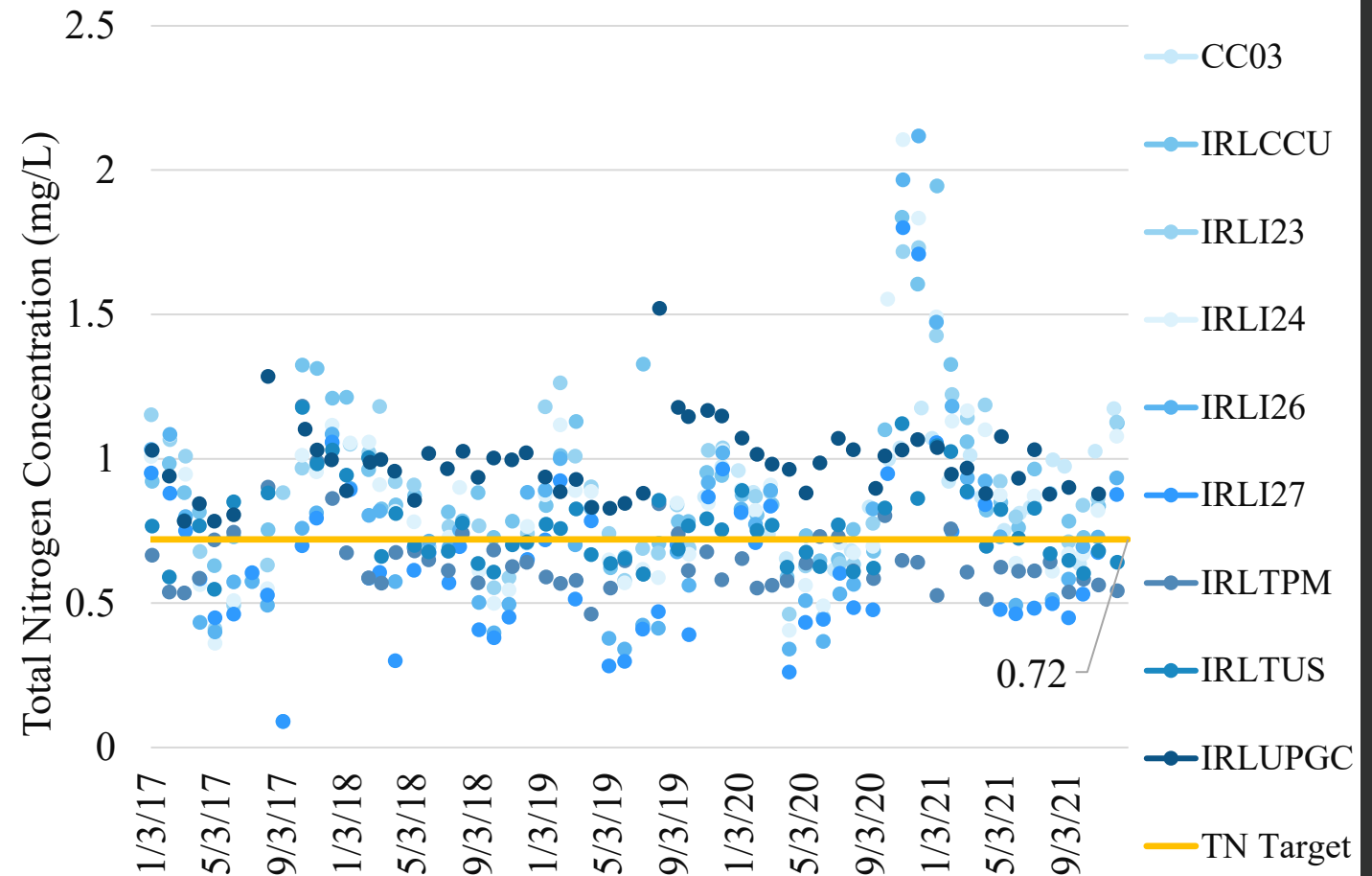
Step 2

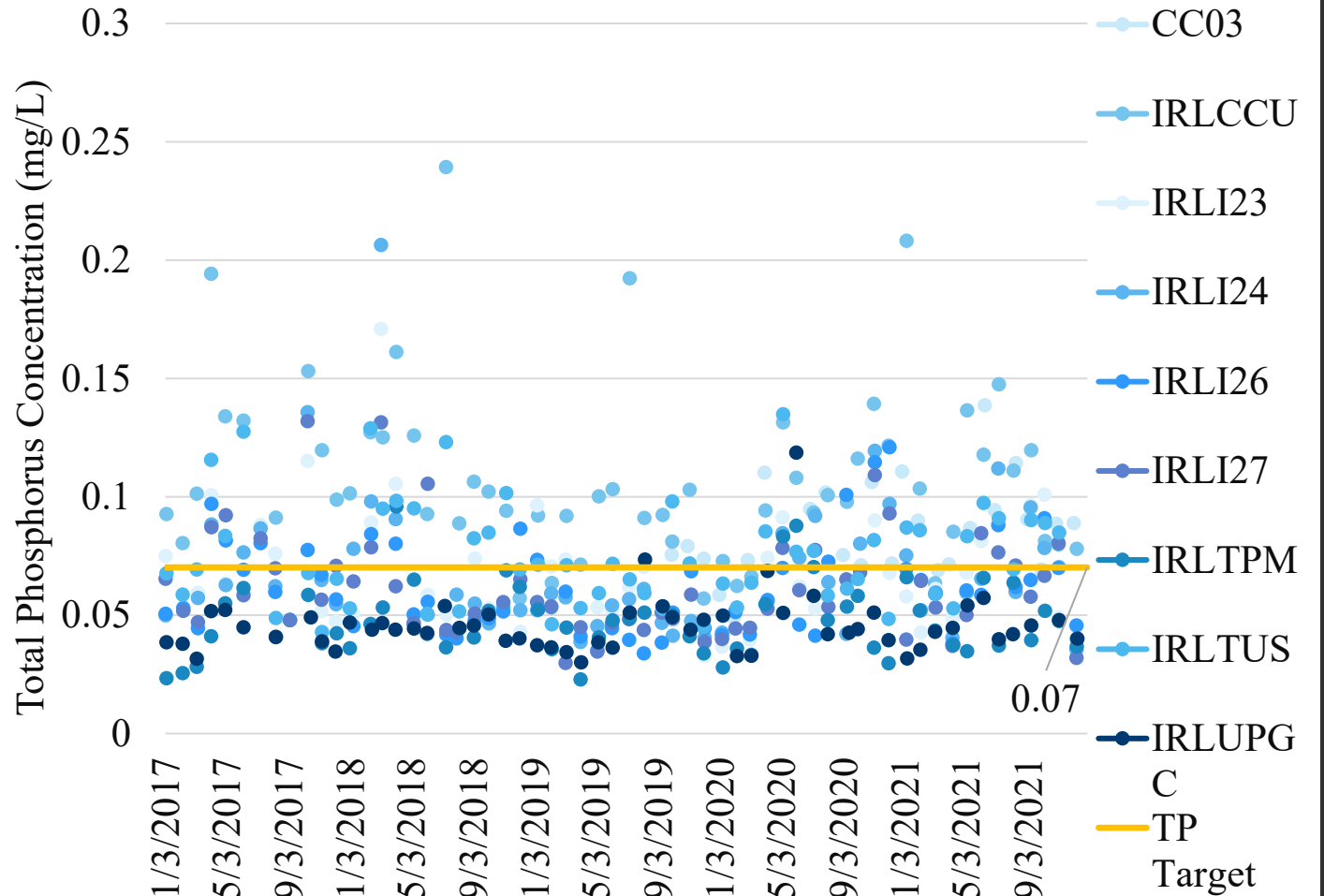
2015 - 2021 Median Deep Edge



Areal Cover Over Time



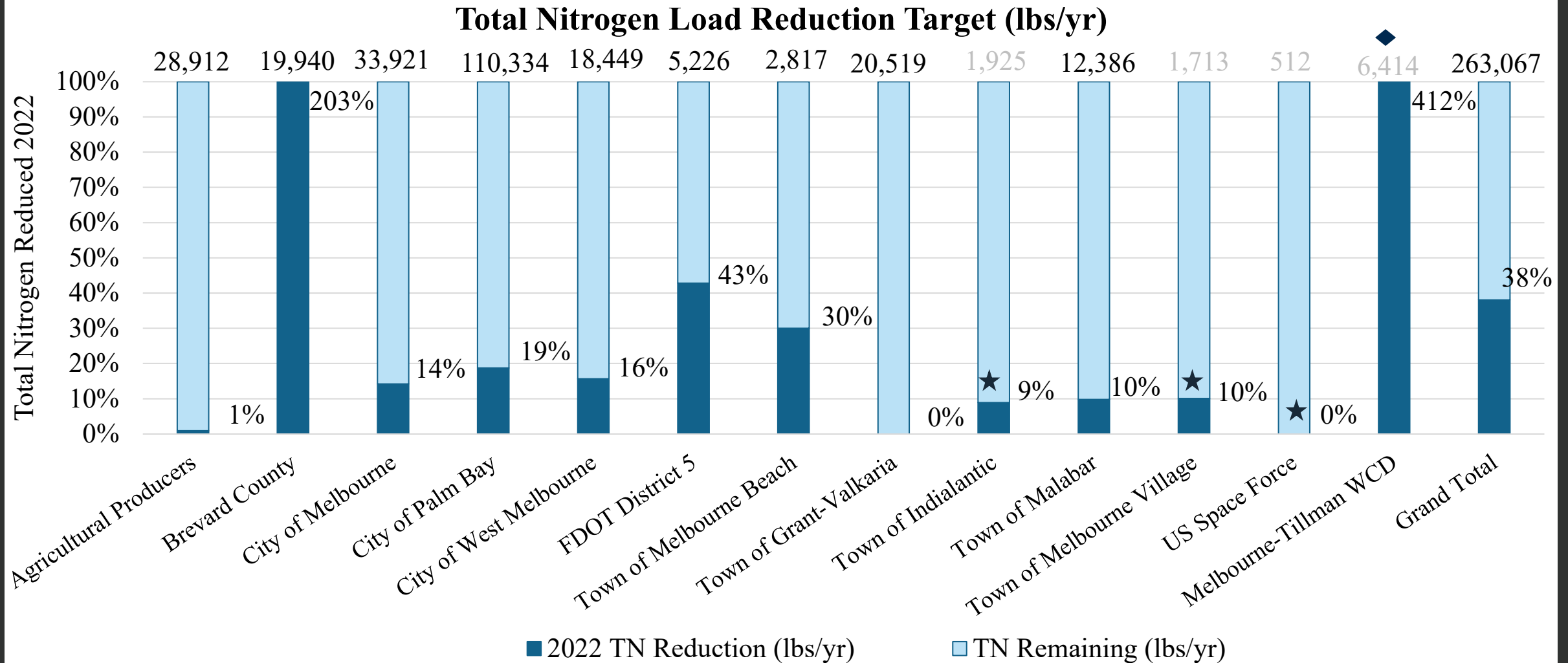
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Stakeholder Individual Allocation TN Progress

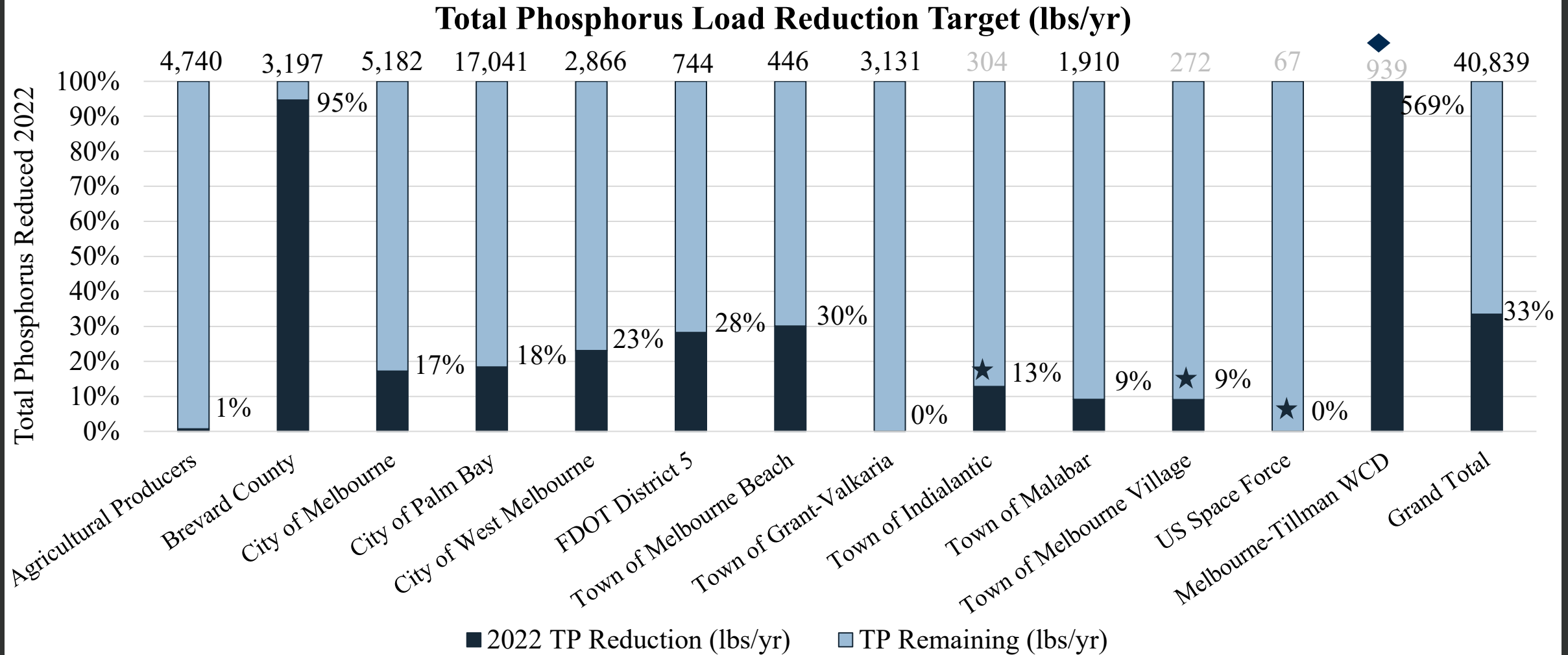
Central IRL Project Zone A – DRAFT 2022





Stakeholder Individual Allocation TP Progress

Central IRL Project Zone A – DRAFT 2022

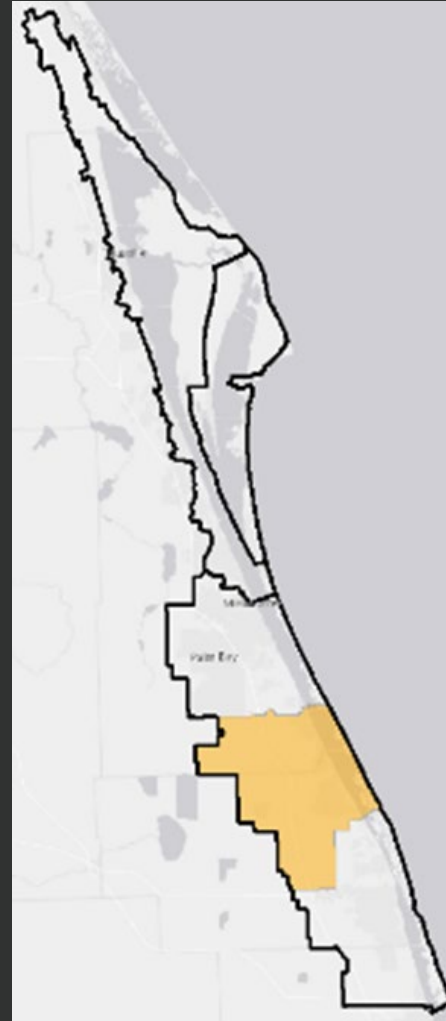
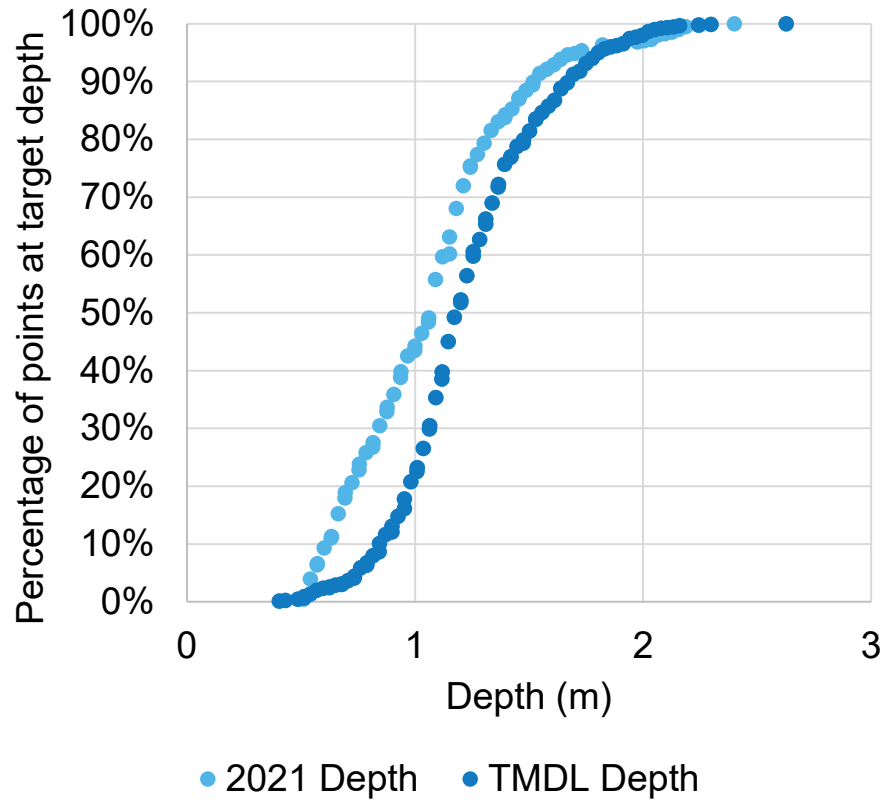




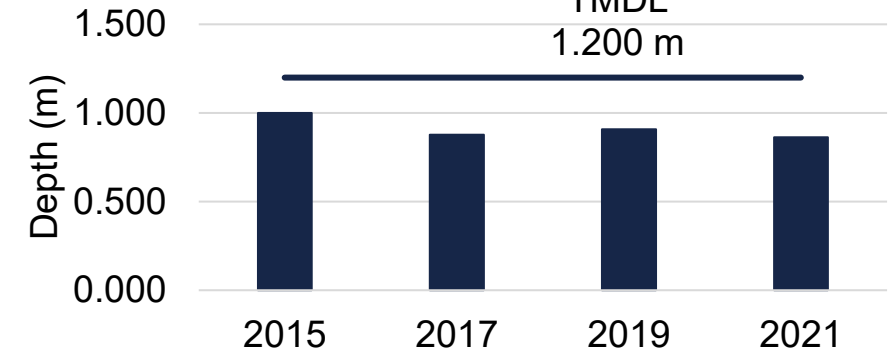
Seagrass Deep Edge Assessment

Central IRL Project Zone SEB

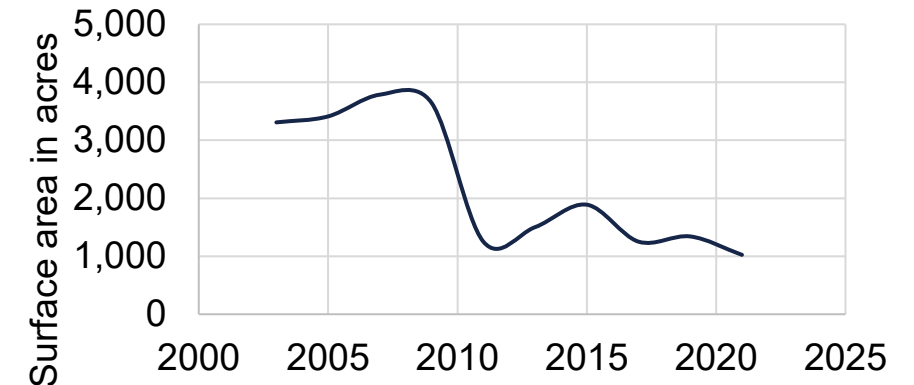
Step 1
2015 – 2021 Cumulative
Distribution of Deep Edge Points



Step 2
2015 - 2021 Median Deep Edge
TMDL
1.200 m



Areal Cover Over Time

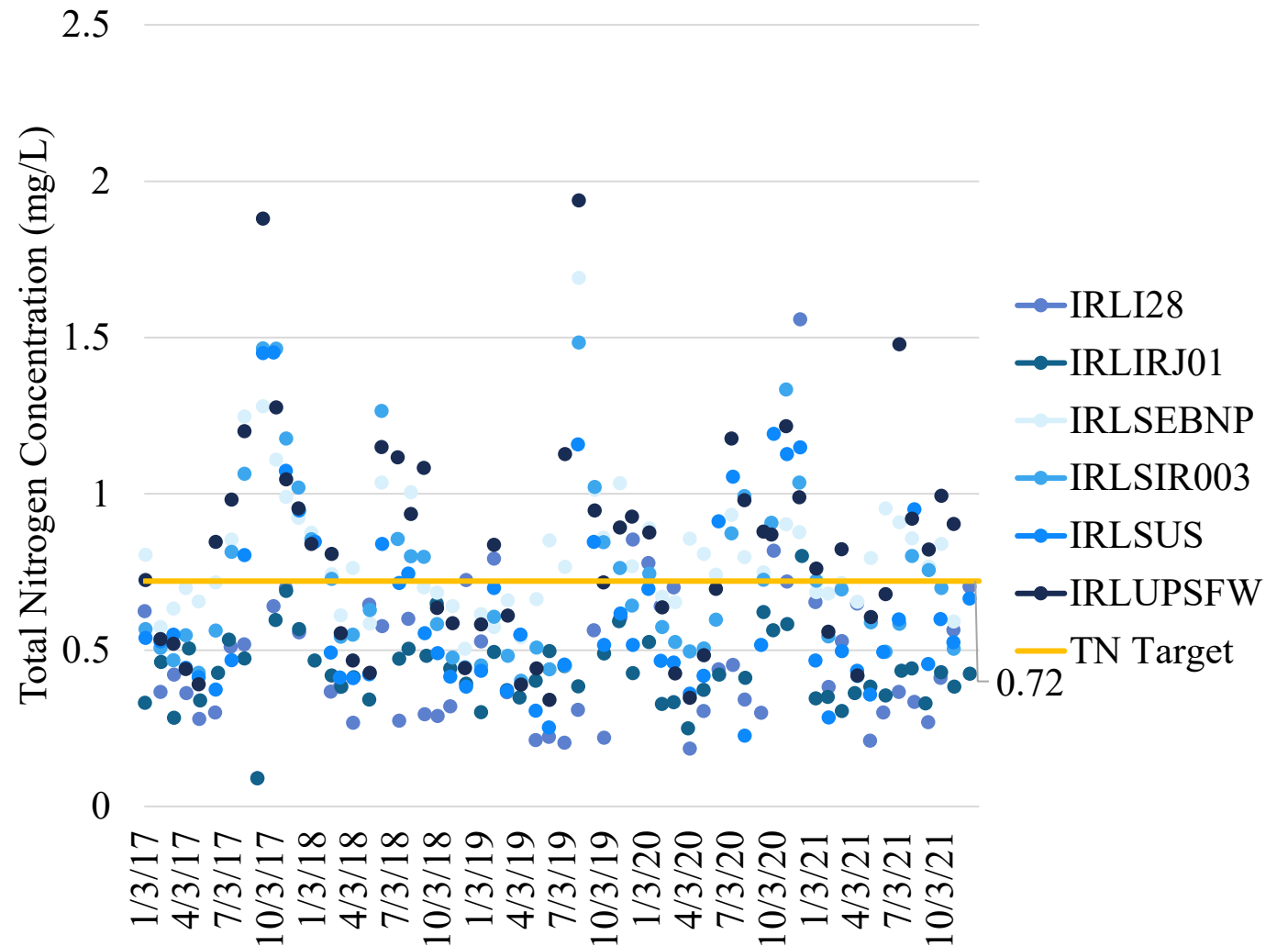
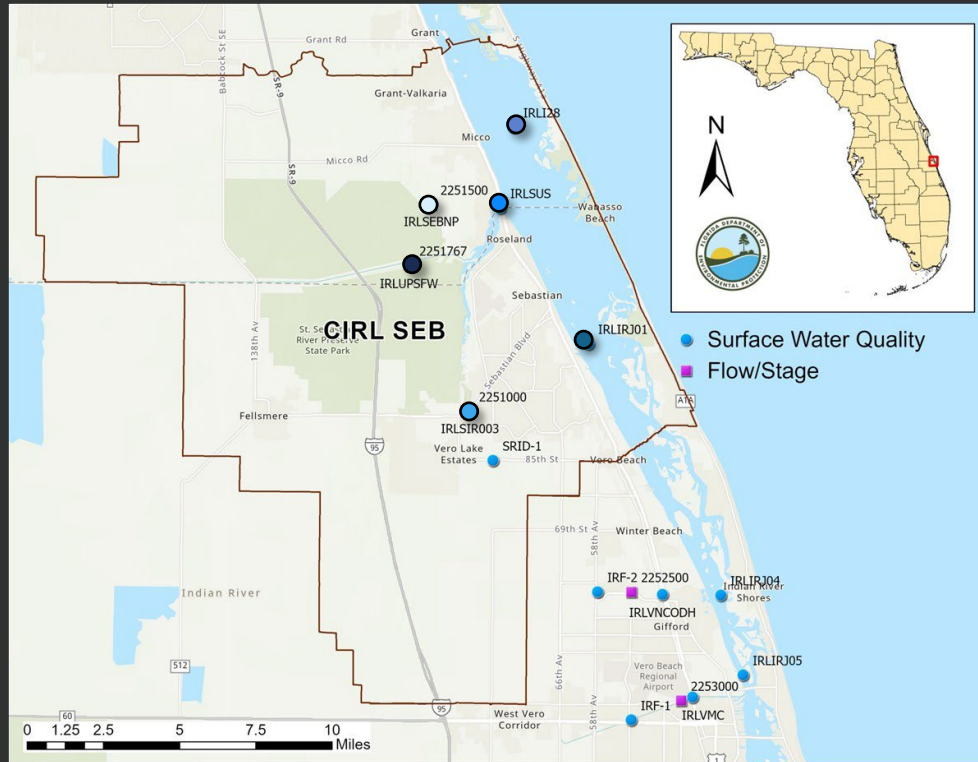




BMAP Water Quality Assessment

Central IRL Project Zone SEB

Total Nitrogen 2017 to 2021

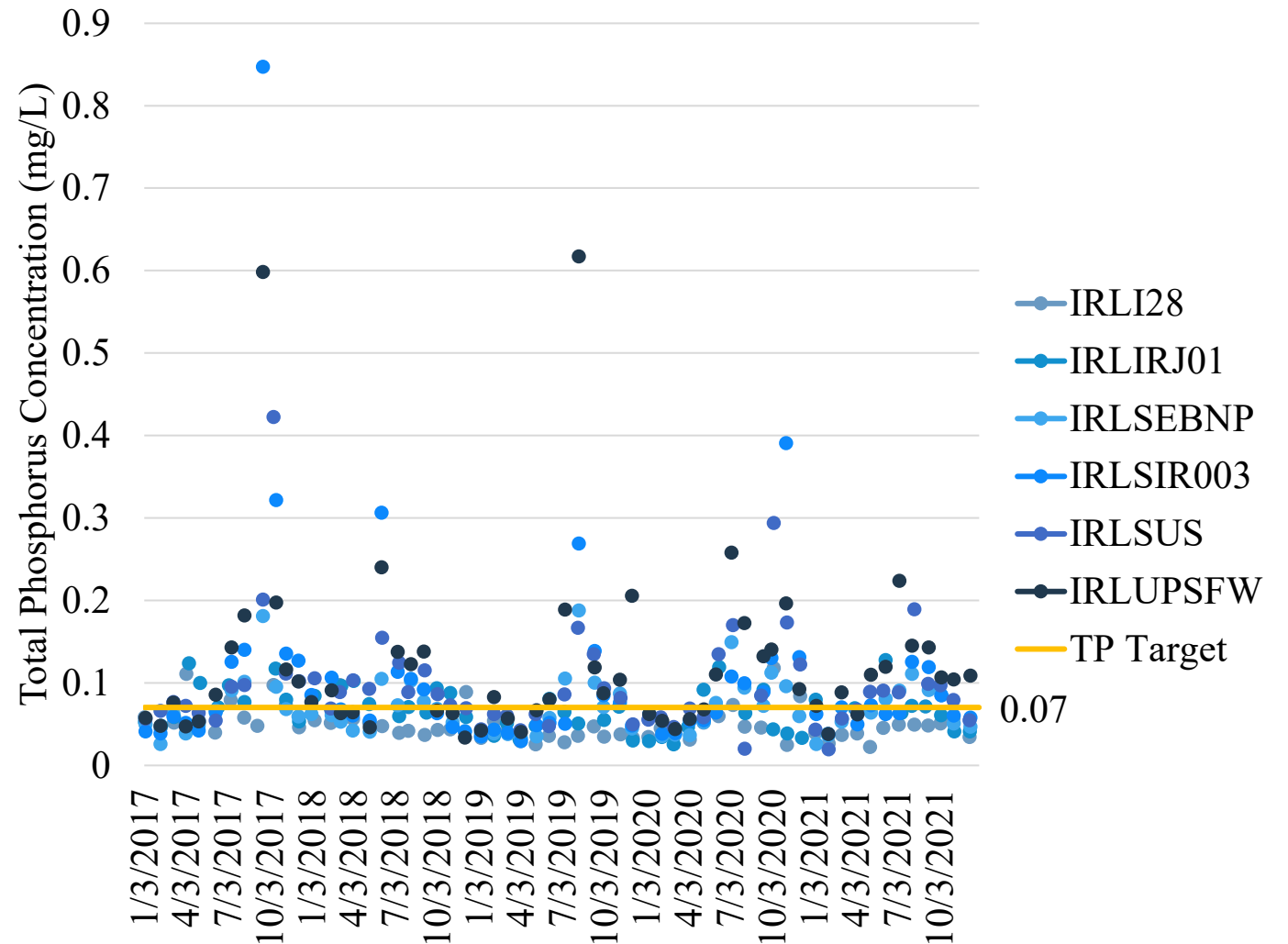
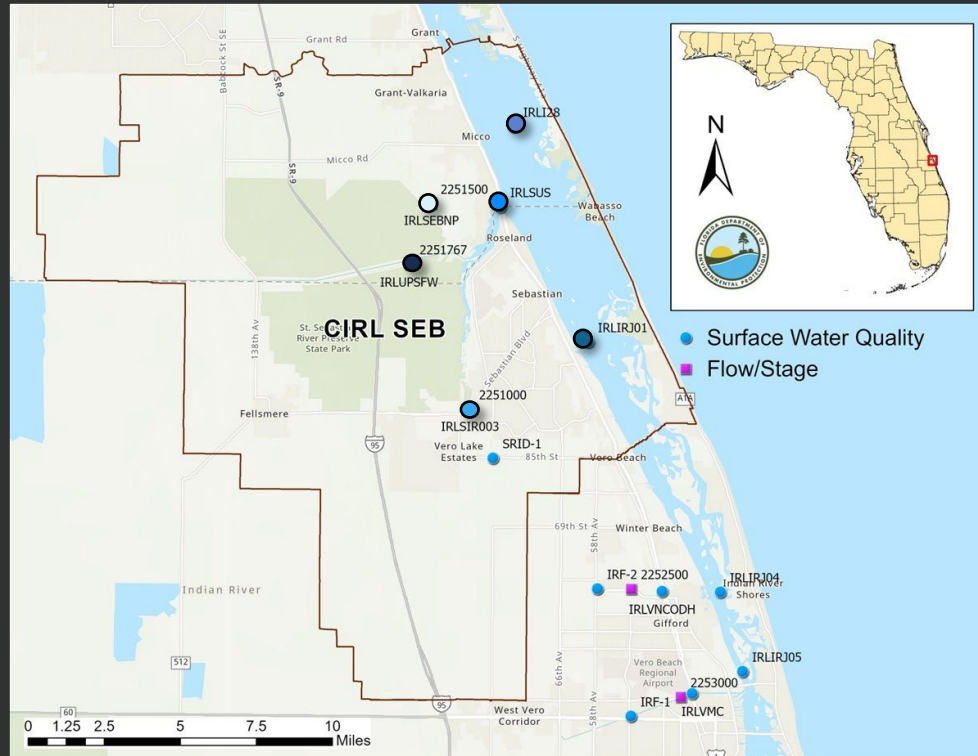




BMAP Water Quality Assessment

Central IRL Project Zone SEB

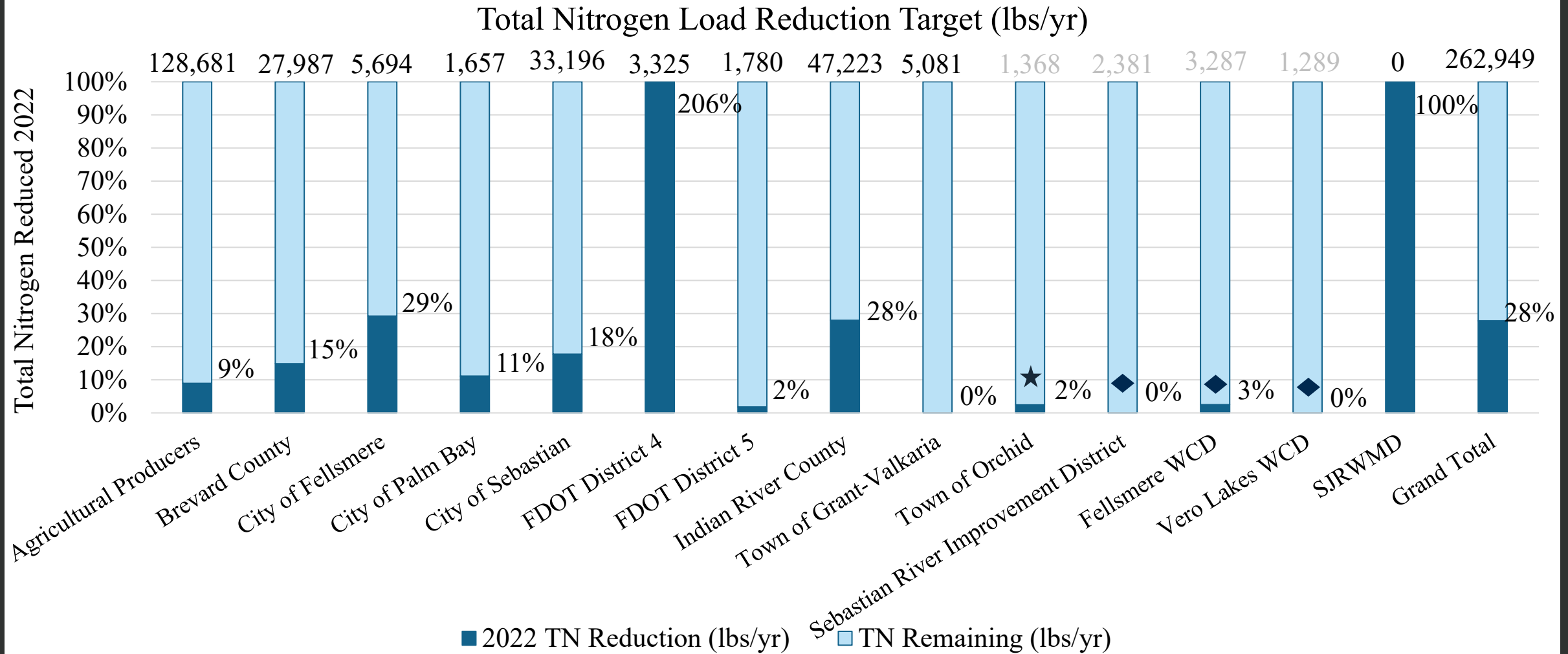
Total Phosphorus 2017 to 2021





Stakeholder Individual Allocation TN Progress

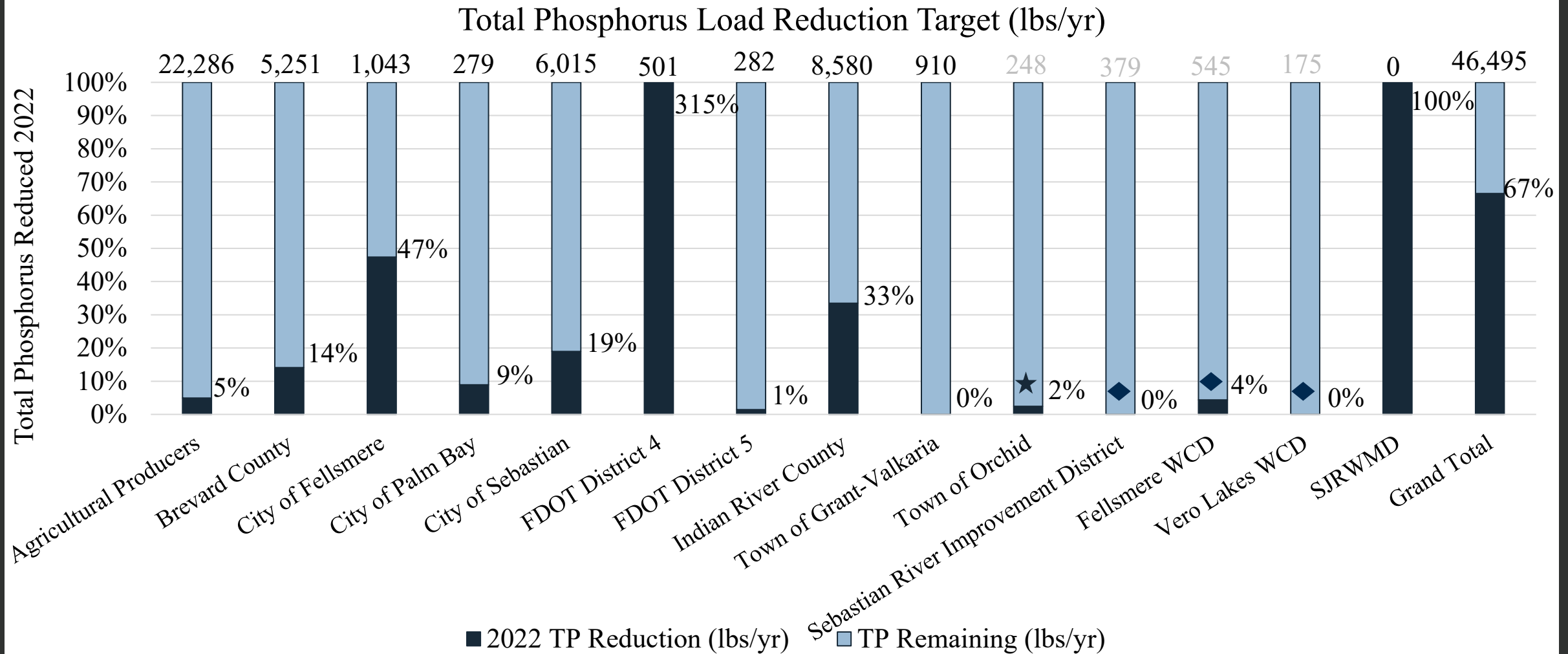
Central IRL Project Zone SEB – DRAFT 2022





Stakeholder Individual Allocation TP Progress

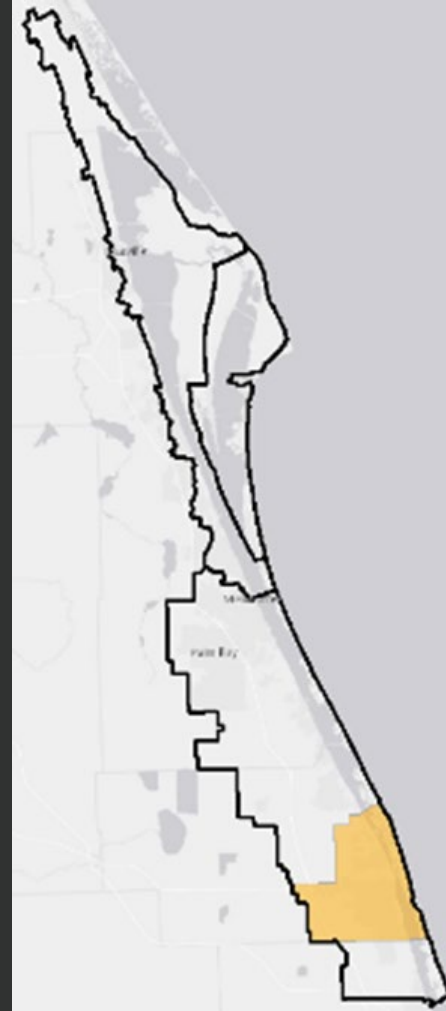
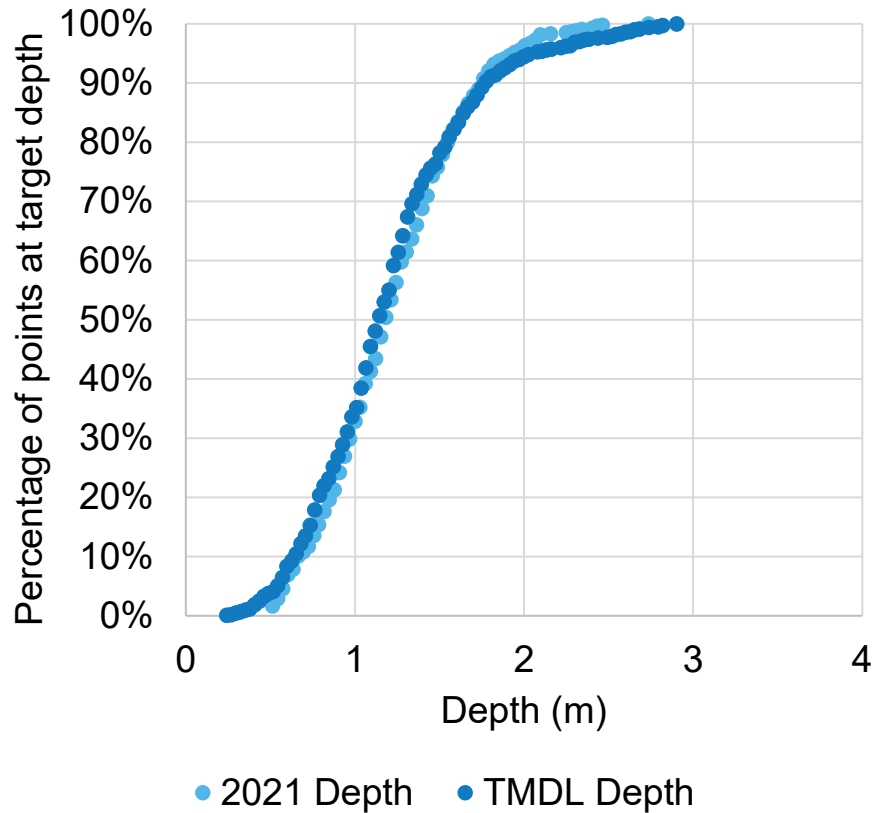
Central IRL Project Zone SEB – DRAFT 2022



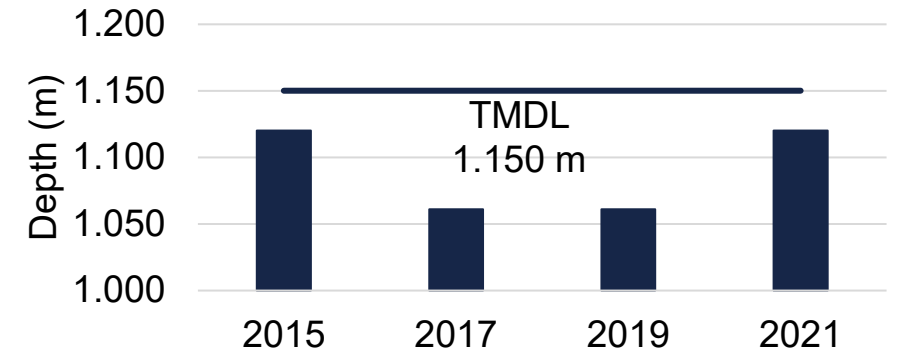


Seagrass Deep Edge Assessment Central IRL Project Zone B

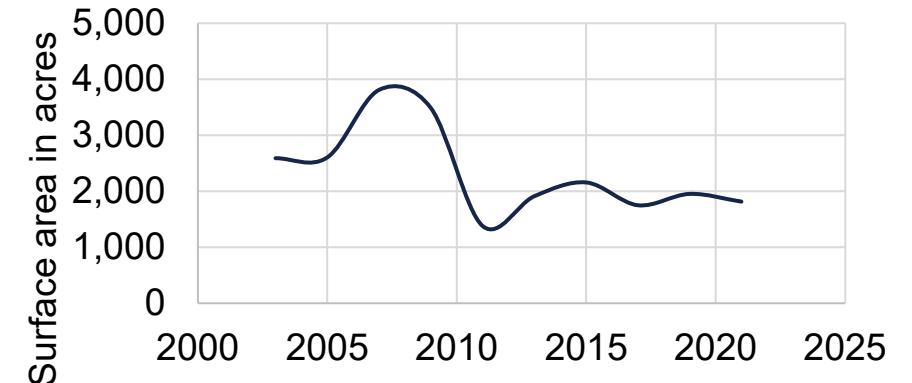
Step 1
**2015 – 2021 Cumulative
Distribution of Deep Edge Points**



Step 2
2015 - 2021 Median Deep Edge



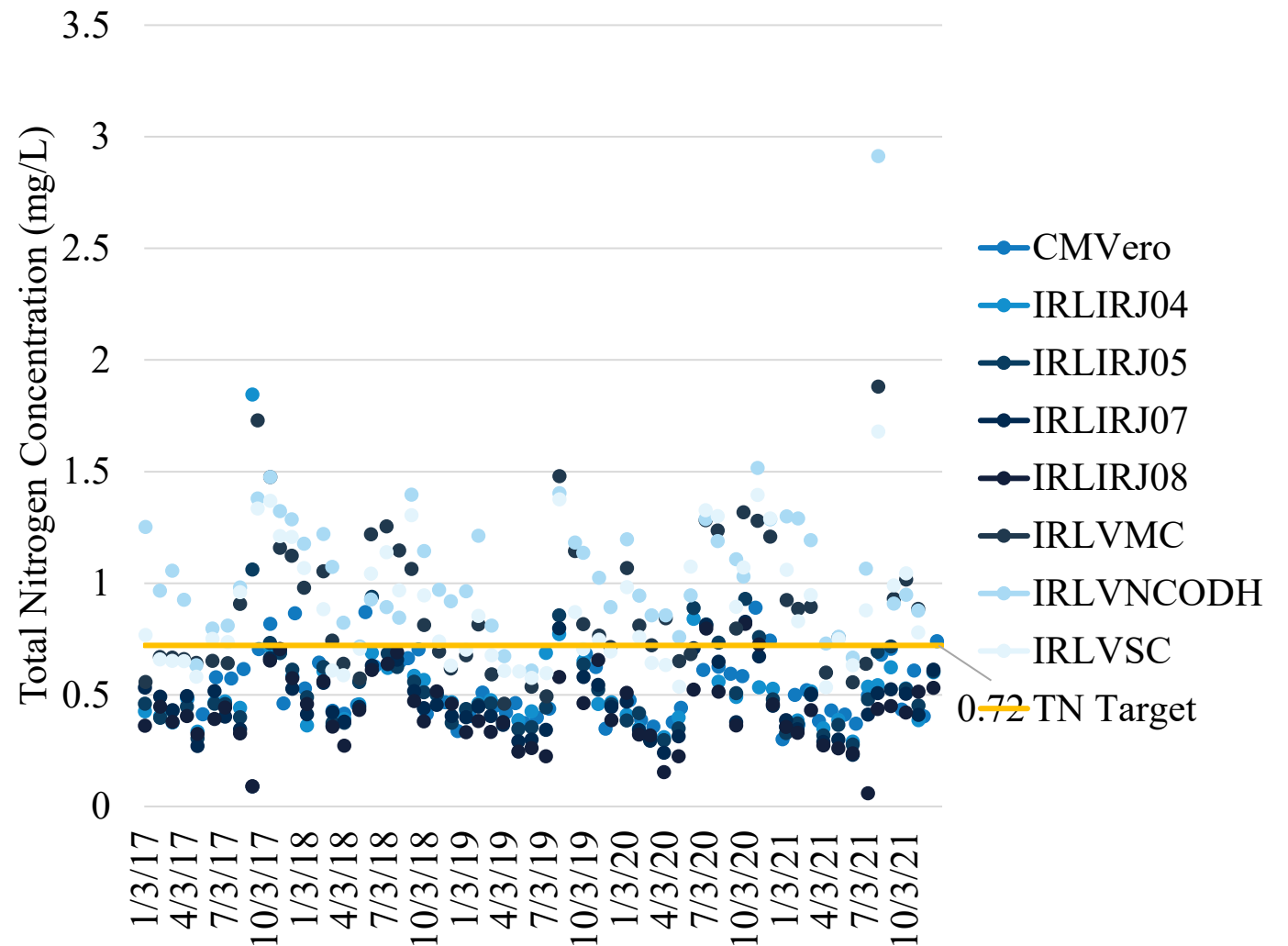
Areal Cover Over Time





The map displays the Vero Beach area, including the Indian River Lagoon and surrounding land. Key features include:

- Legend:**
 - Blue circle: Surface Water Quality
 - Purple square: Flow/Stage
- Scale:** 0 to 6 miles.
- Inset Map:** Shows the location of Vero Beach within the state of Florida.
- Data Points:**
 - SRID-1:** Surface Water Quality (blue circle) near Vero Lake Estates.
 - IRF-1:** Surface Water Quality (blue circle) near West Vero Corridor.
 - IRF-2:** Surface Water Quality (blue circle) near 69th St.
 - IRF-3:** Surface Water Quality (blue circle) near 27th Av SW.
 - CIRL B:** Flow/Stage (purple square) near Vero Beach Regional Airport.
 - 2252500:** Flow/Stage (purple square) near 49th St.
 - 2253000:** Flow/Stage (purple square) near 26th St.
 - 2253500:** Flow/Stage (purple square) near 20th Av SW.
 - IRLVNCODH:** Surface Water Quality (blue circle) near 49th St.
 - IRLVNC:** Surface Water Quality (blue circle) near 26th St.
 - IRLVSC:** Surface Water Quality (blue circle) near 20th Av SW.
 - IRLIRJ04:** Surface Water Quality (blue circle) near Indian River Shore.
 - IRLIRJ05:** Surface Water Quality (blue circle) near 41st St.
 - IRLIRJ07:** Surface Water Quality (blue circle) near Nevins.
 - IRLIRJ08:** Surface Water Quality (blue circle) near Florida Ridge.

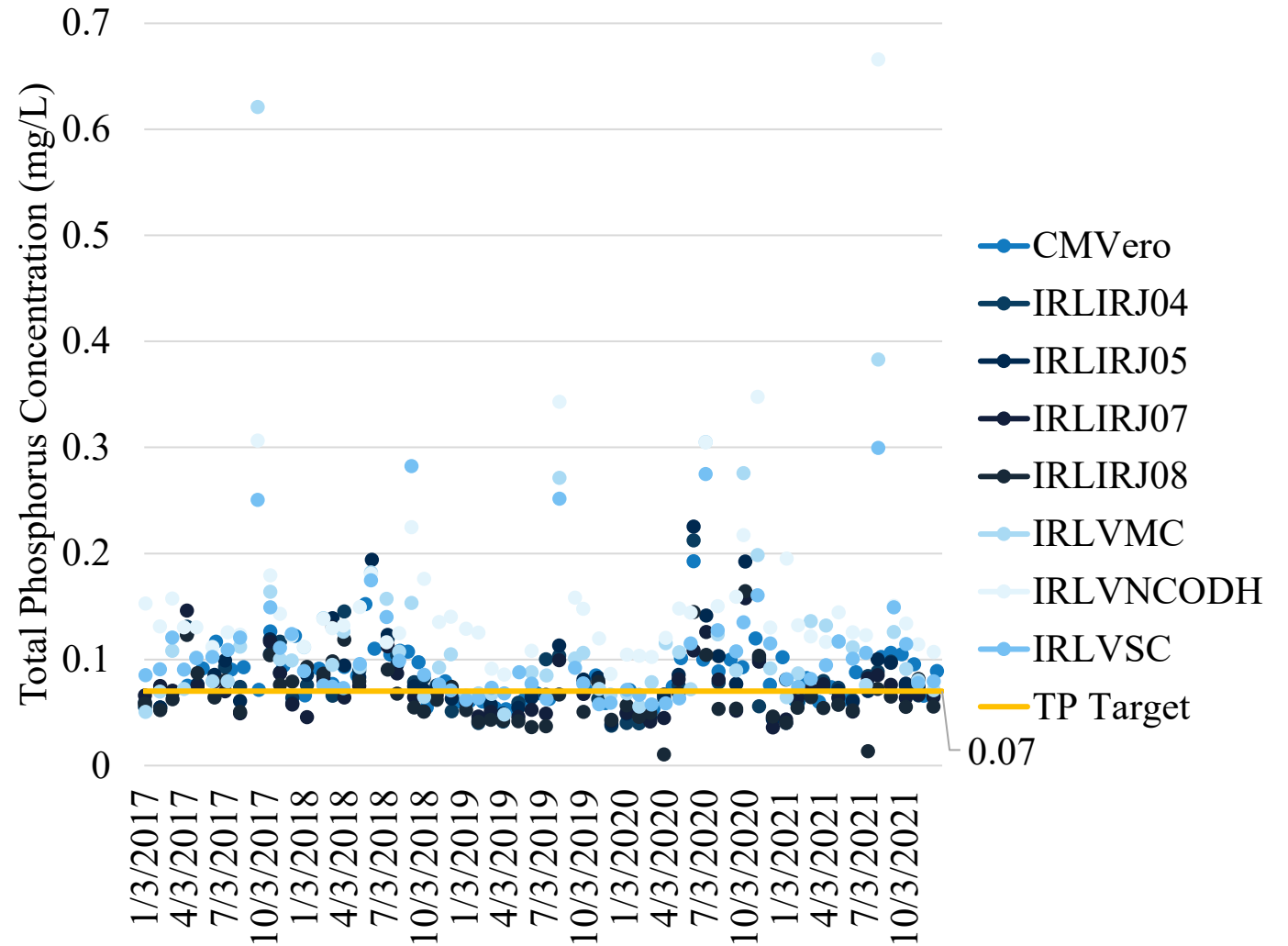
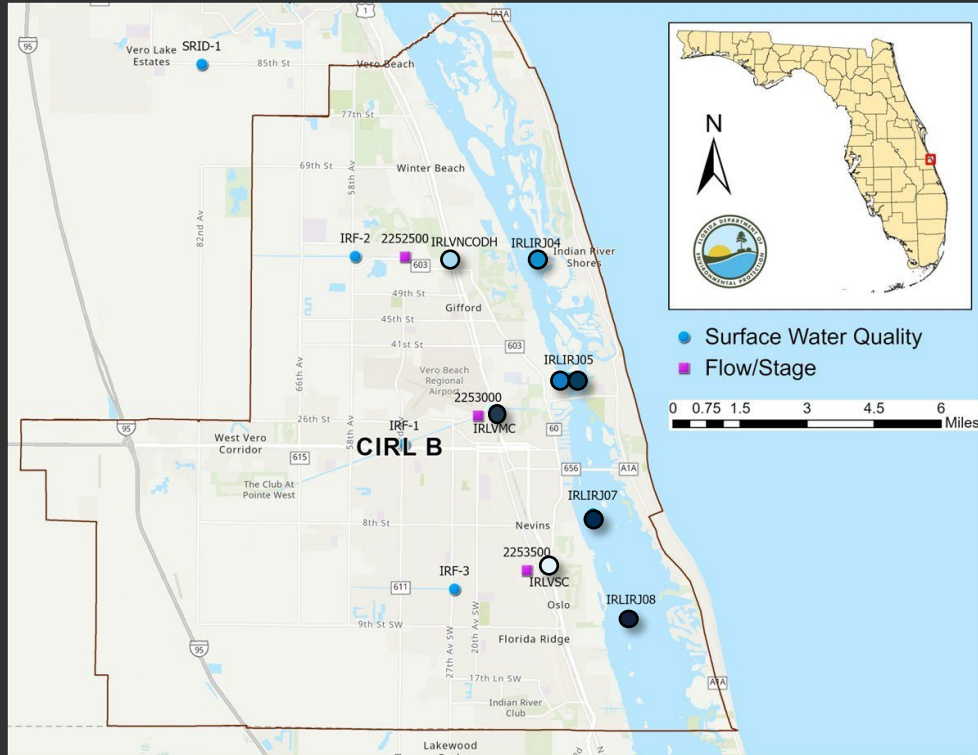




BMAP Water Quality Assessment

Central IRL Project Zone B

Total Phosphorus 2017 to 2021

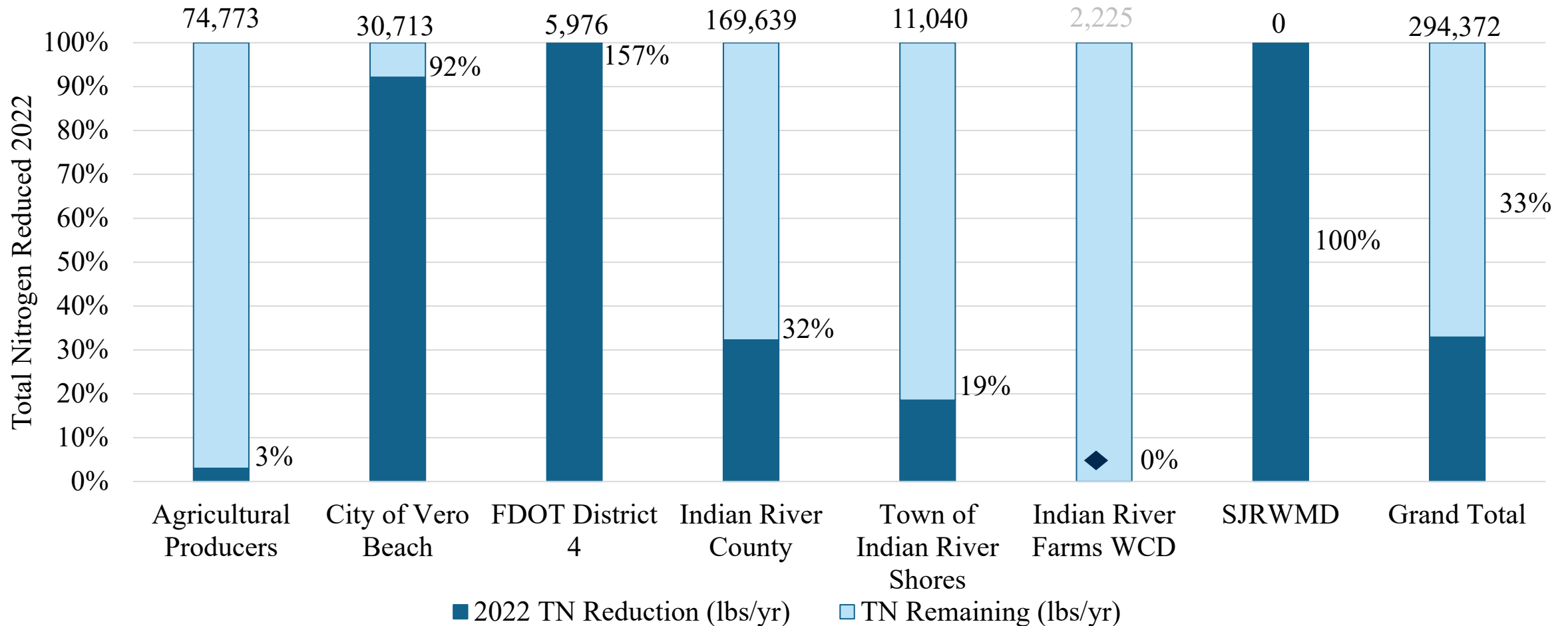




Stakeholder Individual Allocation Progress

Central IRL Project Zone B – DRAFT 2022

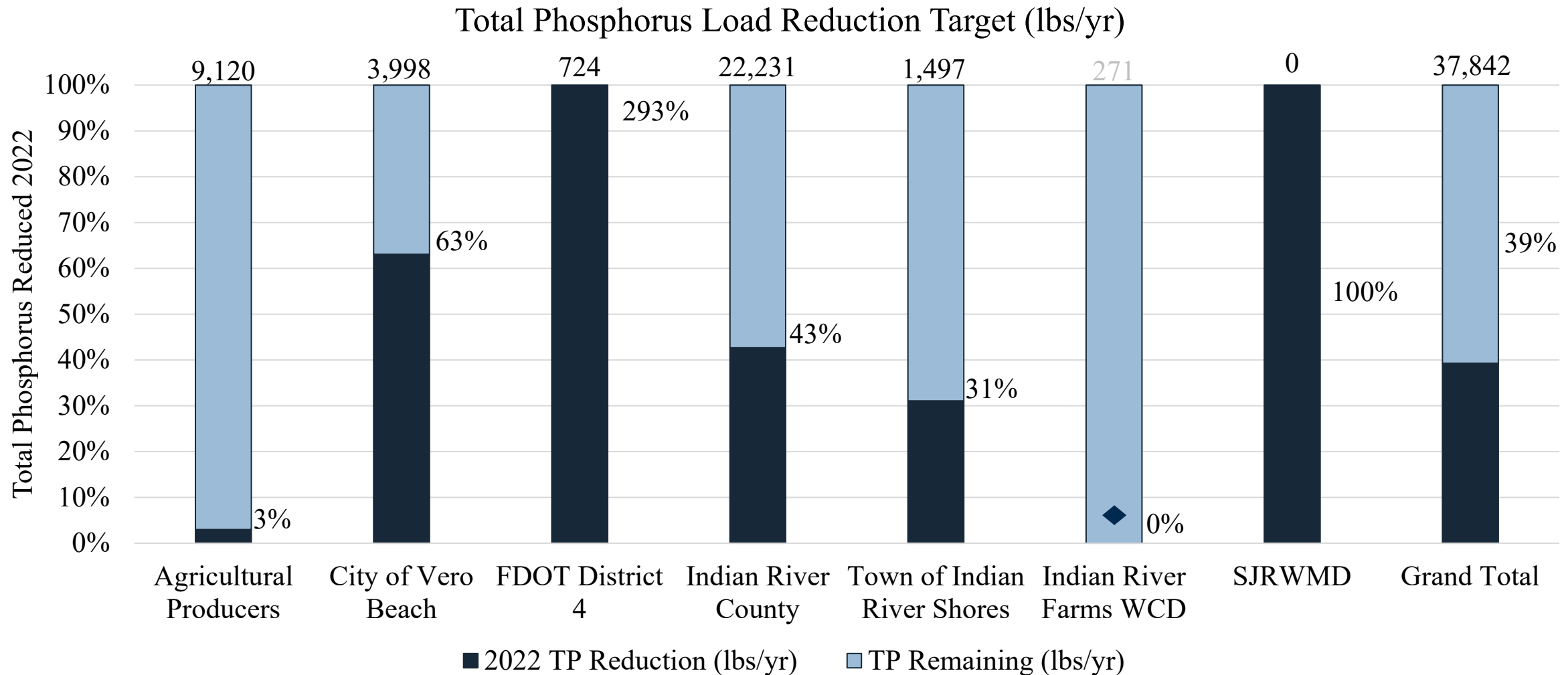
Total Nitrogen Load Reduction Target (lbs/yr)

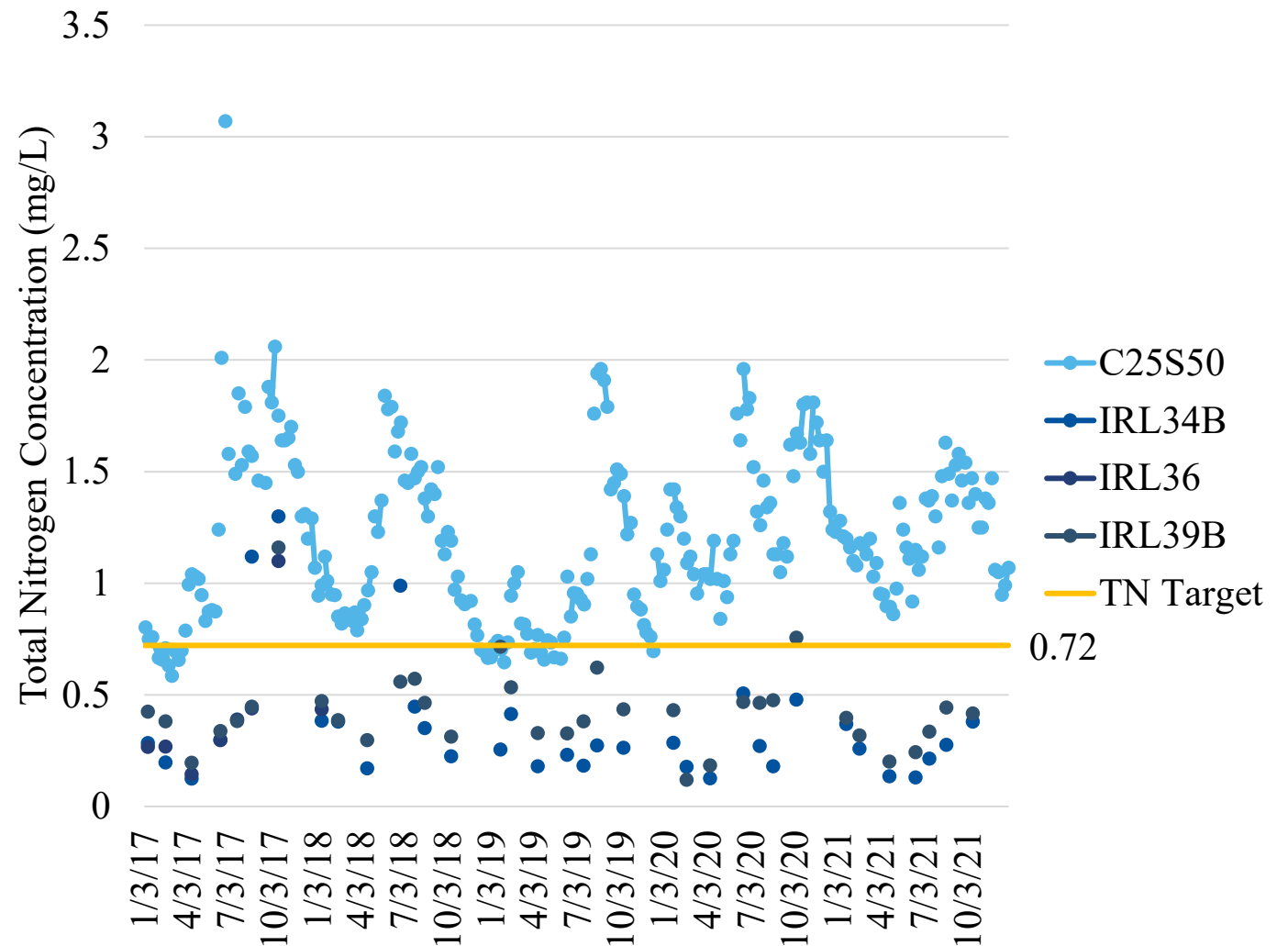




Stakeholder Individual Allocation Progress

Central IRL Project Zone B – DRAFT 2022



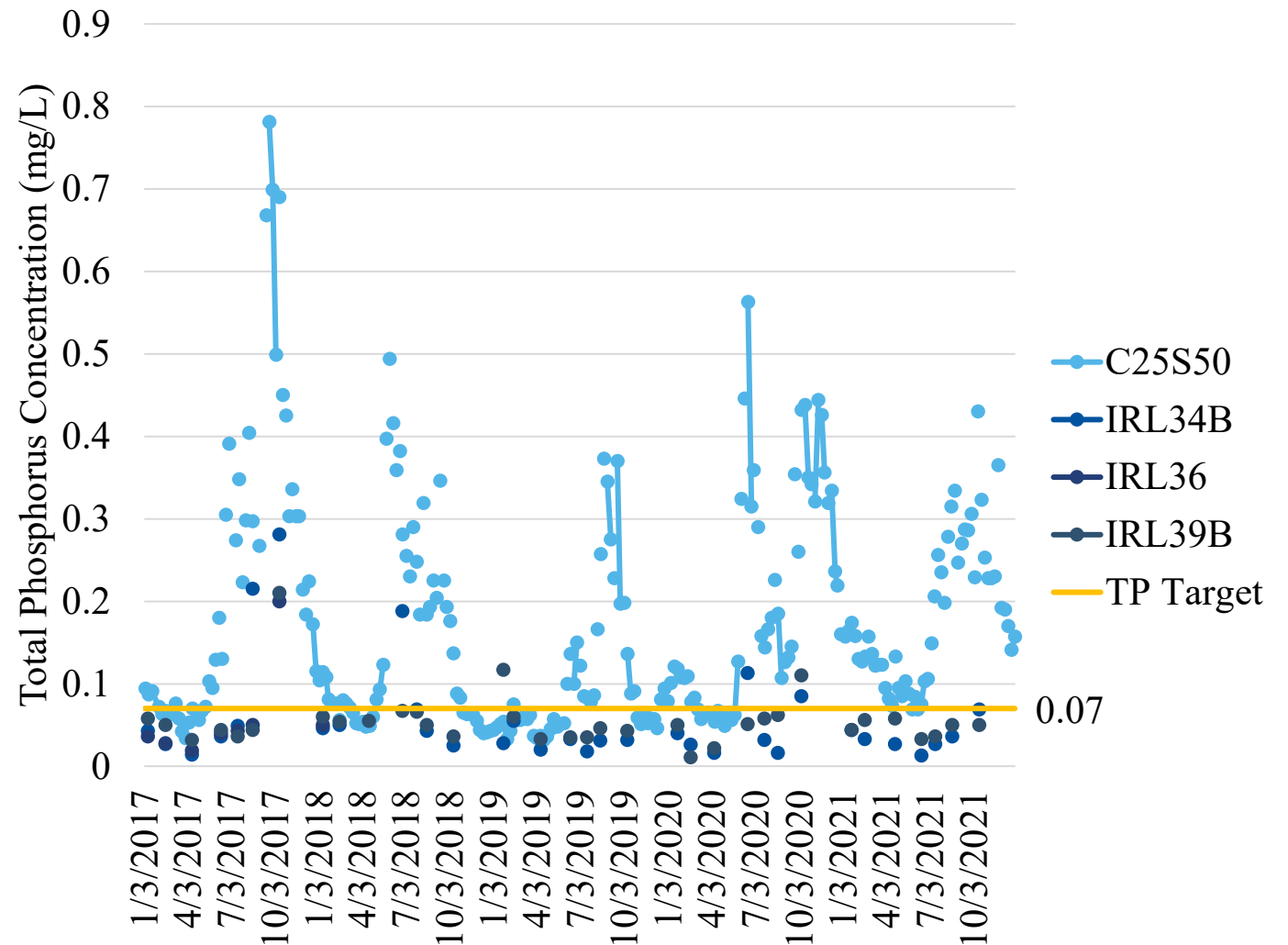
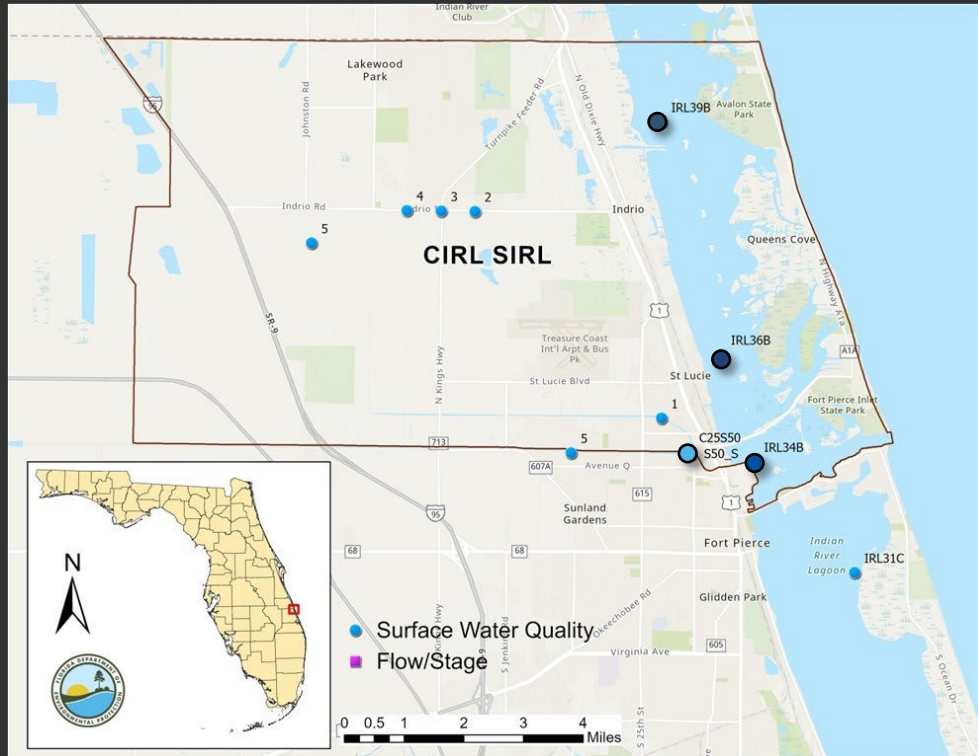




BMAP Water Quality Assessment

Central IRL Project Zone SIRL

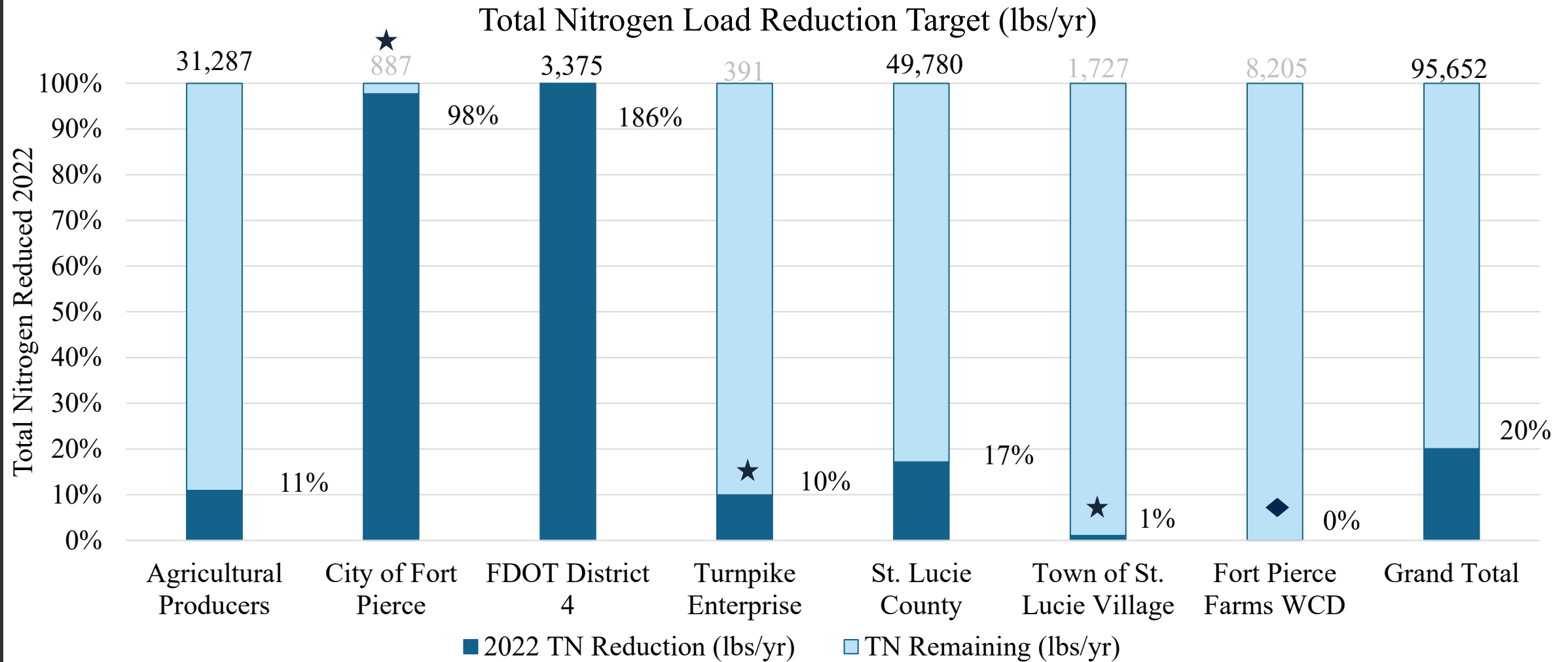
Total Phosphorus 2017 to 2021





Stakeholder Individual Allocation Progress

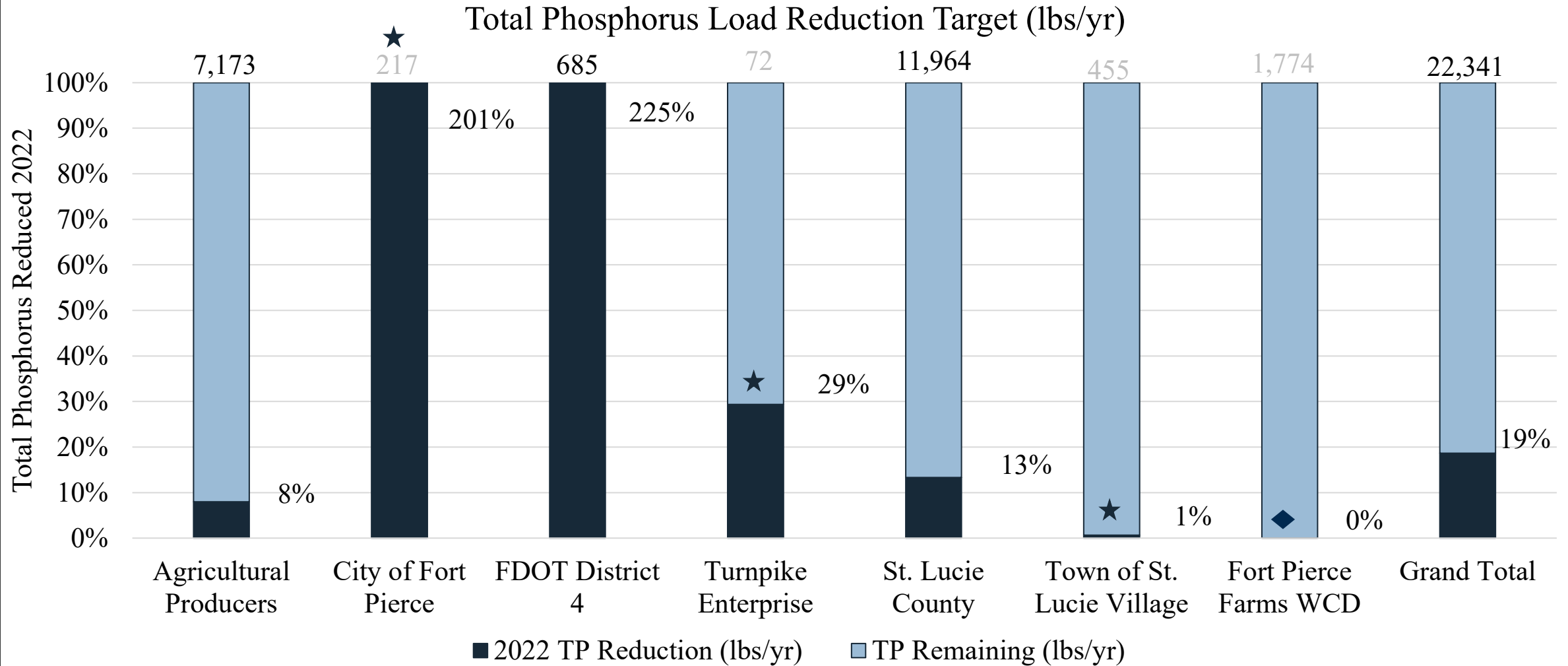
Central IRL Project Zone SIRL – DRAFT 2022





Stakeholder Individual Allocation Progress

Central IRL Project Zone SIRL – DRAFT 2022

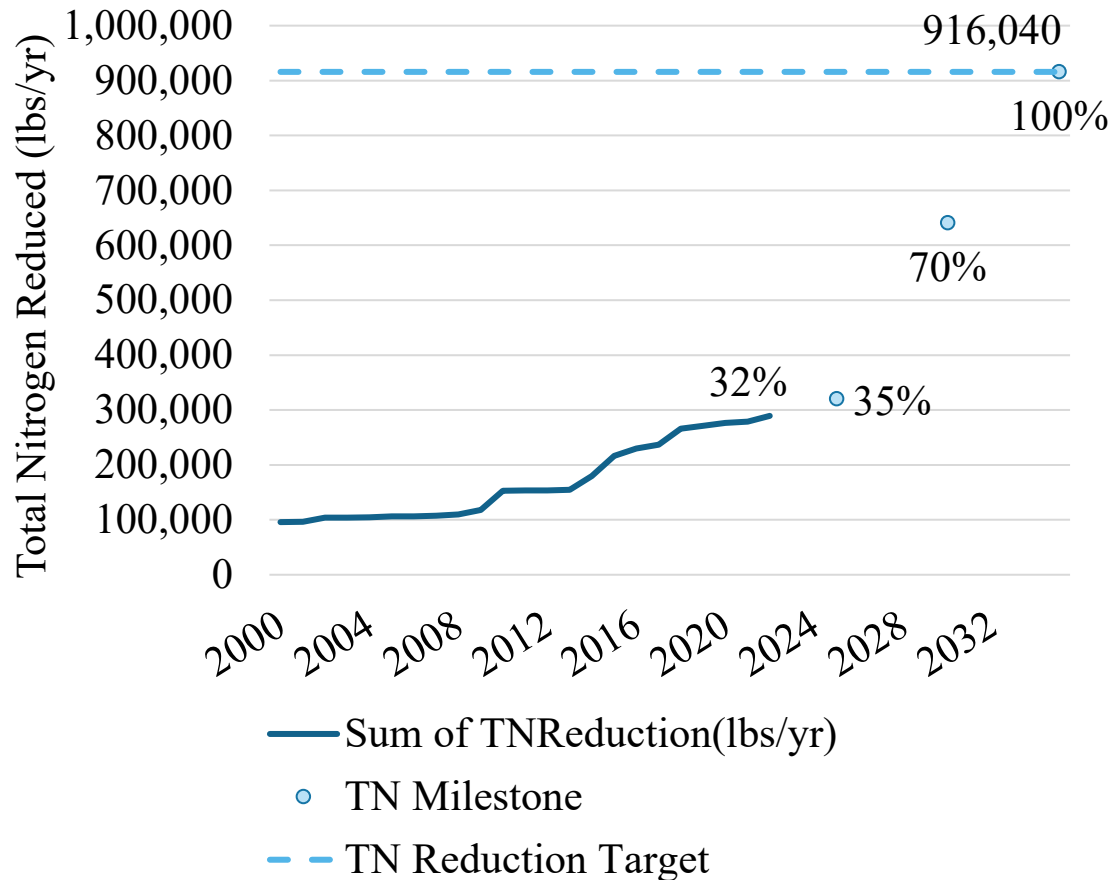




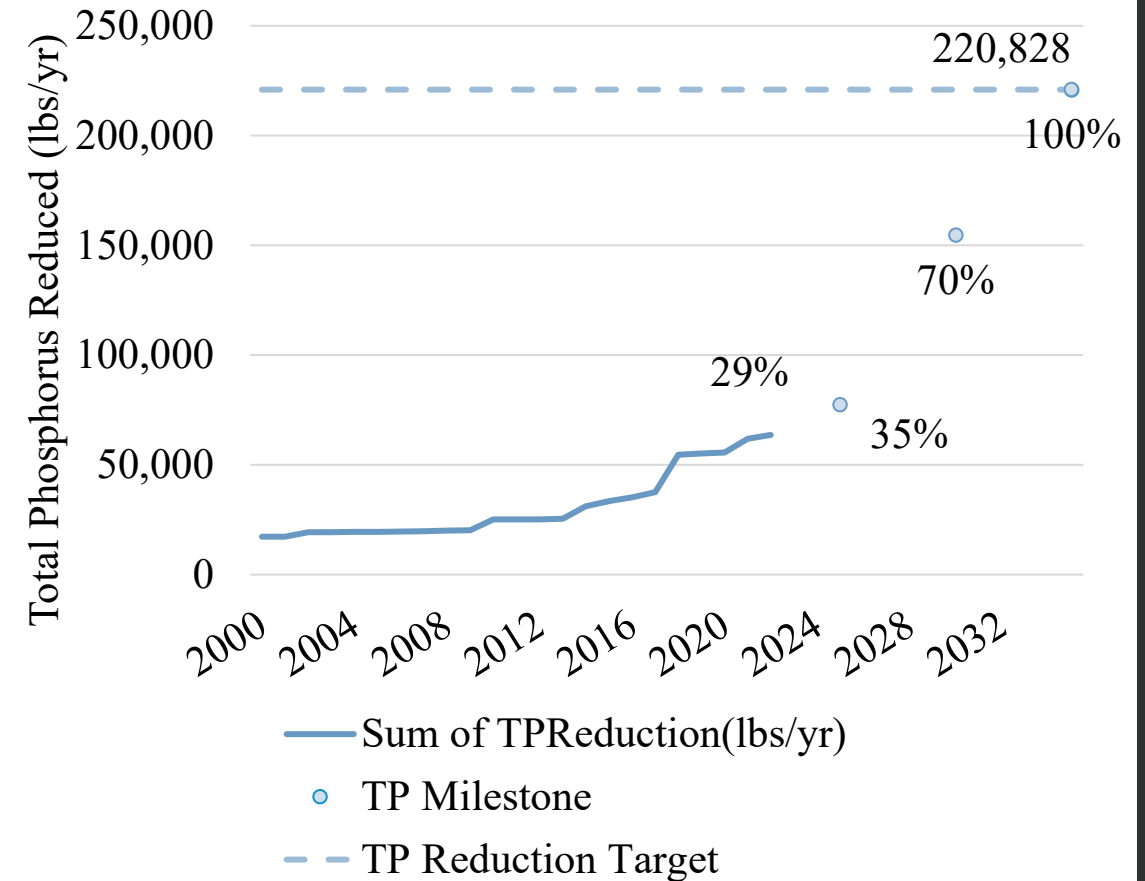
BMAP Project Nutrient Reduction Progress

Central IRL – DRAFT 2022

Central Indian River Lagoon 2022 Total Nitrogen Reductions from Projects



Central Indian River Lagoon 2022 Total Phosphorus Reductions from Projects





Q₁₀ U₁ E₁ S₁ T₁ I₁ O₁ N₁ S₁

Indian River Lagoon BMAP Annual Meeting

April 2023

Yesenia Escribano

Florida Department of Agriculture and Consumer Services

Office of Agricultural Water Policy



Overview

- Agricultural Best Management Practices (BMP)
- FDACS Role in BMP Implementation
- Enrollment within the Indian River Lagoon BMAPs
 - Unenrolled Agricultural Lands Classification
- BMP Implementation Verification (IVs)
- Producer Outreach
- Legislative Report



Office of Agricultural Water Policy (OAWP) Staff Update

- **N. West Gregory**; Director West.Gregory@fdacs.gov
- **Bret Prater**; Asst. Director Bret.Prater@fdacs.gov
- **Angela Chelette**; Chief of Policy Planning and Coordination (PPC) Section Angela.Chelette@fdacs.gov
- **Yesenia Escribano**; Environmental Administrator Yesenia.Escribano@fdacs.gov



Agricultural Best Management Practices

- Management strategies, tools and practices that improve water quality, conserve water, enhance soil health and protect water resources
- Based on the best available science and technology
 - Work closely with FDEP staff
- Must balance production and water resource protection



Benefits of Agricultural Best Management Practices

- Increase efficiencies in nutrient, irrigation and water management
- Conservation and protection of water and environmental resources
- Improve soil health
- Promote groundwater recharge
- Enhance wildlife habitat

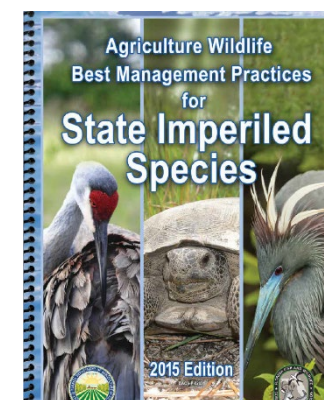
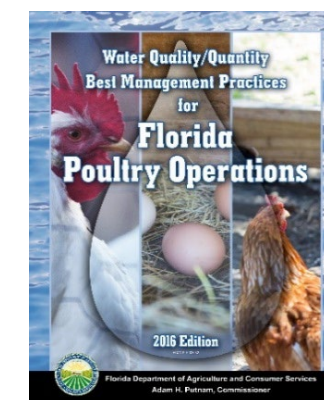
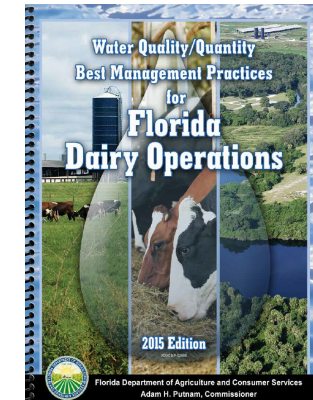
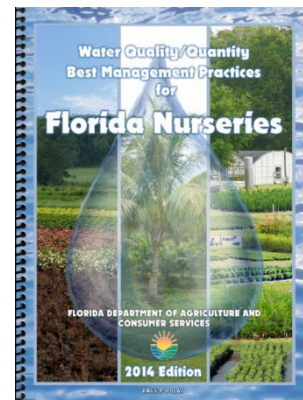
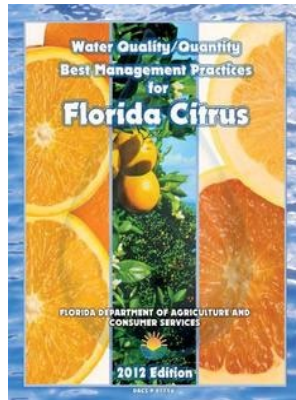
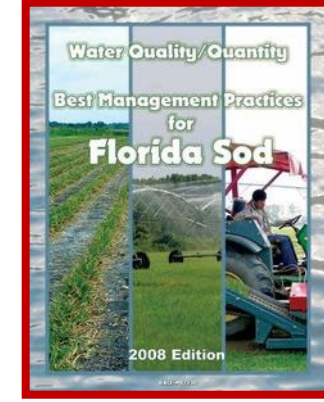
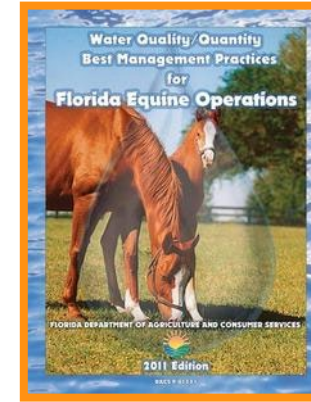
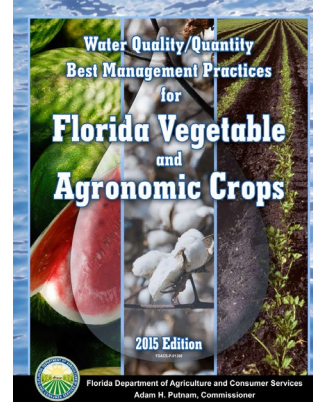
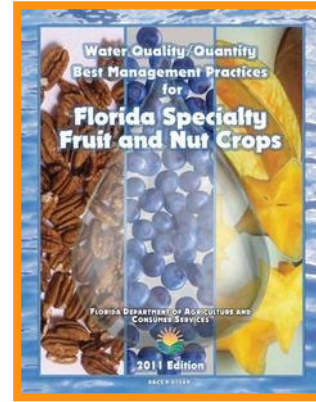
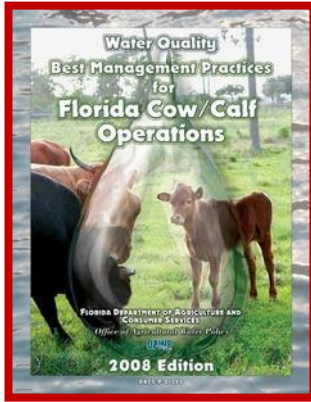


FDACS Role in BMP Implementation

- Develop BMPs in Manuals and adopt BMPs by Rule
- Assist Producers with BMP Enrollment
- Identify and support targeted cost-share of select BMPs
- Fund research to develop new, innovative BMPs that improve nutrient and irrigation use efficiencies
- Verify proper implementation through site visits and record review



Adopted BMP Manuals



Producer Options in BMAP Areas

1. Sign a Notice of Intent (NOI) and properly implement applicable BMPs for presumption of compliance, OR
2. Follow an FDEP or WMD-prescribed water quality monitoring plan at a Producer's expense



Enrollments within the Indian River Lagoon BMAPs

BMAP	Project Zones	Total Ag Acres	Enrolled Ag Acres	% Enrolled	Irrigated Acres	Enrolled Irrigated Acres	% Enrolled
Banana	A,B	75	0	0%	0	0	0%
Central	A	9,893	383	4%	230	33	14%
Central	B	16,153	1,816	11%	1,771	392	22%
Central	SEB	33,769	10,026	30%	5,823	3,481	60%
Central	SIRL	12,665	2,637	21%	2,568	1,547	60%
North	A	5,275	549	10%	463	236	51%
North	B	1,410	44	3%	91	14	15%

BMP enrollment as of Dec 2022 and the 9th Florida Statewide Agricultural Irrigation Demand ([FSAID](#)) Geodatabase

Agricultural Acres Enrolled within Indian River Lagoon

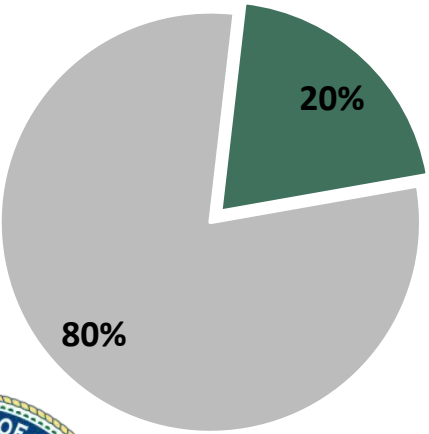
BMP Manual	Central	North
Citrus	2,586	436
Cow/Calf	10,100	113
Equine	22	0
Fruit/Nut	0	34
Multiple Commodities	1,220	1
Nursery	157	9
Row/Field Crop	777	0
Total	14,862	593

BMP enrollment as of Dec 2022 and the 9th Florida Statewide Agricultural Irrigation Demand ([FSAID](#)) Geodatabase

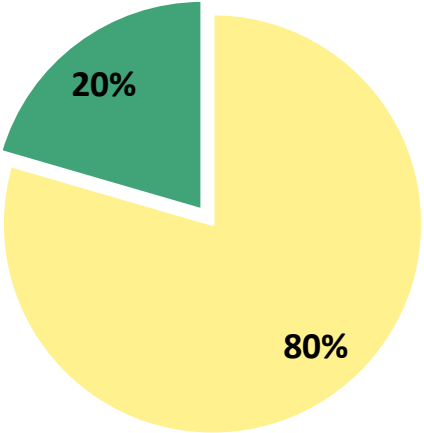
Agricultural Lands within Central

Non-Agricultural Acres	Agricultural Acres	Enrolled Agricultural Acres	Remaining Agricultural Acres	Unlikely Enrollable Acres	Potentially Enrollable Acres
282,945	72,479	14,862	57,623*	10,779	42,893

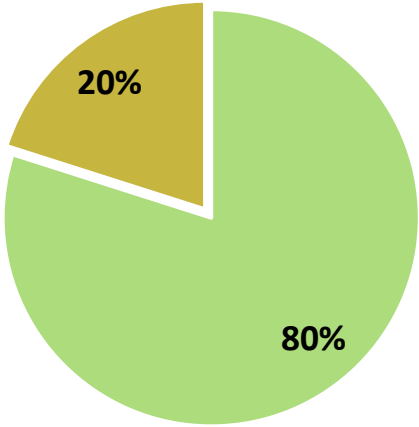
Non-Ag Acres vs.
Ag Acres



Enrolled Ag Acres vs.
Remaining Ag Acres



Unlikely Enrollable Acres
vs. Potentially Enrollable
Acres



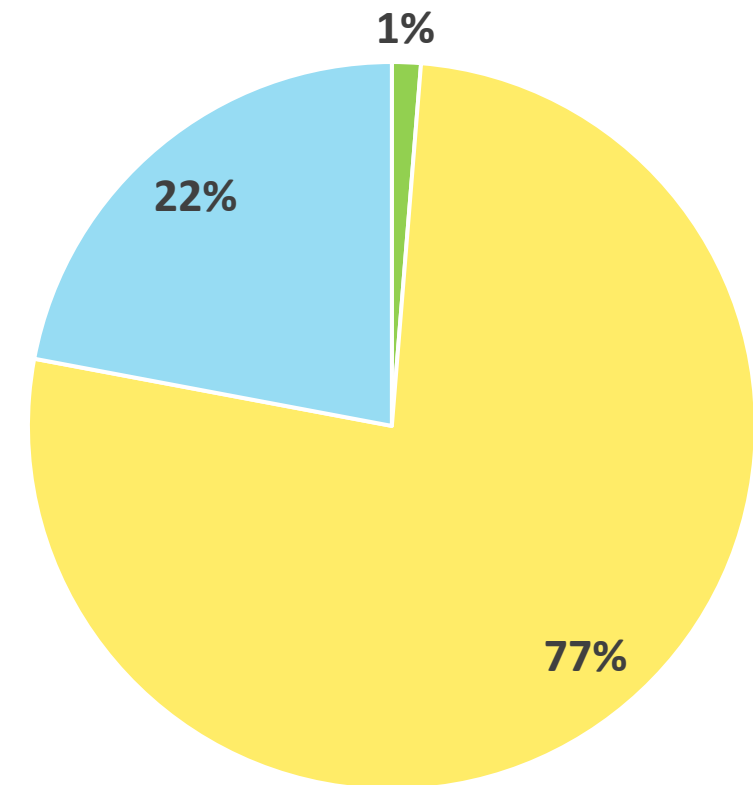
*This value includes ~4,000+ acres within state-owned properties that are not included in the ‘unlikely enrollable’ or ‘potentially enrollable’ acres categories

Unlikely Enrollable Agricultural Lands within Central

Category	Acres
State Lands	4,487
Timberland and Aquaculture	138
Not Agriculture [e.g., DOR Use Code 70-99 (industrial or institutional use, acreage not zoned agricultural), Non-Ag Entity]	8,265
Not Enrollable [e.g., Missing Parcel Information, Slivers, Tribal Lands]	2,376

Unlikely Enrollable Acres: 10,779

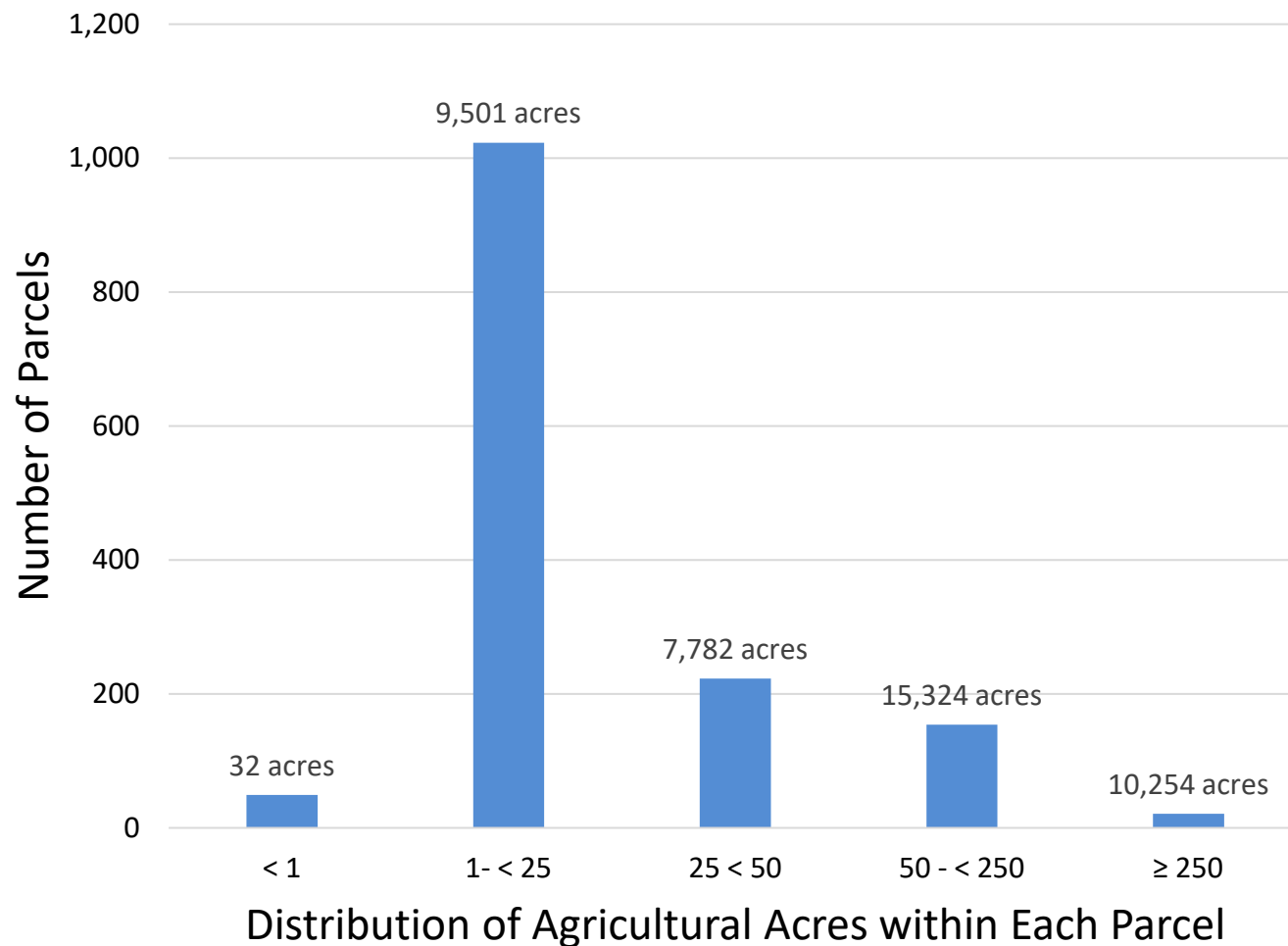
Remaining Acreage: Unlikely Ag Breakdown



Potentially Enrollable Agricultural Lands within Central

Ag Acres within Parcel	Parcel Count	Total Ag Acres
< 1	49	32
1 - < 25	1,023	9,501
25 - < 50	223	7,782
50 - < 250	154	15,324
≥ 250	21	10,254

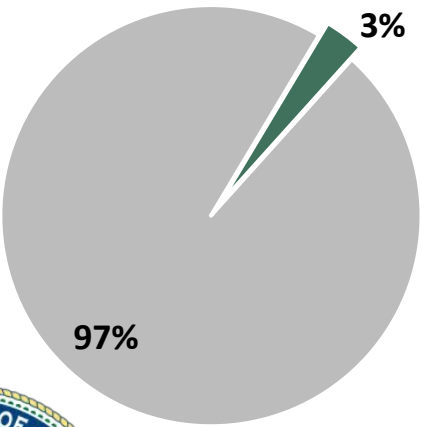
Potentially Enrollable Acres: 42,893



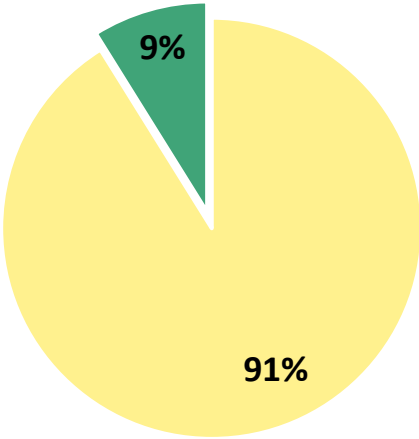
Agricultural Lands within North

Non-Agricultural Acres	Agricultural Acres	Enrolled Agricultural Acres	Remaining Agricultural Acres	Unlikely Enrollable Acres	Potentially Enrollable Acres
210,405	6,685	593	6,091*	2,908	3,179

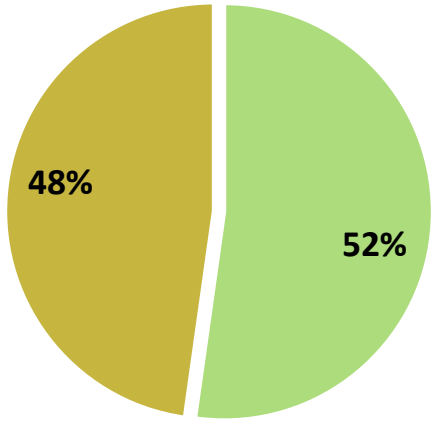
Non-Ag Acres vs.
Ag Acres



Enrolled Ag Acres vs.
Remaining Ag Acres



Unlikely Enrollable Acres
vs. Potentially Enrollable
Acres



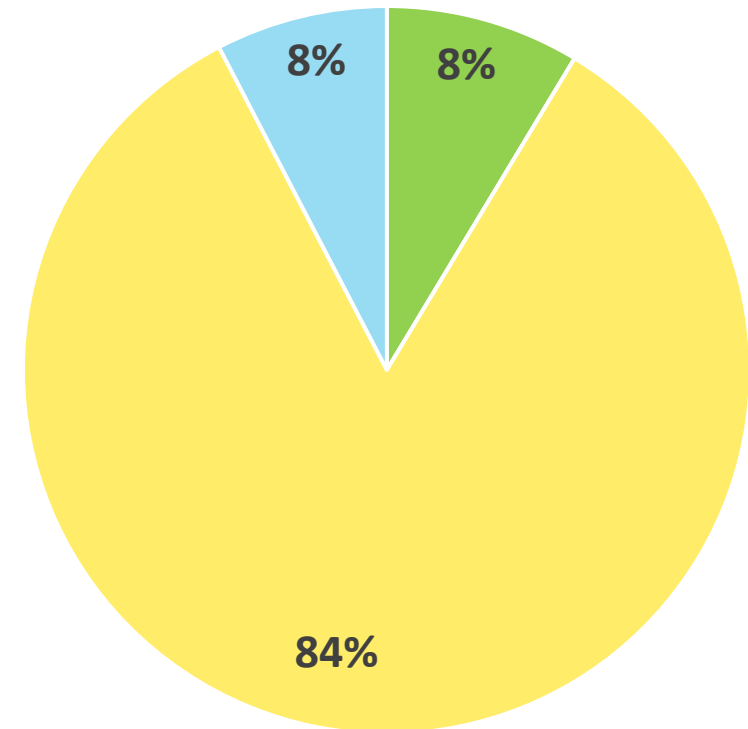
*This value includes ~10 acres within state-owned properties that are not included in the 'unlikely enrollable' or 'potentially enrollable' acres categories

Unlikely Enrollable Agricultural Lands within North

Category	Acres
State Lands	10
Timberland and Aquaculture	251
Not Agriculture [e.g., DOR Use Code 70-99 (industrial or institutional use, acreage not zoned agricultural), Non-Ag Entity]	2,435
Not Enrollable [e.g., Missing Parcel Information, Slivers, Tribal Lands]	222

Unlikely Enrollable Acres: 2,908

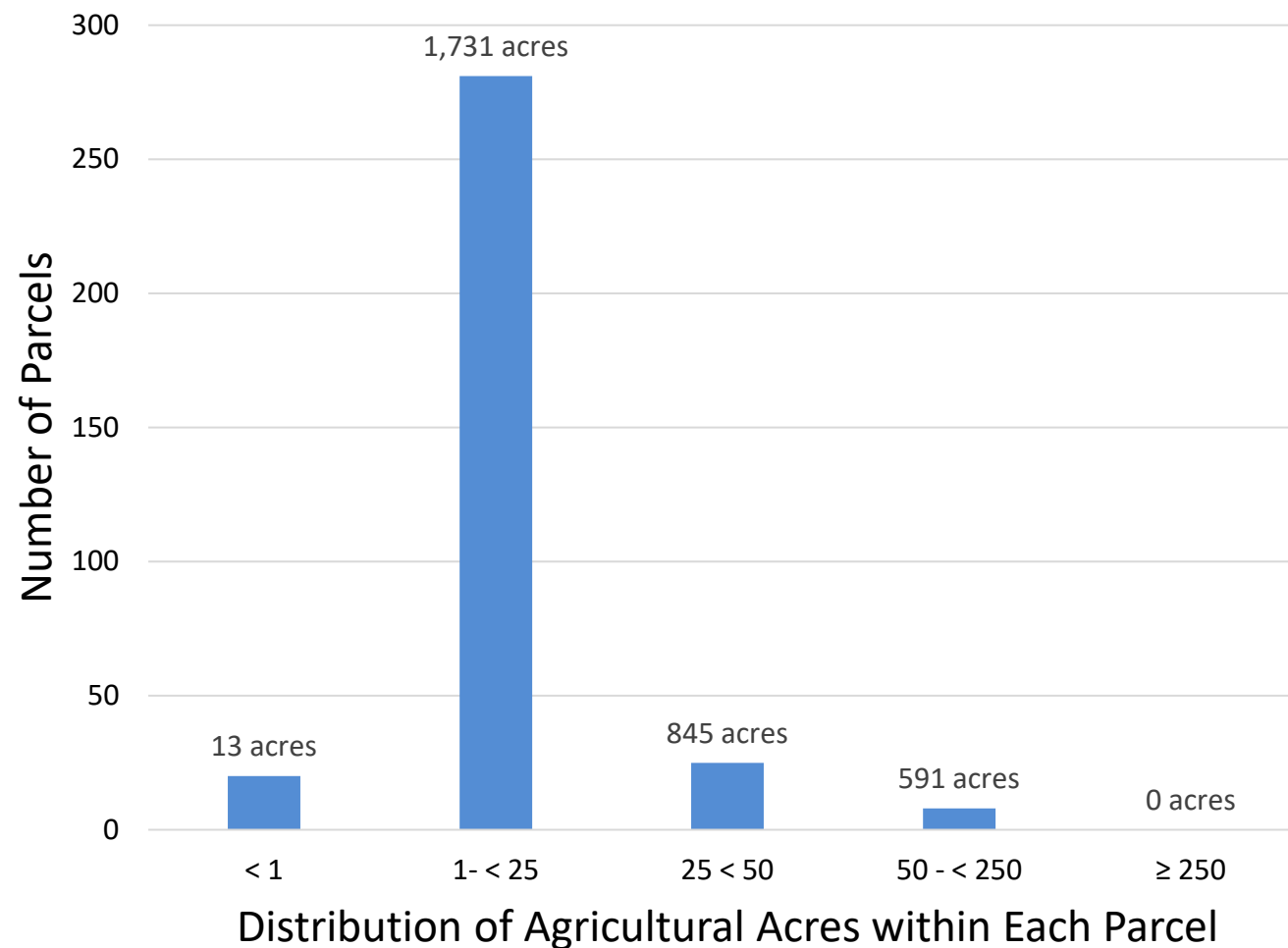
Remaining Acreage: Unlikely Ag Breakdown



Potentially Enrollable Agricultural Lands within North

Ag Acres within Parcel	Parcel Count	Total Ag Acres
< 1	20	13
1 - < 25	281	1,731
25 - < 50	25	845
50 - < 250	8	591
≥ 250	0	0

Potentially Enrollable Acres: 3,179



BMP Implementation Verification (IV)

- Process to verify the status of implementation of BMPs
- **Clean Waterways Act - SB 712 (July 2020)**
 - Requires IV site visits every 2 years
 - Central 92% completed
 - North 100% completed
- Requires collection, review, and retention of N and P fertilizer records
 - Nutrient Application Record Form (NARF)
- FDACS reports total N and P applications to FDEP for utilization in BMAP assessments

** IVs completed as of Dec 31, 2022



Producer Outreach: Coming Soon....

- BMP Program Videos

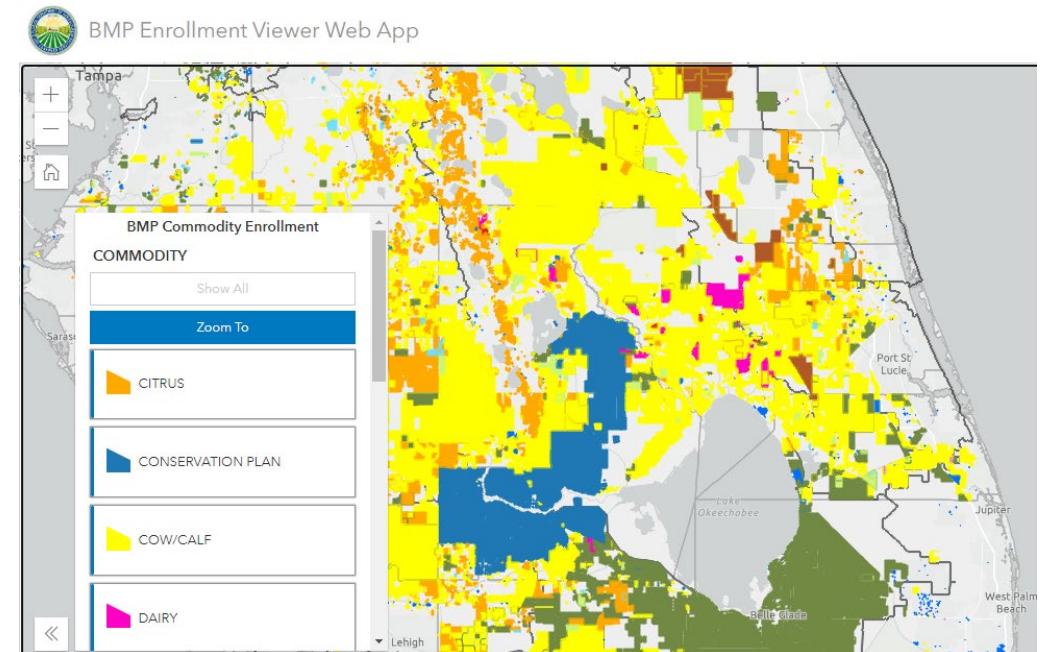
[Agricultural Water Policy - About BMPs – YouTube](#)



- New Online Features

- Are you in a BMAP?

- BMP Enrollment Viewer Web App



[Agricultural Best Management Practices / Water / Agriculture Industry / Home - Florida Department of Agriculture & Consumer Services \(fdacs.gov\)](#)

2022 FDACS Legislative Report

Florida Department of Agriculture and Consumer Services Office of Agricultural Water Policy



Status of Implementation of Agricultural Nonpoint Source Best Management Practices

July 1, 2022

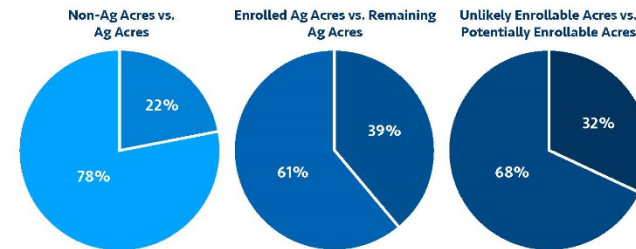
Report to the Governor, the President of the Senate, and the Speaker of the House
Pursuant to Section 403.0675(2), F.S.

Publication No: FDACS-P-01924 Rev. 07/22



Status of Implementation of Agricultural Best Management Practices (BMPs) Statewide

Non-Agricultural Acres	Agricultural Acres	Enrolled Agricultural Acres	Remaining Agricultural Acres*	Unlikely Enrollable Acres	Potentially Enrollable Acres
26,723,359	7,596,641	4,628,627	2,968,014	884,291	1,851,559



Enrollment and IV Site Summary	2021	2021 Percent Enrolled
Total agricultural acres in the state	7,596,641	61%
Total agricultural acres enrolled	4,628,627	
Total irrigated acres	1,862,717	82%
Total irrigated acres enrolled	1,526,689	
Number of NOIs statewide	13,269	
Completed IV site visits	3,938	

Potentially Enrollable Parcel Distribution by Agricultural Acreage

Agricultural Acres Within Parcel	Number of Parcels	Total Agricultural Acres
< 1	2,984	1,610
1 - 25	52,005	468,885
25 - < 50	8,580	298,416
50 - < 250	6,187	596,906
≥ 250	971	485,742
TOTAL	70,727	1,851,559

Agricultural Acres Enrolled

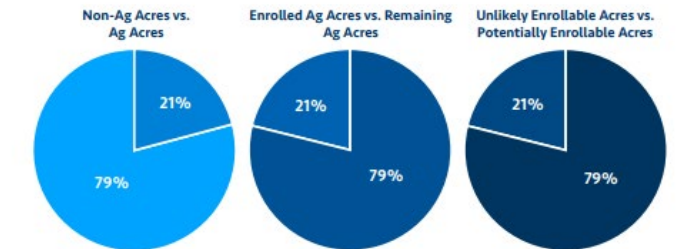
BMP Manuals	Acres
Citrus	445,006
Conservation Plan	192,280
Cow/Calf	1,684,597
Dairy	13,227
Equine	20,071
Fruit & Nut	16,615
Lake Okeechobee PP	2,476
Multiple Commodities	1,172,097
Nursery	32,246
Poultry	1,024
Row/Field Crops	1,010,521
Sod	26,321
Wildlife	13,346
TOTAL	4,628,627

* This value includes acreages within state-owned properties and/or surface water project areas that are not included in the 'unlikely enrollable' or 'potentially enrollable' acres categories.

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Status of Implementation of Agricultural Best Management Practices (BMPs) Central Indian River Lagoon BMAP

Non-Agricultural Acres	Agricultural Acres	Enrolled Agricultural Acres	Remaining Agricultural Acres*	Unlikely Enrollable Acres	Potentially Enrollable Acres
282,279	73,146	15,479	57,667	11,235	42,498



Enrollment and IV Site Summary	2021	2021 Percent Enrolled
Total agricultural acres in the BMAP	73,146	21%
Total agricultural acres enrolled	15,479	
Total irrigated acres	13,455	53%
Total irrigated acres enrolled	7,142	
Number of NOIs within BMAP	110	
Completed IV site visits	24	

Potentially Enrollable Parcel Distribution by Agricultural Acreage

Agricultural Acres Within Parcel	Number of Parcels	Total Agricultural Acres
< 1	56	40
1 - 25	997	9,301
25 - < 50	226	7,874
50 - < 250	152	14,945
≥ 250	21	10,338
TOTAL	1,452	42,498

Agricultural Acres Enrolled

BMP Manuals	Acres
Citrus	3,498
Cow/Calf	9,972
Equine	22
Multiple Commodities	1,024
Nursery	170
Row/Field Crops	793
TOTAL	15,479

* This value includes acreages within state-owned properties and/or surface water project areas that are not included in the 'unlikely enrollable' or 'potentially enrollable' acres categories.

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<https://www.fdacs.gov/Divisions-Offices/Agricultural-Water-Policy>

Thank You!

<http://www.fdacs.gov/Divisions-Offices/Agricultural-Water-Policy>

Yesenia Escribano, Environmental Administrator
Yesenia.Escribano@FDACS.gov – (850) 617-1732





Unenrolled Agricultural Producer Enforcement

David Frady, Ph.D.

Program Administrator

Division of Environmental Assessment and Restoration

Florida Department of Environmental Protection

Annual Public Meeting | April 3, 2023



Clean Waterways Act

- The Clean Waterways Act (SB 712) was signed into law by Governor DeSantis in 2020
 - The law requires a wide range of water quality protection provisions aimed at minimizing impacts from known nutrient pollution sources
 - Agricultural landowners and producers within a basin management Action Plan (BMAP) must enroll in one of two programs:
 - FDACS' Best Management Practices (BMP) program
 - Water Quality Monitoring approved by DEP
- The law also requires FDACS to:
 - Conduct on-site implementation verification (IV) site visits on properties enrolled in the BMP program every two years
 - Collect fertilizer data via the Nutrient Application Record Form (NARF)
 - **identify agricultural parcels within a BMAP that are out of compliance and refer them to DEP for enforcement**



Unenrolled Agricultural Producer Enforcement

FDACS identifies non-compliant producers

- The Florida Department of Agriculture and Consumer Services (FDACS) uses various databases to identify parcels within a BMAP that may be agricultural operations.

FDACS refers non-compliant producers to DEP for enforcement

- After confirming agricultural activity and attempting to enroll the producer in the BMP program, FDACS refers non-compliant producers to DEP for enforcement.

DEP conducts outreach and engagement to bring producers into compliance

- It saves taxpayers money and is better for the environment to bring producers into compliance quickly through education and outreach efforts prior to taking formal enforcement action against small farmers.

DEP initiates enforcement action

- If an agricultural producer fails to come into compliance, DEP initiates a civil suit to compel them to come into compliance.
- DEP is prioritizing enforcement actions based on parcel size and impact to the environment.



Outreach and Engagement Has Been Successful

- DEP takes immediate action when a producer is referred for enforcement.
 - More than 96% of the unenrolled agricultural parcels identified by FDACS and referred to DEP have been brought into compliance.
- There are no parcels greater than 100 acres out of compliance and the majority of noncompliant areas are smaller than 10 acres.
- DEP is engaged in an ongoing campaign to educate landowners of their requirements and bring them into compliance quickly through additional outreach and on-site visits.



THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION



THANK YOU

David Frady

Division of Environmental Assessment and Restoration
Florida Department of Environmental Protection

CONTACT INFORMATION:

850-245-8559

David.Frady@FloridaDEP.gov



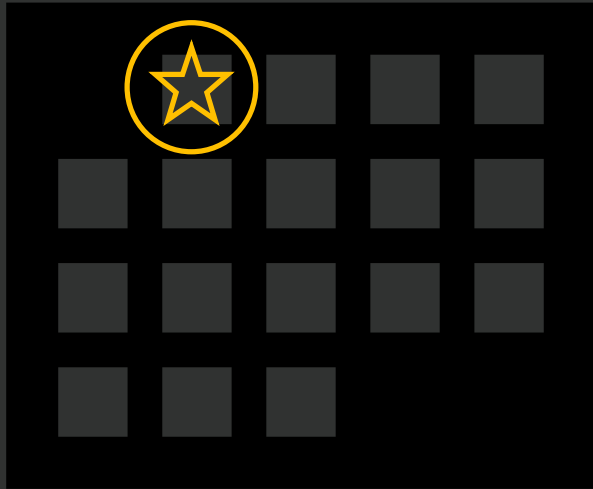
STAR = STATEWIDE ANNUAL REPORT

- ❖ *What is it and where can you find it?*
- ❖ *How were the data collected?*
- ❖ *What does it report for the IRL BMAPs?*



STAR = STATEWIDE ANNUAL REPORT

**Report will be
submitted by July 1,
2023.**



<https://floridadep.gov/STAR>

- ❖ What's in the STAR?
 - Summarizes accomplishments in the BMAPs, statewide.
 - Reports on restoration projects and management strategies.
- ❖ STAR is getting a digital makeover!
 - Moving to visual-driven experience.
 - Data download available.



STAR IRL STORY MAPS

Banana River Lagoon Basin Management Action Plan

Division of Environmental Assessment and Restoration



[Introduction](#) [Overview](#) [Location](#) [Monitoring](#) [Projects](#) [Progress](#) [Contacts & More Information](#)

INTRODUCTION

Welcome to the Banana River Lagoon Basin Management Action Plan Story Map

A Basin Management Action Plan (BMAP) is a framework for water quality restoration, containing local and state commitments to reduce pollutant loading through current and future projects and strategies. BMAPs contain a comprehensive set of solutions, such as permit limits on wastewater facilities, urban and agricultural best management practices, and conservation programs designed to achieve pollutant reduction established by a Total Maximum Daily Load (TMDL).

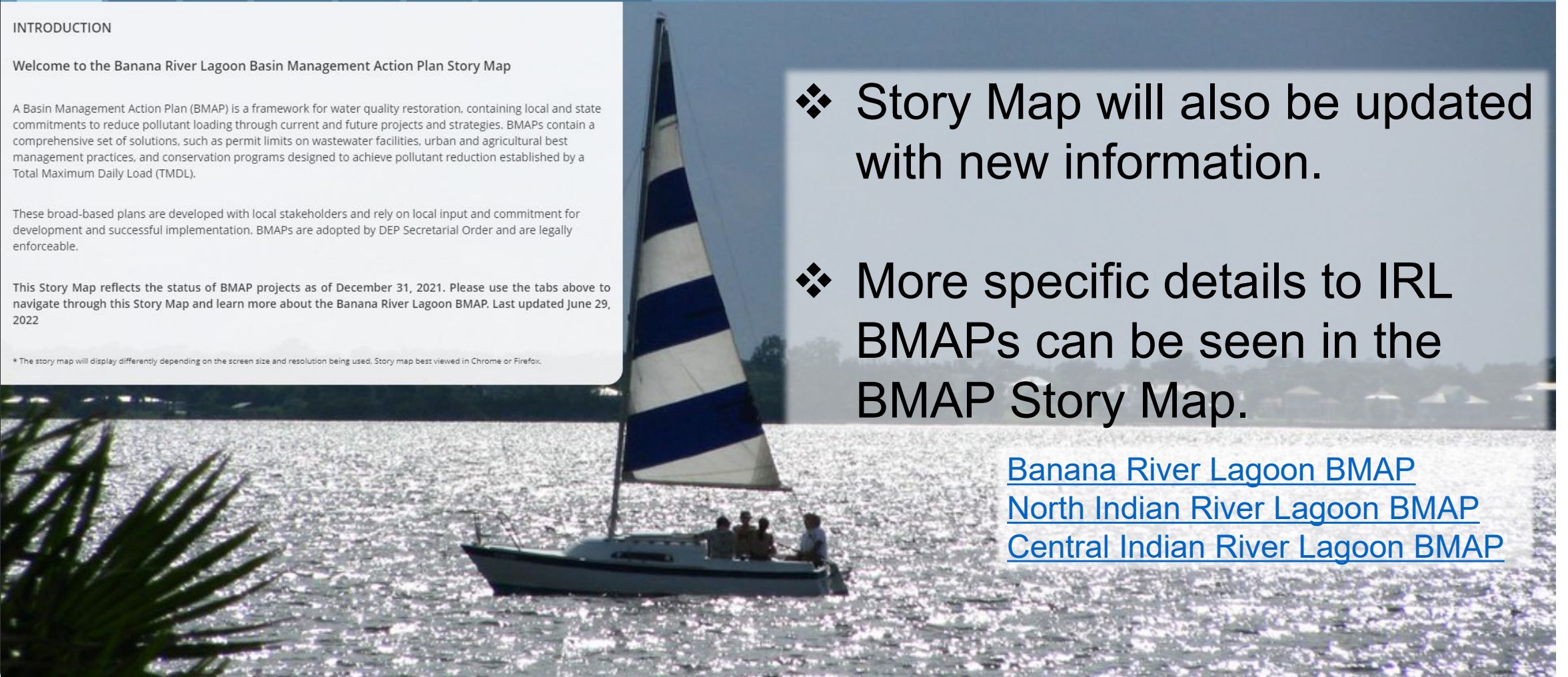
These broad-based plans are developed with local stakeholders and rely on local input and commitment for development and successful implementation. BMAPs are adopted by DEP Secretarial Order and are legally enforceable.

This Story Map reflects the status of BMAP projects as of December 31, 2021. Please use the tabs above to navigate through this Story Map and learn more about the Banana River Lagoon BMAP. Last updated June 29, 2022

* The story map will display differently depending on the screen size and resolution being used. Story map best viewed in Chrome or Firefox.

- ❖ Story Map will also be updated with new information.
- ❖ More specific details to IRL BMAPs can be seen in the BMAP Story Map.

[Banana River Lagoon BMAP](#)
[North Indian River Lagoon BMAP](#)
[Central Indian River Lagoon BMAP](#)







IRL BMAPs Update by 2025

- ❖ Allocation Modeling.
- ❖ Florida Clean Waterways Act.
- ❖ Executive Order 23-06.
- ❖ Next Steps.



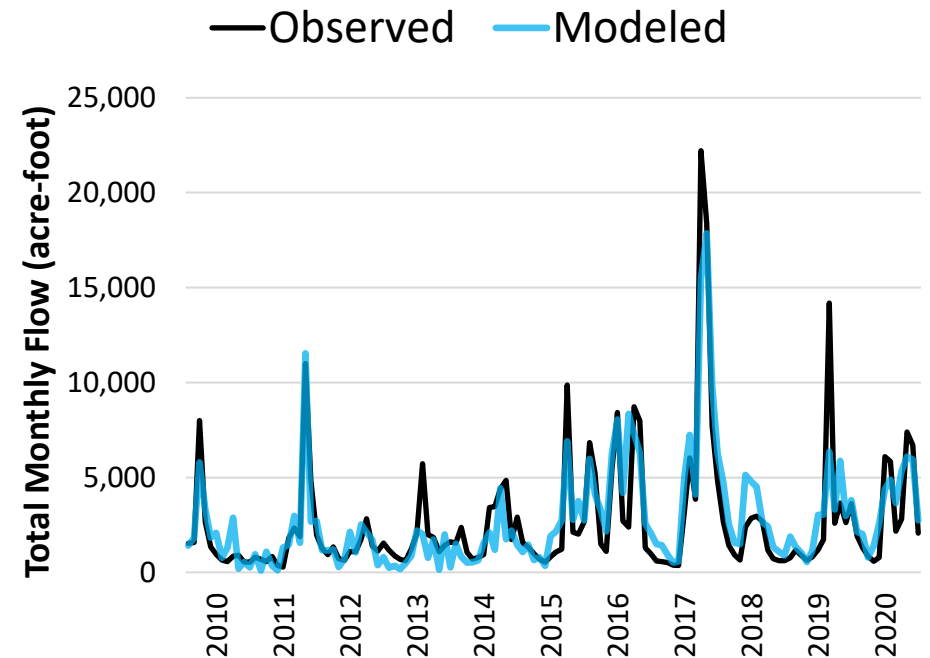
[This Photo](#) by Unknown Author is licensed under [CC BY-SA-NC](#)



Allocation Modeling

- ❖ March 23, 2023 – Meeting on Calibration.
 - DEP is taking Comments.
 - Link to materials: [Link](#)
- ❖ Next steps:
 - Summer 2023 → Allocation load run.
 - Load estimation tool (LET) development.
 - ❑ I NEED YOUR UPDATED JURISDICTIONAL BOUNDARIES!
 - Fall 2023 → Natural background load run.

Observed and Modeled Monthly Sum of Total Flow for Sebastian North Prong



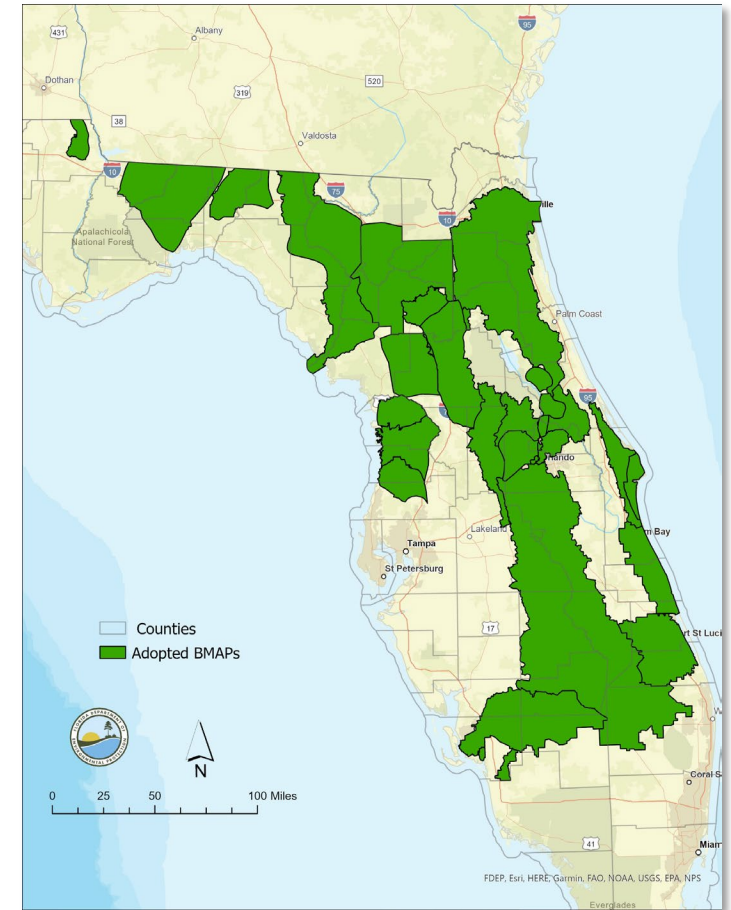


Clean Waterways Act Requirements

Wastewater Treatment Plans

- ❖ Inventory of wastewater treatment facilities (WWTFs) within jurisdiction of local governments.
- ❖ Summary of each facility's current status, which may include:
 - Permitted capacity;
 - Average discharge;
 - Permitted nutrient limits;
 - Average nutrient concentration; and
 - Estimated average nutrient load.
- ❖ Summary of capacity analysis for each facility:
 - ❖ Including plans for future growth.
- ❖ Ranking or list of facility upgrades needed to meet requirements.
- ❖ Timelines/milestones for all projects.
- ❖ Funding estimates for all projects.

Nutrient BMAPs



Updates to BMAPs must be adopted by July 1, 2025.

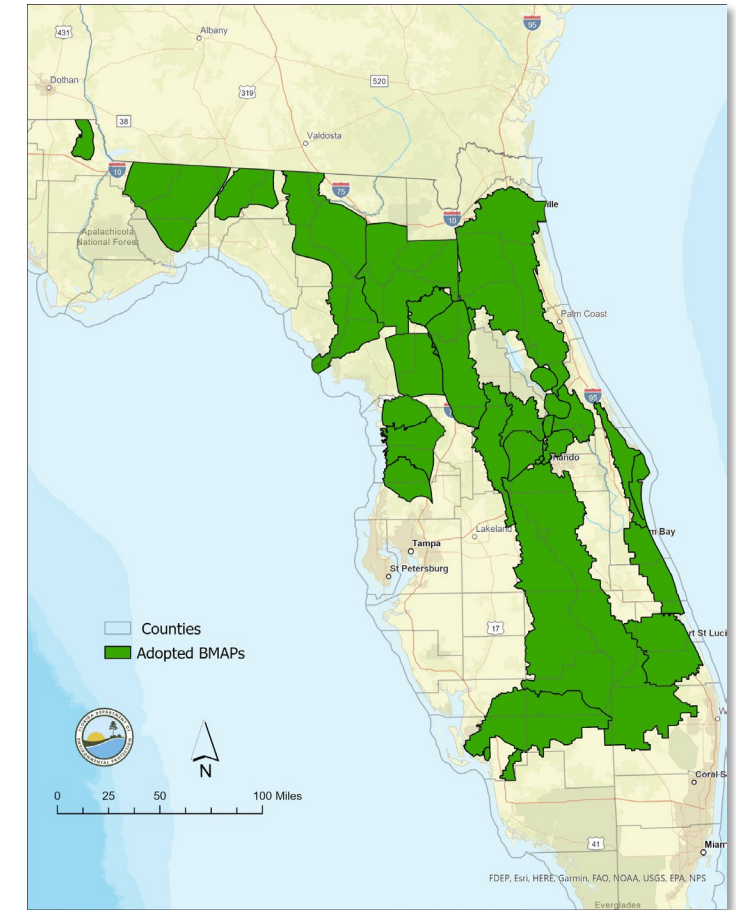


Clean Waterways Act Requirements

OSTDS Remediation Plans

- ❖ Inventory of OSTDS within jurisdiction of local governments.
- ❖ Plan to address OSTDS in the future:
 - Areas for sewerage and/or enhancements and prioritization of those areas.
 - Summary of capacity analysis for wastewater facilities that would accept newly sewerage areas.
 - Timelines/milestones for projects.
 - Funding estimates for all projects.
 - Future growth considerations.

Nutrient BMAPs



Updates to BMAPs adopted by
July 1, 2025.



Executive Order 23-06

Achieving Even More for Florida's Environment

Basin Management Action Plans (BMAPs)

- ❖ Update all BMAPs.
- ❖ Require local governments to identify and expedite projects necessary to achieve restoration.
- ❖ All wastewater facilities discharging to waterbodies in a BMAP upgrade to advanced wastewater treatment by 2033.
- ❖ Coordinate with FDACS to identify and seek funding for regional projects that reduce agricultural nutrient impacts.

Agricultural Best Management Practices (BMPs)

- ❖ Review all agricultural BMP manuals and coordinate with FDACS to improve agricultural best management practices.
 - Obtain and review site-specific data on BMP implementation.
 - Parcel-level reporting of commodity.
 - Fertilizer application.
 - Achieve 100% BMP enrollment and implementation in BMAP areas.



Executive Order 23-06

Achieving Even More for Florida's Environment

Establishing the Indian River Lagoon Protection Program:

- ❖ Requesting at least \$100 million annually for water quality improvement projects
- ❖ Coordination with restoration partners to identify and prioritize projects for water quality restoration
- ❖ Enhanced water quality monitoring to identify sources of nutrient loading.
- ❖ Innovative nature based solutions.

Reducing Nutrient Contributions to the IRL.

- ❖ Septic systems.
 - Septic-to -sewer.
 - Enhanced nutrient-reducing OSTDS.
- ❖ Wastewater facilities.
 - Advanced wastewater treatment for all facilities by July 1, 2025.
 - Increase treatment capacity.
- ❖ Stormwater discharge.
- ❖ Agricultural discharges.



Next Steps



- ❖ Individual stakeholder meetings:
 - Project needs to meet 2025 milestones.
 - Allocation updates.
 - Clean Waterways Act Plans.
- ❖ Update allocations and LET:
 - Comments on calibration.
 - Updates to jurisdictional boundaries.
 - Special District assessment.
- ❖ Development of water quality restoration prioritization tools:
 - Targeted restoration area evaluation.
 - Station hotspot analysis.



Stacy Cecil

Indian River Lagoon BMAP Coordinator
Florida Department of Environmental Protection

Stacy.Cecil@floridadep.gov

850-245-8683

Diana Turner

South Florida BMAPs Environmental Administrator
Florida Department of Environmental Protection

Diana.M.Turner@dep.state.fl.us

850-245-8825