PUBLIC HEARING COMMENT CARD

PINELLAS COUNTY, FLORIDA
BOARD OF COUNTY COMMISSIONERS

The Board of County Commissioners values your participation

Please fill out this card if you wish to speak or record your sentiment regarding a public hearing item.

Public Hearing Item:

☑ **Individual** (3 minutes)

☐ **Group Speaker** (see additional details on the back of this card)

Agenda date: Oct 22, 2019

Agenda item number *(NOT case number)*: 43

Speaking:

For ☑ **Against** ☐ **Undecided** ☐

Waive speaking:

In Support ☐ **Against** ☐

(The Chairman will read this information into the record.)

Name: Randy Runnels

Address: 5137 17th Ave S

Gulfport DEP

City: _____ **Zip:** 33707

Email: randy.runnels@dep.state.fl.us

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Public Hearing Item:

☒ **Individual** (3 minutes)

☐ **Group Speaker** (see additional details on the back of this card)

Agenda date: 10/22/19

Agenda item number *(NOT case number)*: 43

Speaking:

For ☒ **Against** ☐ **Undecided** ☐

Waive speaking:

In Support ☐ **Against** ☐

(The Chairman will read this information into the record.)

Name: TODD BIBZA

Address: 538 ST TROPEZ CIRCLE

City: ST PETERSBURG **Zip:** 33703

Email: TODDBIBZA@AOL.COM

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☐ **Group Speaker** (see additional details on the back of this card)

Agenda date: 10/22/19

Agenda item number *(NOT case number)*: 43

Speaking:

For ☒ **Against** ☐ **Undecided** ☐

Waive speaking:

In Support ☐ **Against** ☐

(The Chairman will read this information into the record.)

Name: Jessica Biba

Address: 538 St. Tropez Circle NE

City: St. Petersburg **Zip:** 33703

Email: Bibaj@nwf.org

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☒ **Individual** (3 minutes)

☐ **Group Speaker** (see additional details on the back of this card)

Agenda date: 10/22/19

Agenda item number *(NOT case number)*: #43

Speaking:

For ☒ **Against** ☐ **Undecided** ☐

Waive speaking:

In Support ☐ **Against** ☐

(The Chairman will read this information into the record.)

Name: Roger Wilson

Address: P.O. Box 3418

City: Seminole, Fla **Zip:** 33775

Email:

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Public Hearing Item:

☑ **Individual** (3 minutes)

☐ **Group Speaker** (see additional details on the back of this card)

Agenda date: 10/22/19

Agenda item number *(NOT case number)*: 43

Speaking: approval of ordinance to prohibit horse-back riding in Pinellas waters

For ☑ **Against** ☐ **Undecided** ☐

Waive speaking:

In Support ☐ **Against** ☐

(The Chairman will read this information into the record.)

Name: Ann Paul

Address: 410 S Ware Blvd #702

City: Tampa **Zip:** 33619

Email: apaul@audubon.org

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Public Hearing Item:

☒ **Individual** (3 minutes)

☐ **Group Speaker** (see additional details on the back of this card)

Agenda date: 10/22/19

Agenda item number *(NOT case number)*: 43

Speaking:

For ☒ Against ☐ Undecided ☐

Waive speaking:

In Support ☐ Against ☐

(The Chairman will read this information into the record.)

Name: JOHN HOOD

Address: 207 FLAMINGO RD

City: BELLEAIR **Zip:** 33756

Email: jhood2@tampabay.rr.com

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Public Hearing Item:

☒ **Individual** (3 minutes)

☐ **Group Speaker** (see additional details on the back of this card)

Agenda date: 10/22/19

Agenda item number *(NOT case number)*: 19-1420A

Speaking:

For ☒ Against ☐ Undecided ☐

Waive speaking:

In Support ☐ Against ☐

(The Chairman will read this information into the record.)

Name: Heather Young

Address: 4000 Gateway Centre Blvd, Suite 100

City: Pinellas Park **Zip:** 33782

Email: heather@tbrpc.org

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Public Hearing Item:

☒ **Individual** (3 minutes)

☐ **Group Speaker** (see additional details on the back of this card)

Agenda date: 10-22-2019

Agenda item number *(NOT case number)*: 4319-1420A

Speaking:

For ☒ **Against** ☐ **Undecided** ☐

Waive speaking:

In Support ☐ **Against** ☐

(The Chairman will read this information into the record.)

Name: SANDRA CHIAPPETTA

Address: 7235 14th AVE S.

ST PETERSBURG FL 33736

City: ST PETERSBURG **Zip:** 33707

Email:

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☒ **Individual** (3 minutes)

☐ **Group Speaker** (see additional details on the back of this card)

Agenda date: 10/22/19

Agenda item number *(NOT case number)*: 43

Speaking: Ordinance re operation of horseback riding ordinance

For ☒ **Against** ☐ **Undecided** ☐

Waive speaking:

In Support ☐ **Against** ☐

(The Chairman will read this information into the record.)

Name: Barbara Sheer Todd

Address: 8462 35th Ave No

City: St. Petersburg **Zip:** 33710

Email: Barbsheertodd@gmail.com

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SANDRA CHIAPPETTA

Pinellas County Seagrasses meeting

So many living mangrove shorelines, oyster banks and sea grass beds were lost in Pinellas County during the dredge and fill heyday of rapid development that protecting what little we have left is no longer optional.

Cumulative damage over time from many sources increases stress to sea grass beds bit by bit until they reach a tipping point and collapse like recently happened in Biscayne Bay, Florida Bay and the Indian River Lagoon. Now those communities are scrambling to meet the need to generate hundreds of millions of dollars in tax revenue for attempted restoration of their lost sea grass beds.

Many cumulative stressors threaten sea grass - some natural such as hurricanes, increasing bay water temperatures and changes in salinity - and some man made - aging leaking sewage lines and septic tanks, boat wake turbity clouds near seawalls along with nutrient laden runoff in heavily populated areas that reduces water clarity and increases harmful algae blooms, trampling, anchoring and boat prop scarring, fertilizer use in combination with nutrient laden reclaimed water, and loss of natural mangrove shorelines and oyster beds to water front developments.

In addition, many boaters are unaware of the important role of seemingly bare living benthic bottom, seagrass tufts and rhizomes roots that extend far out horizontally from the visible edge of sea grass beds. These areas are even more easily damaged and seeds buried too deep to germinate by activities such as trampling, anchoring and prop scarring, digging, and power boat and jet-ski washout.

Sea grass, living mangrove shorelines and oyster banks work together to filter and clean our water to increase water clarity, protect recreational water quality and prevent harmful algae blooms.

Reducing as many man made cumulative negative impacts as possible allows our marine ecosystems to better handle the natural stressors that we have no control over. Restoring and protecting our shared resources improves water clarity which then allows sea grass beds to regenerate and expand improving water clarity even more.

Adding living shorelines and building living seawalls instead of traditional seawalls at all new water front developments with no more mangrove removal, requiring mandatory rain sensors on sprinkler systems, limiting fertilizer use even in the dry season, promoting oyster gardens and building oyster reef balls and oyster banks, insisting on more green space water filtering areas in all new developments are all solutions that are much much cheaper than the too little too late multi million dollar restoration studies and strategies that become necessary after a collapse.

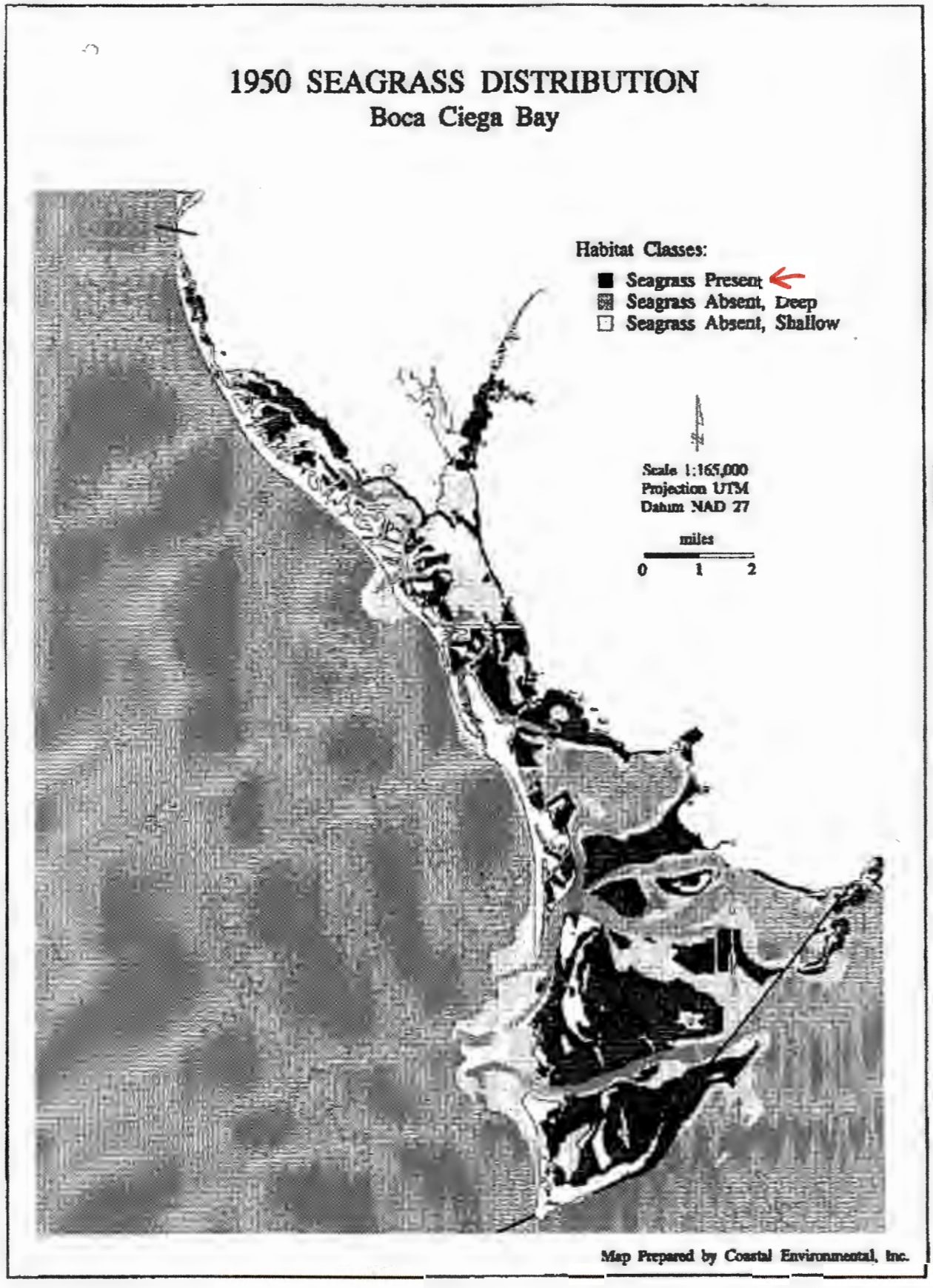
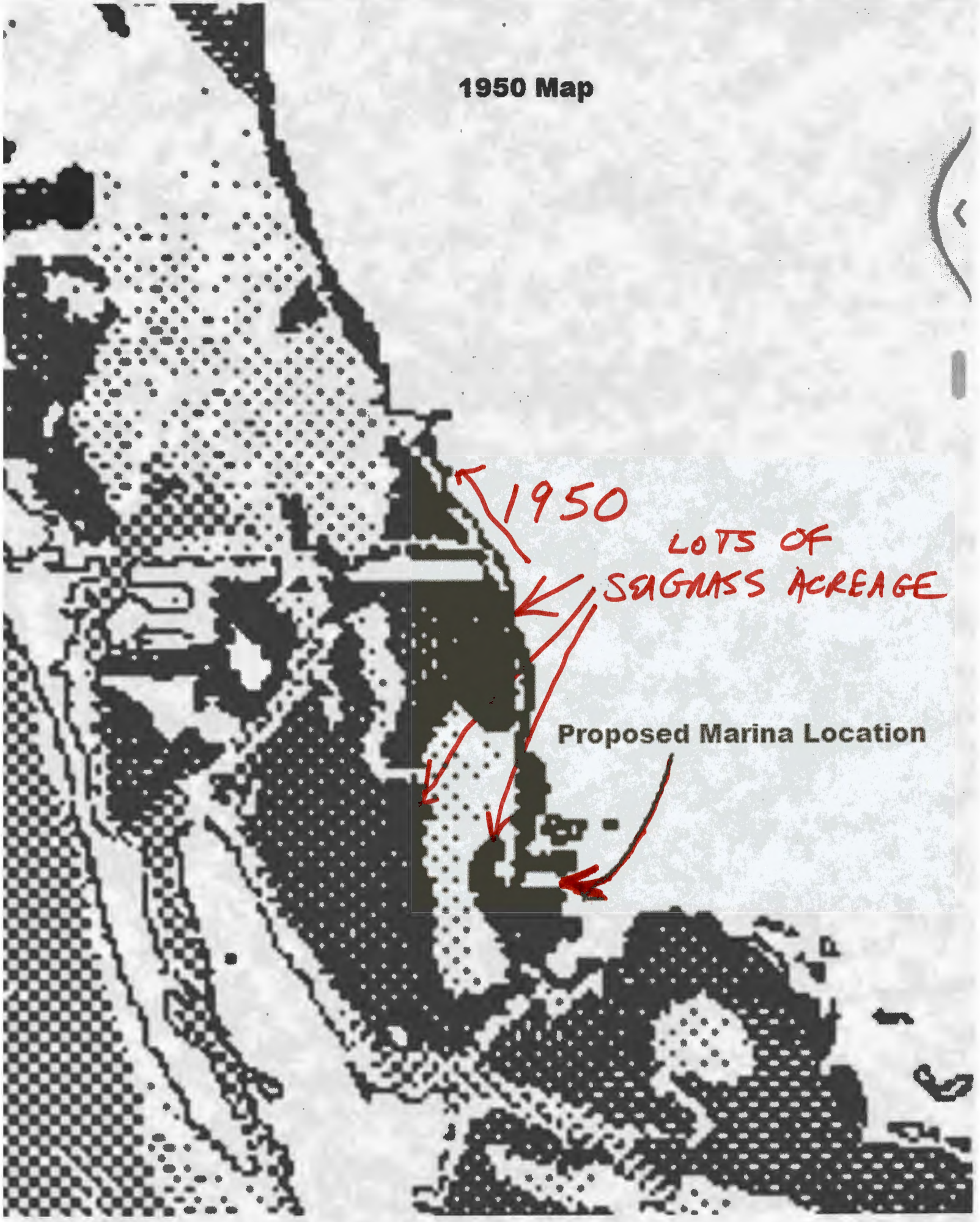


Figure 4.6 1950 Seagrass distribution in Boca Ciega Bay. Data source: FDNR and USFWS cooperative study.


1950 Map
1950
LOTS OF
SEAGRASS ACREAGE
Proposed Marina Location

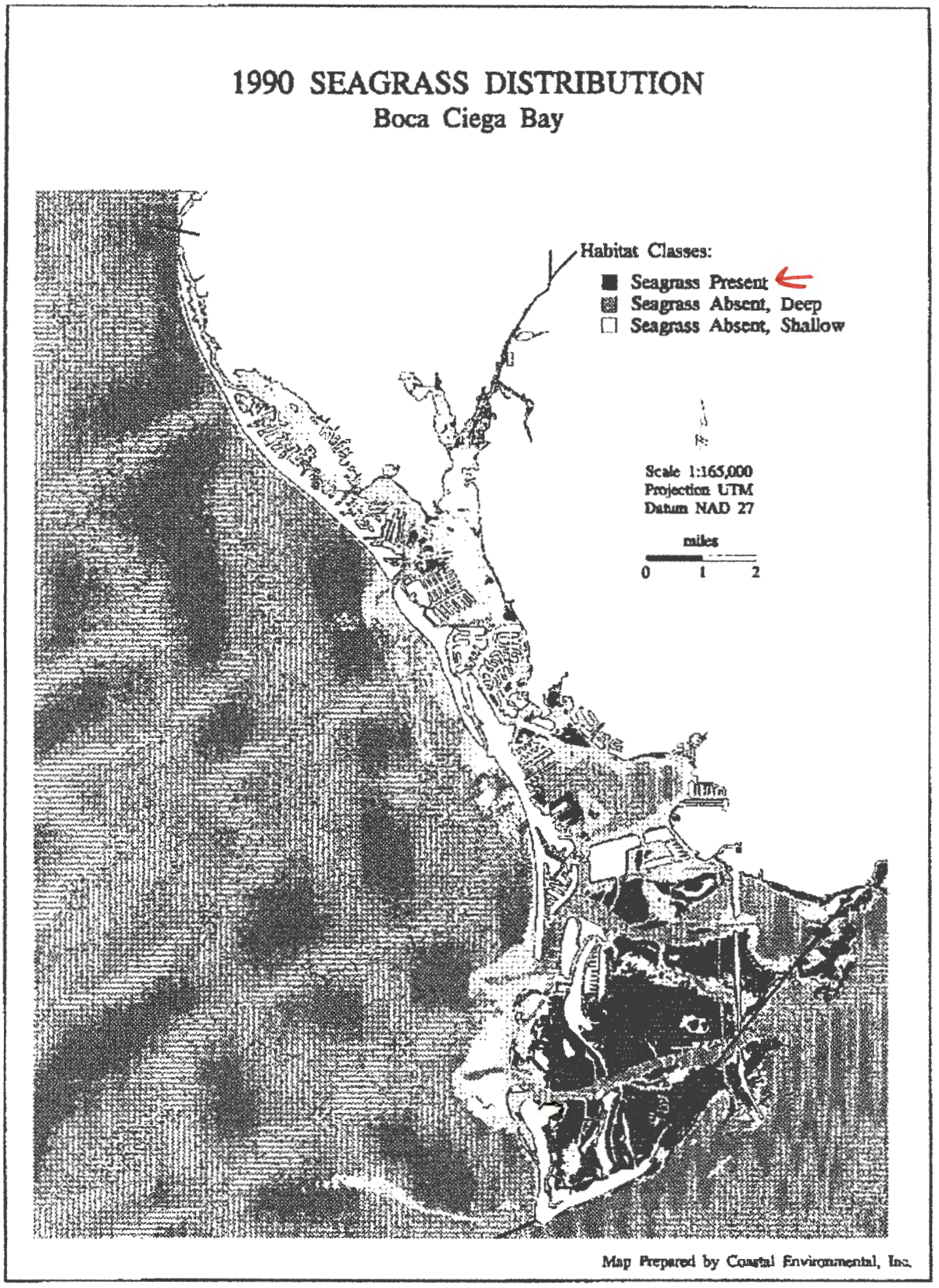
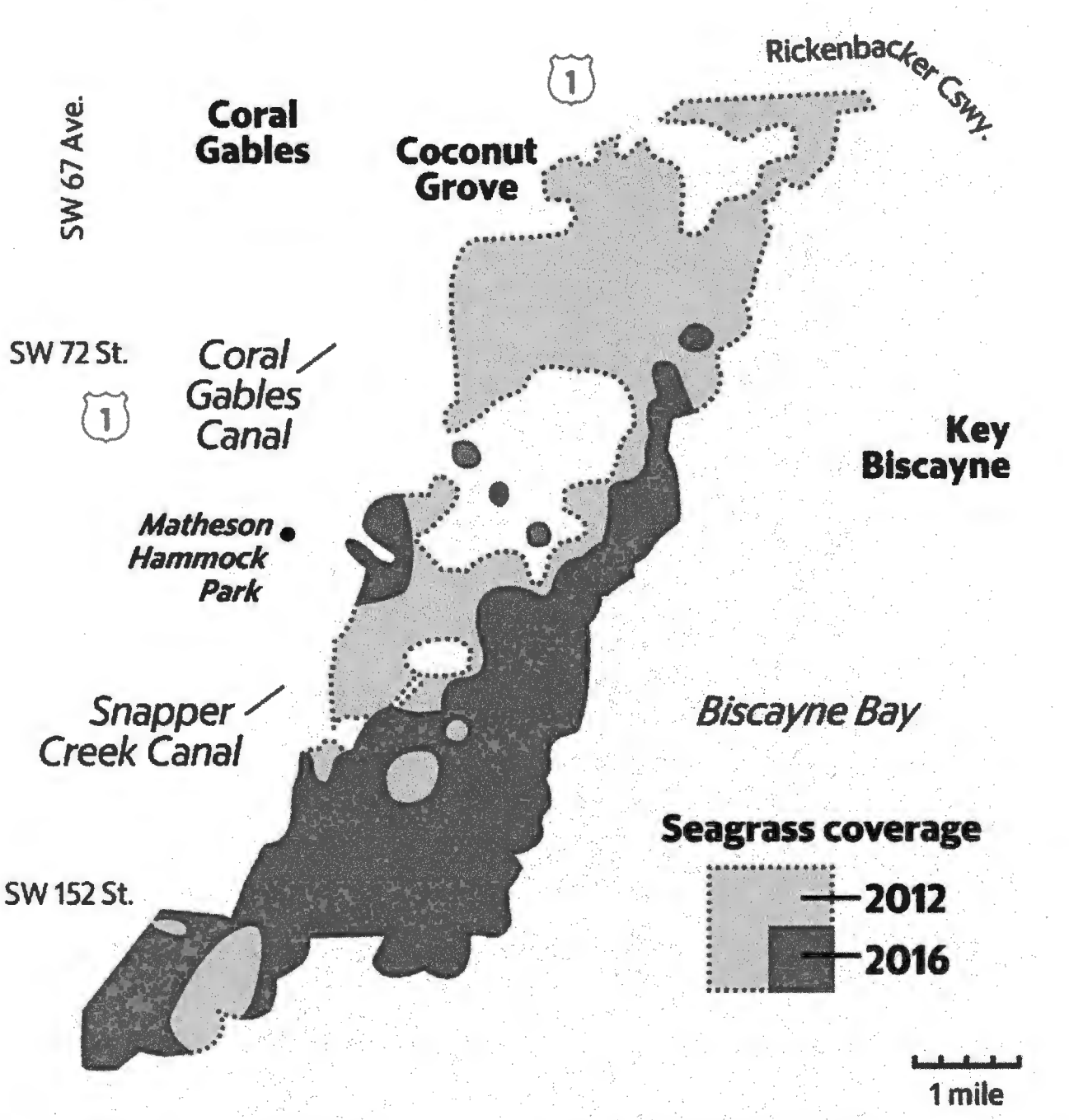


Figure 4.14 1990 Seagrass distribution in Boca Ciega Bay. Data source: SWFWMD SWIM Program.


1990 - VERY LITTLE SEA GRASS LEFT
RESTORATION TARGET AREA
PROTECTED SEAGRASS
CAUSEWAY VILLAGE

Biscayne Bay's shrinking seagrass

Since 2012, seagrass meadows in the central and southern parts of Biscayne Bay have shrunk dramatically. Scientists are now trying to figure out how the die-off is related to persistent algae blooms and worsening water conditions.



Sources: Miami-Dade County and FIU

KARA DAPENA kdapena@miamiherald.com

Miami Herald

ENVIRONMENT

Seagrass keeps dying in Biscayne Bay. Is it getting too sick to recover?

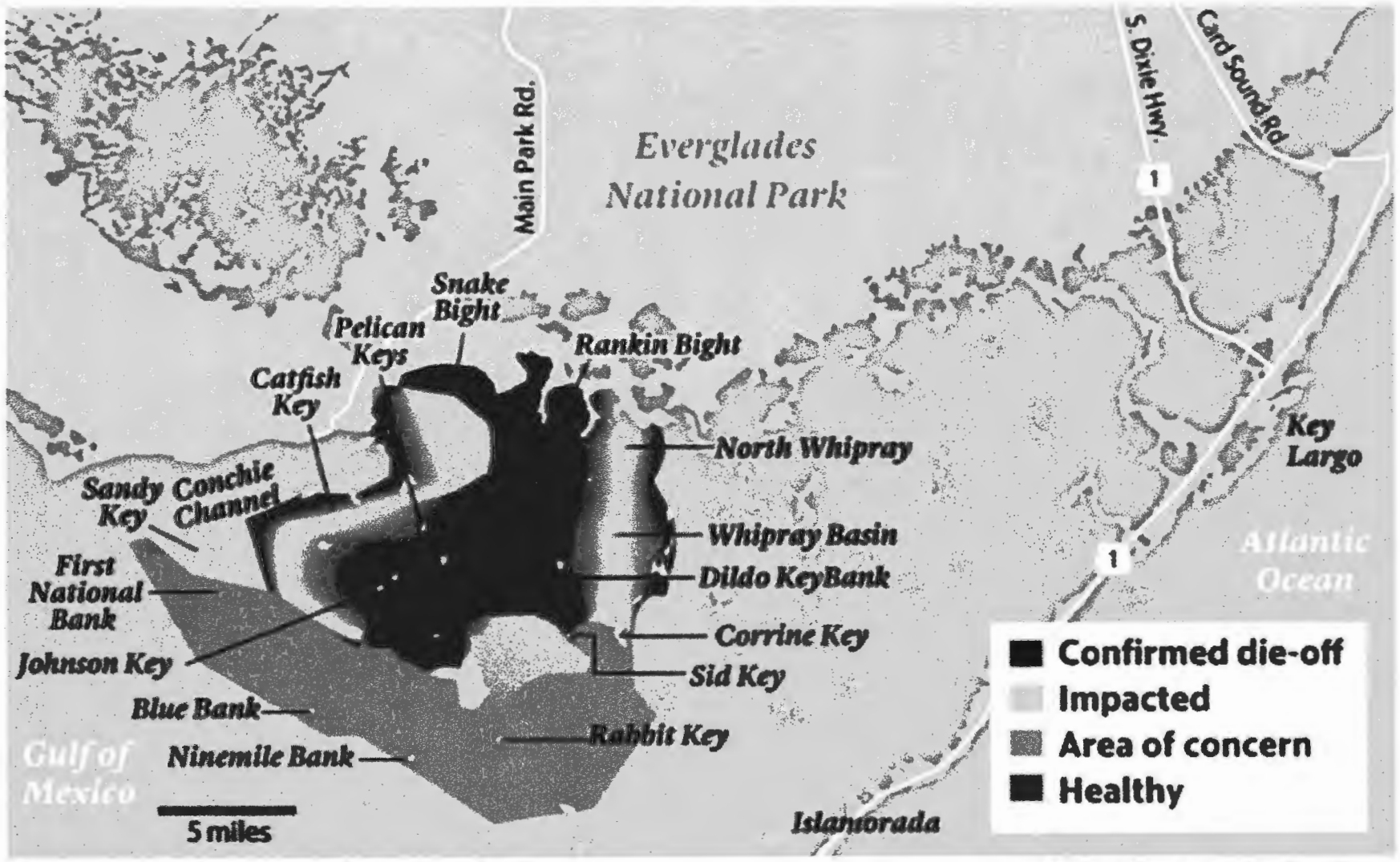
BY JENNY STALETOVICH
jstaletovich@miamiherald.com

chemistry. Or it could be the usual suspects that have worsened water quality across the bay: aging leaky septic systems, water flowing from dirty canals filled with high levels of nutrients that don't jibe with the bay's need for low phosphorus levels; or periods of drought followed by heavy rain that upset salinity.

The biggest new X factor for some scientists could be the increased pumping of untreated stormwater from Miami Beach. The city has installed a massive pumping system that filters out large debris and oil but does nothing to treat nutrients like fertilizer or dog poop from yards or human waste from leaky sewer pipes.

Seagrass die-off in Florida Bay

Since 2014, scientists say more than 62 square miles of seagrass has died in Florida Bay. While a rainy winter helped stop the trend, summer heat could rekindle the losses or trigger damaging algae blooms. The toll could approach the massive die-off of 1987, when 94 square miles of the bay's ecosystem collapsed.



Source: South Florida Ecosystem Restoration Joint Group

MARCO RUIZ mruiz@miamiherald.com

threatens wildlife-rich lagoon

May 4, 2017 by Jason Dearen And Mike Schneider

In this June 29, 2016 file photo, boats docked at Central Marine in Stuart, Fla., are surrounded by blue green algae. The 153-mile-long Indian River Lagoon has been plagued by harmful algae blooms. Water quality testing data analyzed by the AP showed the average

INDIAN RIVER LAGOON COLLAPSE

The lagoon's woes threaten the region's $2.5 billion recreation, fishing and tourism economy, alarming kayak tour operators, charter boat captains, restaurateurs and organizers of bird-watching festivals.

Environmentalists are distressed to see the lagoon's rich variety of life threatened in a crisis similar to what has happened in recent decades in such places as the Chesapeake Bay, Lake Erie and the Gulf of Mexico.

Although the federal and state governments have spent hundreds of millions of dollars to heal the lagoon in recent years, an Associated Press examination found that pollution spiked, algae blooms spread and fish kills worsened over the past decade and a half as central Florida's population swelled faster than that of anywhere else in the state.

Algae Again Threatening Indian River Lagoon

By THE ASSOCIATED PRESS • MAR 4, 2018

Tweet Share Google+ Email

PHOTO COURTESY BREVARD COUNTY

Scientists are seeing concerning levels of algae this year in Florida's Indian River Lagoon just two years after massive blooms led to the worst fish kills on record.

measuring similar algae levels in the lagoon's waters that they saw before the devastating 2016 blooms.

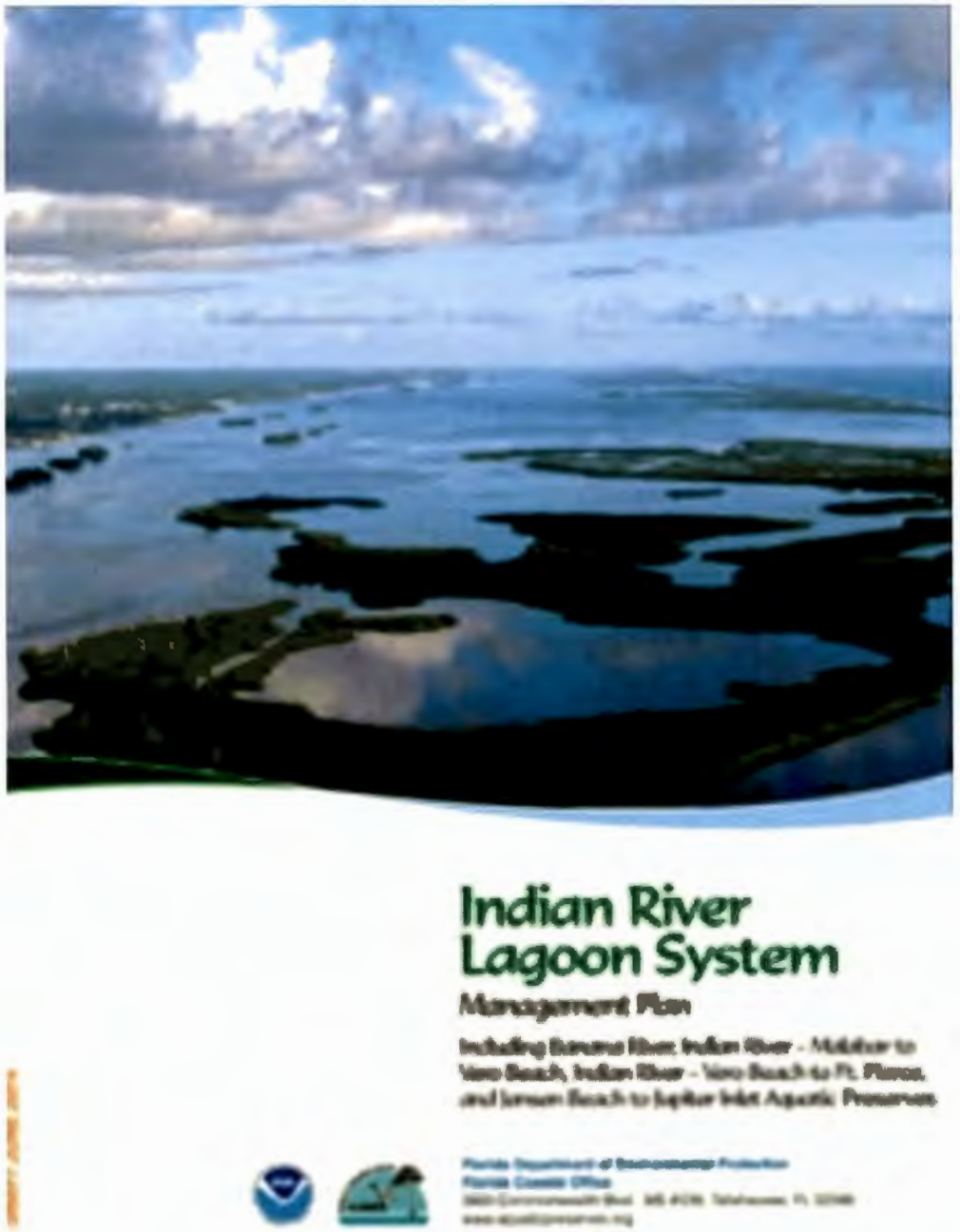
The lagoon on the state's Atlantic Coast is one of the most biologically diverse waterways in the nation.

When algae grow at high concentrations in the water they remove oxygen used by fish, manatees and other creatures.

Kayakers are reporting that the lagoon's waters appear olive-brown in color, rather than clear as in years past.

While no fish kills have been reported yet, biologists are worried that the problem will worsen as temperatures rise.

DEP's "2014 Indian River Lagoon System Management Plan" for the Once Outstanding Waters of Our Aquatic Preserves



Cover of NOAA/DEP "Draft"Indian River Lagoon System Management Plan, 2014.

Indian River Lagoon Half Penny Tax

Brevard sales tax to help clean Indian River Lagoon

Ailing Indian River Lagoon

Sea grass in a small wave at Mosquito Lagoon February 17, 2016. An outbreak of brown algae has turned the Indian River and Mosquito Lagoon east of Orlando into a muddy-looking mess again. The concentration of algae is as bad or worse than three years ago when an algae eruption was followed by a die off of manatees, dolphins and pelicans. Long celebrated as one of the nationÂ?s richest estuaries, the Indian River along much of FloridaÂ?s east coast is in a spiral of decline triggered by polluted ditch water from local and inland sources. Brown algae was never known as a problem in the lagoon until this decade. ItÂ?s too early to say if critical sea grass, fish and wildlife are in jeopardy. (Red Huber/Staff Photographer) (Red Huber / Orlando Sentinel)

Kevin SpearBy Kevin Spear•Contact Reporter

The half-cent sales tax will bring in more than $30 million annually.

January 10, 2017, 4:40 PM

Brevard County has begun collecting a half-cent of sales tax aimed at achieving what stymied state government for years: recovery of the sickly Indian River Lagoon.

"Now we have skin in the game," said Jim Barfield, a county commissioner, repeating a widely used phrase meant to convey pride in voter approval of the tax and a challenge for Florida agencies to step up efforts for the ailing lagoon.

County officials expect the half penny to bring in more than $30 million a year for a decade to clean out the algae and muck linked to frequent, mass killings of manatees, dolphins, game fish, coastal birds and life-supporting sea grass.

Devoted to restoration of a specific environment, where projects will include extensive muck dredging and sewerage upgrades, the tax may be the only of its kind in Florida, according to officials familiar with such initiatives. It won 62 percent of ballots in November, took effect Jan. 1 and starts providing revenue in March.

"Every precinct in our county supported it," said Barfield, the owner of a medical-services company that gave $10,000 to the campaign backing the referendum. "That's unheard of."

Indian River Lagoon will see changes due to a half-penny increase in sales tax. After several years of environmental horror stories from the Indian River Lagoon, Brevard County voters last month overwhelmingly approved a half-penny increase in sales tax to restore the ailing coastal estuary. The measure will raise more than $300 million during the next decade.

Separated from the Atlantic Ocean by a string of barrier islands, the 156-mile lagoon spans dozens of communities and five counties from Ponce Inlet in Volusia to Jupiter Inlet in Palm Beach County. Its mix of ocean and fresh water supports one of the nation's richest marine ecosystems.

The lagoon came under assault decades ago by pollutants from septic tanks, sewer plants, stormwater runoff and agricultural drainage established according to now-outmoded state rules.

While the coastal treasure is chiefly under Florida guardianship, Brevard officials have stressed that restoration is a pressing concern for the local economy.

Nearly half of the lagoon's length and nearly three-quarters of its area are within the county.

"There is a $2 billion upside of potential economic gain with restoration," said Al Vazquez, whose investment-analysis company Closewaters LLC of Satellite Beach assessed the county's stake in the lagoon's fate. "There's a very conservative $4.3 billion potential economic loss if we don't restore it."

Gains or losses during a 30-year window considered by CloseWaters will hinge largely on tourism, property values and commercial fishing.

Vazquez has encouraged county leaders to accelerate restoration by borrowing against future revenues of the half-cent tax.

Nearly all of the more than $300 million in tax revenue will have to be spent to reach a "tipping point" when the lagoon becomes healthy enough to avoid losses, Vazquez said.

The cost of borrowing money would be less than the losses arising from taking as long as a decade to restore Brevard's share of the lagoon, he said.

"We will be at risk until this is fully implemented," Vazquez said.

Virginia Barker, director of Brevard's department of natural resources, said the county is pushing to establish an oversight committee, set up funds and accounts, and coordinate with cities to select "shovel-ready" projects.

She warned of potential setbacks and disputes.

"It's going to be easy to find things that we disagree about," said Barker, speaking recently to a gathering of environmentalists. "We have to stick with the big picture."

State experts have said they don't know precisely why the lagoon's health seemed to be on the upswing a decade ago before the system's waters became plagued with algae and deadly for sea grass and wildlife.

Yet, Brevard leaders have goals for a restored lagoon: mostly sandy bottom; well-oxygenated water and few fish kills; water clarity that allows visibility of the bottom; and sea grass as widespread as before the Kennedy Space Center and extensive development arrived.

R. Grant Gilmore Jr., a senior scientist at Estuarine, Coastal and Ocean Science Inc., a research and consulting company in Vero Beach, said the lagoon's chemistry and biology are difficult to understand.

Added to that is ongoing sea rise and the increasing chance that storms could carve new, system-altering inlets between the Atlantic and lagoon.

Gilmore said muck removal and sewer upgrades "are good, constructive things that will have a positive impact. But you have to recognize the lagoon is a very complex system."

Drew Bartlett, who heads ecosystem restoration at the Florida Department of Environmental Protection, said his agency will seek to partner with Brevard as the county ramps up lagoon projects.

"We want to get into a long-term, cost-share relationship to do septic-to-sewer, to pull muck out of the lagoon, to address those stormwater issues because all of them need to happen," Bartlett said.

Previously, according to the county's chairman, Barfield, relying on the water district and the state Department of Environmental Project had been marked by delays and frustration.

"It was a waste of county resources," he said.

Barfield hopes that will change, now that Brevard has cash to motivate cooperation.

Brevard voters picked a different path than the one set by Gov. Rick Scott in cutting funding for environmental protection.

After Scott took office in 2011, he and lawmakers slashed budgets of the state's water districts and then lauded the resulting cuts in residential property taxes of less than $50 annually for a typical home.

Brevard voters, however, opted to increase their annual sales-tax bill by more than $60 for a typical family, according to county officials.

"It's not like we are just standing here with our hand out," said Laurilee Thompson, owner of the Dixie Crossroad restaurant in Titusville and member of Brevard's Tourism Development Council. "We've got skin in the game."

kspear@orlandosentinel.com

Indian River Lagoon ½ Cent Sales Tax Referendum

Invest in the future of Brevard County's community and economy.

Brevard County residents have the opportunity to vote for a win-win policy this November that will create a dedicated, multi-year funding stream to restore and protect the Indian River Lagoon system – supporting local industry, sustaining wildlife, and providing a beautiful place for families to experience and connect with nature.

The **Save Our Lagoon Referendum**, which will appear on the November 8 ballot, will ask voters to approve an ordinance to:

- levy a ½ cent Brevard County sales tax
- deposit all revenue in a Save the Lagoon Trust Fund, every dollar of which will be used solely for the implementation of the 10-year Save Our Lagoon Project Plan
- mandate oversight via both a citizen committee and annual, independent audits

The Save Our Lagoon Project Plan, developed by Brevard County's Natural Resources Management Department with input from outside consultants and experts, will help restore Indian River Lagoon over 10 years through upgrades to wastewater treatment facilities, muck removal, stormwater projects, septic system removal and upgrades, fertilizer management, oyster reef projects, living shorelines, and public education.

$7 billion

Indian River Lagoon sustains local industry valued at more than $7 billion, shelters unique wildlife, and offers unmatched recreation opportunities for locals and tourists alike.

Restoring a once world-class fishery is a key objective of the plan.

Photo: Dolphin swimming in lagoon. © TNC (Gabriel Reynoso)

FAQ

What is wrong with the Indian River Lagoon?
It's clear the Indian River Lagoon is suffering. For decades, fertilizer, runoff, wastewater and pollutants have washed into this vital body of water. The resulting abundance of nutrients feeds algae blooms, blocks sunlight and deprives fish and plants of the oxygen they need to live. We've been fighting this in piecemeal fashion but are losing the battle.

How can the Lagoon be restored?
Brevard County's Natural Resources Management Department developed the 90-page Save Our Lagoon Project Plan based on the most current data, with input of scientists and water management experts to comprehensively address the most harmful sources of pollution in the Lagoon. It's a four-step process: remove the muck; restrict the flow of septic, fertilizer, storm water and pollutants; restore the oysters, clams and sea grasses; and respond and adjust as new data comes in.

How much will it cost to fix the Lagoon and how do we fund it?
Brevard County and economists estimate the plan can be successfully implemented for $302 million over 10 years. On November 8, Brevard County residents can vote for a healthy Lagoon with a ½ cent sales tax that will generate approximately $34 million annually. This creates a dedicated fund created by tourists, residents and businesses – that's controlled by Brevard County.

Are federal and state government funds available?
Once the County creates a fund to clean and restore the Lagoon, they will apply to the State and/or Federal government to match those funds. The matched funds will go into the Lagoon Trust, under close watch of the Lagoon Oversight Committee to ensure every cent will be spent as intended.

Why should we pay for it?
The Lagoon is the lifeblood of our area, connecting all Brevard residents. The Plan will maintain our property values, bring back commercial fishing, grow recreational tourism and employment opportunities and ensure a legacy for generations. We need to protect our economy, health and safety, and Brevard's reputation.

How can I be confident that the money will be spent on the Lagoon?
The money goes into a Lagoon Trust Fund and can be spent only on capital (new) infrastructure projects and programs related to the Lagoon. A seven-person Oversight Committee of experts in science, technology, economics/finance, real estate, education/outreach, tourism and lagoon advocacy will be our eyes and ears to ensure every cent is managed in accordance with the Plan.

Why is this a good deal for Brevard County?
Independent economists tell us the Lagoon Plan is valued at $6.2 billion with a strong return on investment, depending on how quickly the plan is implemented. By turning the fate of the Lagoon now, we increase the value of our homes and our community, while boosting our economy in the near and long-term. We have the opportunity to act now -- the sooner we invest, the quicker we benefit.

Why does Indian River Lagoon need to be restored?

The health of this incredible natural resource has been declining in recent years as evidenced by algae blooms, brown tide, fish kills and an unusual number of unexplained deaths of dolphins, manatees and pelicans. Without action, water quality and functionality of the Indian River Lagoon will continue to worsen, resulting in significant losses to revenue and property values.

Experts in science, technology, and water resources have identified specific problems to address and developed targeted, science-based solutions, including:

- **Remove** layers of nutrient-rich muck that have accumulated on the bottom of the Lagoon over the course of many years – leading to algae blooms and other damaging impacts.
- **Reduce** pollution and flow of excess nutrients into the Lagoon by addressing aging wastewater and septic systems, stormwater runoff, and fertilizer management.
- **Restore** natural filters and oxygen-producing systems through oyster reefs, wetlands, seagrass beds, and mangroves.
- **Respond** and adjust as dictated by monitoring and data collection to best ensure the long-term health of the Lagoon and Brevard County.

The Nature Conservancy
Protecting nature. Preserving life.

BREVARD
INDIAN RIVER LAGOON
COALITION

mattresses and even car seats. But it's what they do in their native habitat that has the biggest benefits for humans and the ocean.

Seagrasses support commercial fisheries and biodiversity, clean the surrounding water and help take carbon dioxide out of the atmosphere. Because of these benefits, seagrasses are believed to be the third most valuable ecosystem in the world (only preceded by estuaries and wetlands). One hectare of seagrass (about two football fields) is estimated to be worth over $19,000 per year, making them **one of the most valuable ecosystems on the planet**.

THEY ALSO ADD →OXYGEN← TO THE WATER

Natural and anthropogenic causes

The likely primary cause of seagrass loss is reduction in water clarity, both from increased nutrient loading and increased turbidity. Run-off of nutrients and sediments from human activities on land has major impacts in the coastal regions where seagrasses thrive. The relatively high light requirements of seagrasses make them vulnerable to decreases in light penetration of coastal waters. Along temperate, more industrialized coasts, the losses of water clarity come from rapidly increasing inputs of nitrogen and phosphorus from waste discharge, atmospheric deposition, and watershed run-off. In contrast, in tropical areas, the major impacts on water clarity are extensive sediment discharge into coastal waters caused by watershed deforestation and clearing of the mangrove fringe.

Worldwide, anthropogenic nutrient over-enrichment of coastal waters is the factor responsible for much of the reported seagrass decline. The primary cause of nutrient enrichment in estuarine and coastal waters is anthropogenic loading from coastal watersheds. In general, pristine estuaries and coastal seas are nitrogen-limited and nitrogen inputs from point and non-point sources causes eutrophication. Increased nutrient loading is widely acknowledged to alter the structure and function of coastal ecosystems. In addition to nutrient inputs from land, increased nutrient inputs are also occurring in coastal areas adjacent to industrialized regions of the world through direct atmospheric deposition of nitrogen, providing additional nutrients that can only be reduced at the source.

Poor land use practices also result in increased soil erosion and the delivery of vast quantities of sediment into coastal waters. Removal of terrestrial vegetation leads to erosion and transport of sediments through rivers and streams to estuaries and coastal waters where the suspended particles create turbidity that reduces water clarity and and increase sedimentation above levels tolerable to seagrass.

Direct human impacts to seagrasses, in addition to the major indirect impacts discussed above, threaten the habitat particularly in densely populated areas. Direct impacts from human activity include: i) fishing and aquaculture, ii) introduced exotic species, iii) boating and anchoring, and iv) habitat alteration (dredging, reclamation and coastal construction). Fishing methods such as dredging and trawling may significantly affect seagrasses by direct removal. Damage to *Zostera marina* by scallop dredging reduces shoot density and plant biomass, and digging for clams can also exert extensive damage. Many of these impacts remain unquantified as yet, and their long term effects are poorly known. In the Mediterranean, the exploitation of marine resources, and the use of certain types of fishing gear like bottom trawls, has detrimental effects on seagrass beds. Mussel harvest in the Dutch Wadden Sea is believed to be a major factor in the loss of *Z. marina* and *Z. noltii* there.

Aquaculture is growing fast in both the Mediterranean and Atlantic European coast. Aquaculture has been shown to produce major environmental impacts, particularly due to shading, eutrophication and sediment deterioration through excess organic inputs. The effects of fish farms and other aquaculture developments are of concern as areas of productive seagrass habitats are often targeted for such developments, such as in the Mediterranean coast. Mussel culture adversely affects *Z. marina* and *Z. noltii* beds in France. Seagrass beds as far as 100 m from fish cages can be impacted by the delivery of feed to the fish.

The introduction of exotic marine organisms, from accidental release, vessel ballast water, hull fouling and aquaculture, remains an area of concern, particularly where the introduced species are competitors for soft bottom substratum such as the alga *Caulerpa* and the fan worm *Sabella spallanzanii*. Large scale engineering projects have also resulted in species invasion, such as that by the Lesepian migrant *Caulerpa racemosa*, introduced through the Suez Canal. The Suez Canal also allowed the introduction of the seagrass *Halophila stipulacea* into the Mediterranean.

Direct boat propeller damage to seagrass communities has been recorded, particularly in the Florida Keys, and is prevalent in shallow areas with heavy boat traffic. Boat anchoring leaves scars in *Posidonia oceanica* landscapes, as do boat moorings. Return of large temperate meadow-forming seagrasses to mooring scars may take decades. Docks and piers shade shoreline seagrass, an effect that may fragment the habitat. Boating may also be associated with organic inputs in areas where boats do not have holding tanks.

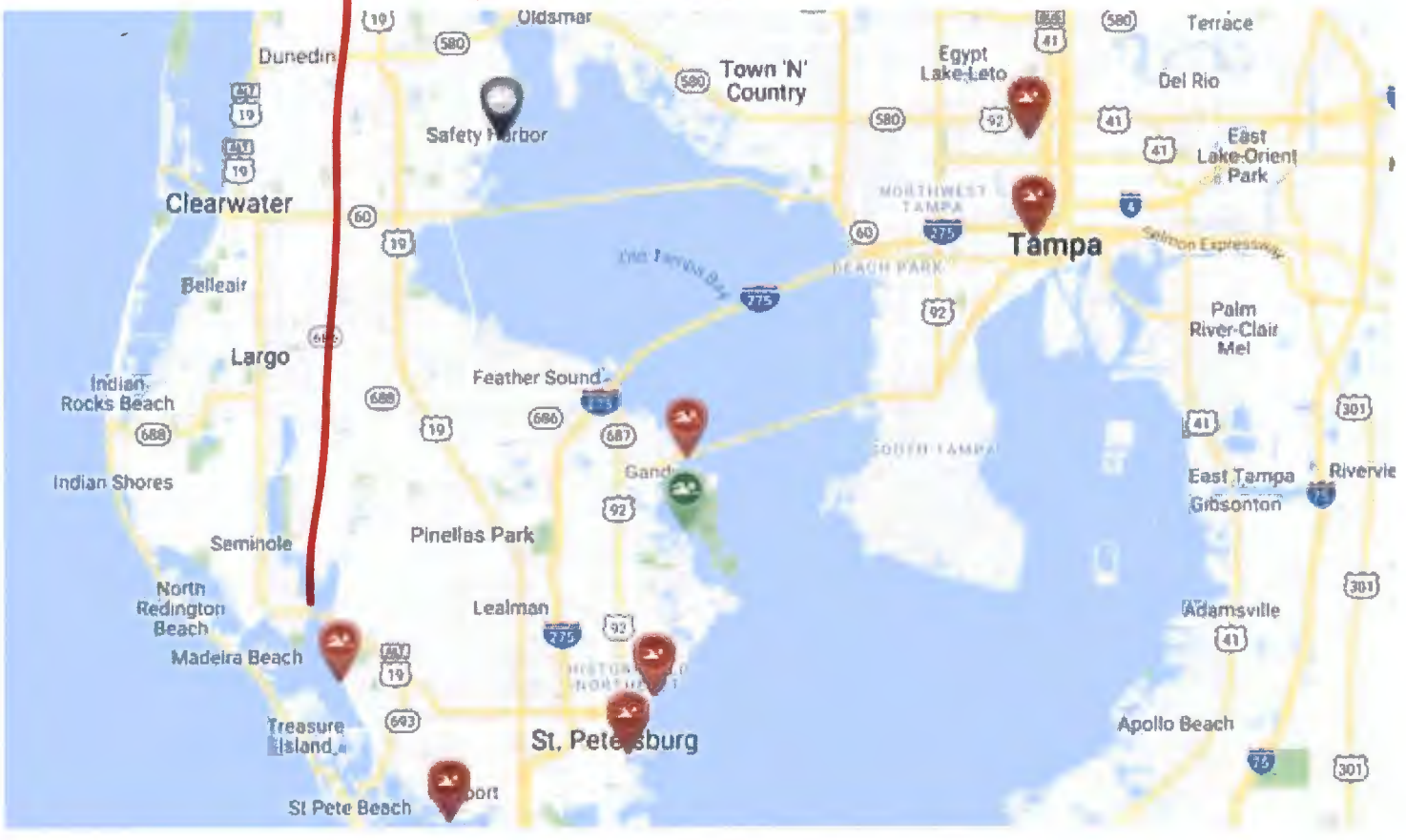
The development of the coastline, particularly related to increased population pressure, leads to alteration and fragmentation of habitats available for seagrasses in coastal waters. Coastal development, construction of ports, marinas and groynes, is usually localized to centers of

ALGAE BLOOM SOUTH PASADENA

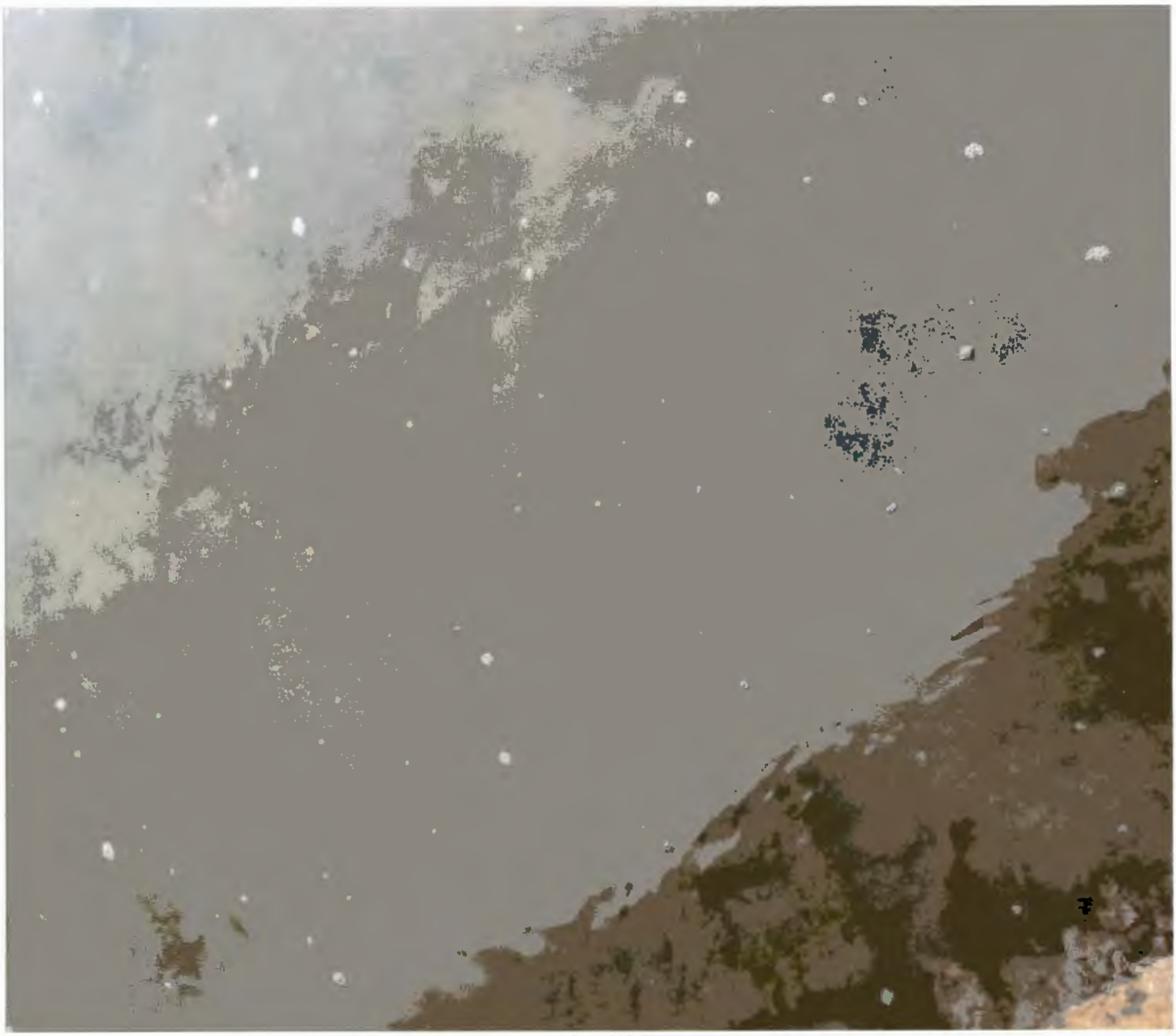
Tampa Bay Waterkeeper

Jan 25 at 5:26 PM •

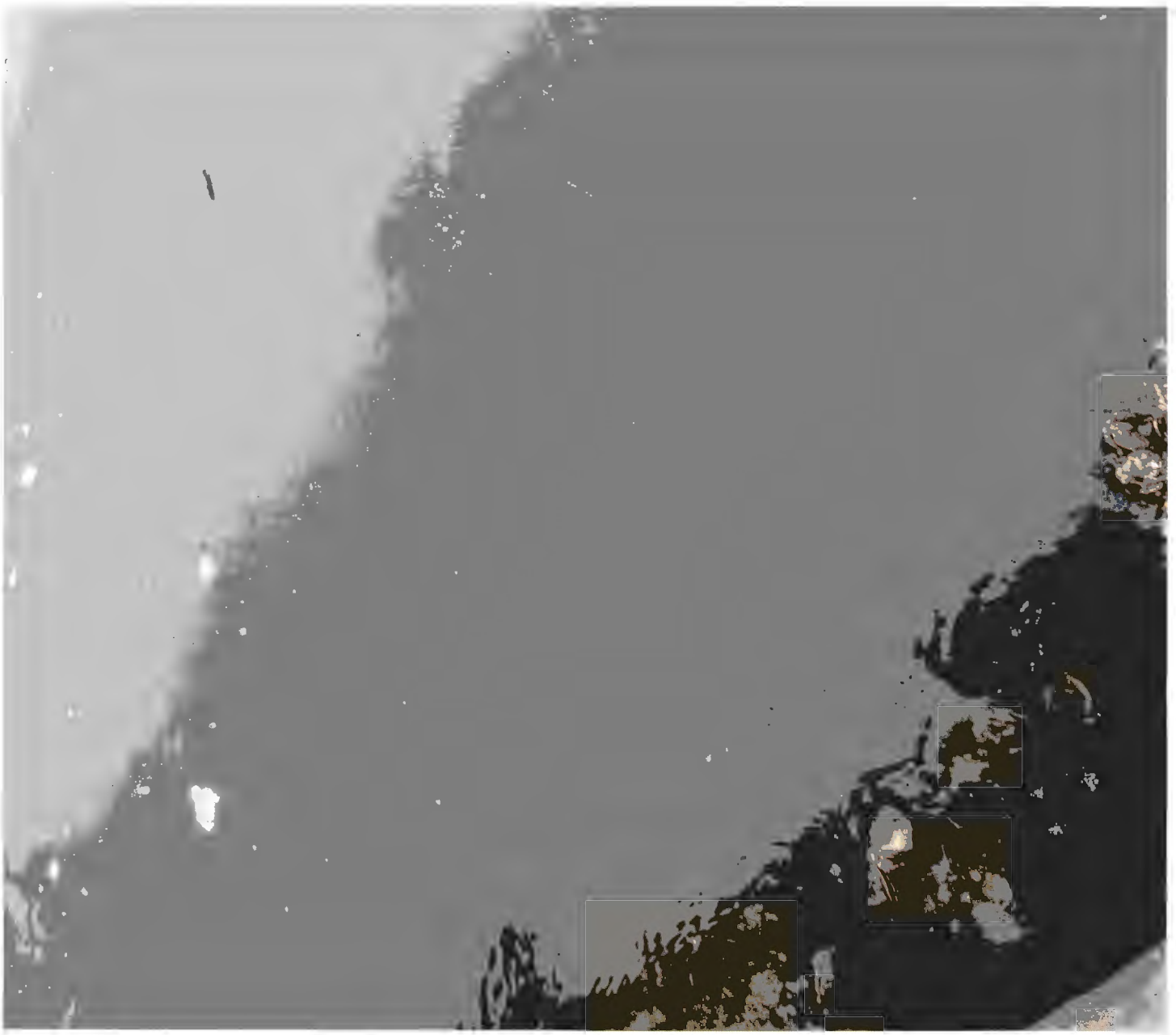
This is the worst week for recreational water quality that we've seen since launching this program last October. Undoubtedly, we have long term issues in our watershed with stormwater pollution and wastewater pollution, and a long road ahead in terms of policy and institutional change so that we can be leaders in the Tampa Bay watershed when it com... See More



ALGAE SMOTHERING OYSTERS IN SOUTH PASADENA.

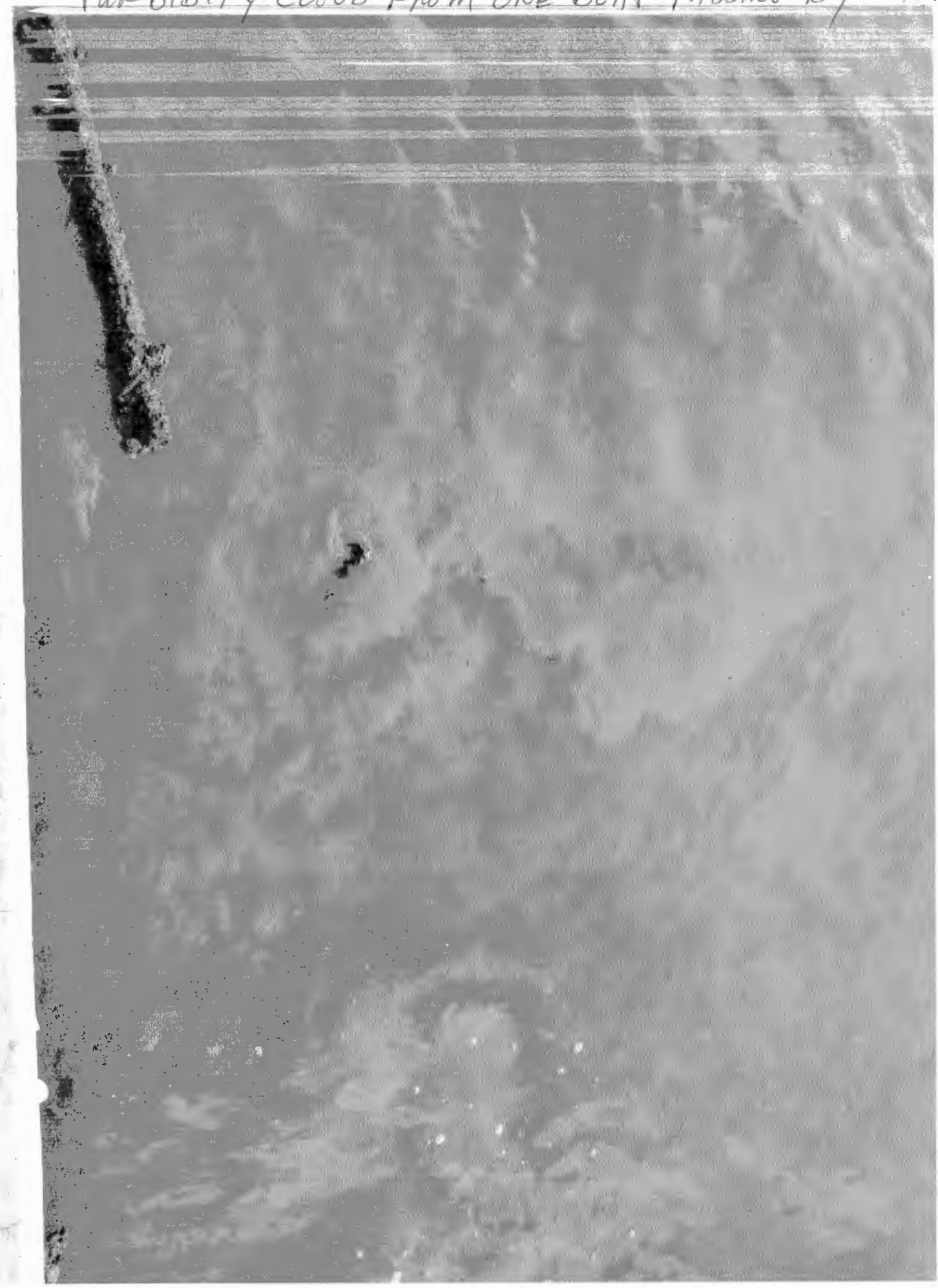


ALGAE AND POOR WATER CLARITY IN SOUTH PASADENA FL.



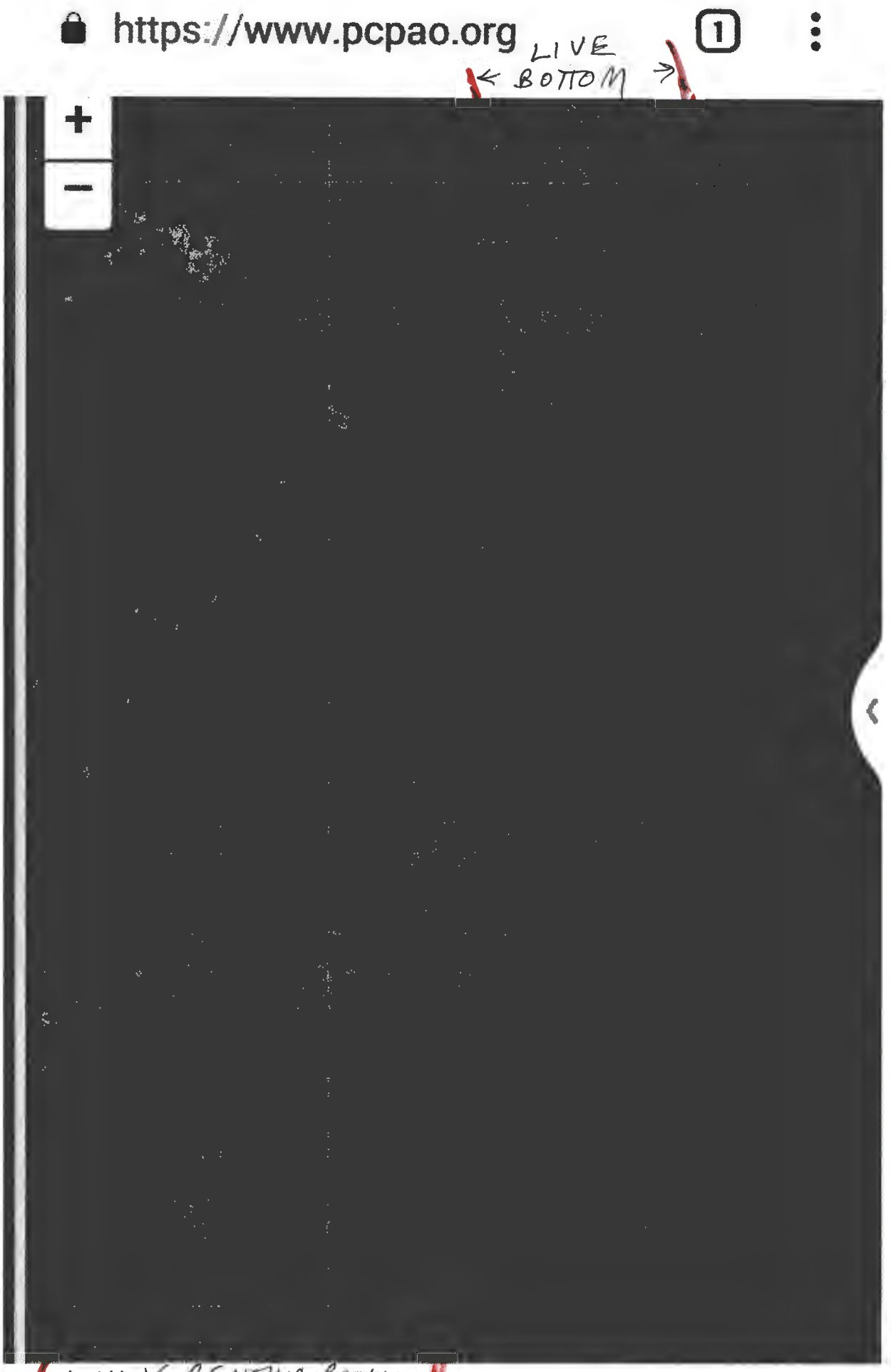
BOAT WAKE TURBIDITY CLOUD SMOTHERING OYSTER BANK IN SOUTH PASADENA FL.

TURBIDITY CLOUD FROM ONE BOAT PASSING BY SEAWALL



LIVING SEA GRASS RHIZOME ROOTS EXTEND FAR OUT HORIZONTALLY FROM THE VISIBLE "EDGE"

AREA BETWEEN DOTTED LINES IS LIVING SUPPORTIVE BENTHIC BOTTOM AND SEA GRASS ROOT SYSTEM



SEA GRASS ROOTS AND LIVING BENTHIC BOTTOM EXTENDS FAR OUT FROM THE VISIBLE "EDGE" PROTECTING THIS AREA TOO THOMAS SEA GRASS TO EXPAND

Tampa Bay Seagrasses Continue to Expand

EXCEPT IN BOCA CIEGA BAY WHERE RECOVERY IS LAGGING BEHIND!

Tweet Save G+ Like 0

Posted by The Fishing Wire on 10.Feb.2014

Tampa Bay gained 1,745 acres of seagrass between 2010 and 2012 – marking the fourth consecutive survey showing increases in this

Tampa Bay gained 1,745 acres of seagrass between 2010 and 2012 – marking the fourth consecutive survey showing increases in this valuable underwater habitat since 2006.

The latest results indicate that the bay is now just 3,358 acres shy of the Tampa Bay Estuary Program's goal of 38,000 acres of seagrass baywide. The good news about seagrasses reinforces recent water quality assessments that show all major bay segments met water clarity goals in 2012.

Tampa Bay now supports 34,642 acres of seagrasses – more than at any time measured since the 1950s. Water clarity also continues to be sufficient to foster continued seagrass recovery. Gains were documented in all bay segments except Boca Ciega Bay, which had a very slight loss of -0.1%, and the Manatee River, with a 12.9 % loss that is not a great concern to bay managers because the amount of seagrasses there already far exceeded historic levels.

BOCA CIEGA BAY IS LAGGING BEHIND

are the nurseries of the bay, sheltering and supporting a variety of juvenile fish and other marine creatures.

The Estuary Program's seagrass recovery strategy relies on controlling nitrogen loadings to the bay to maintain sufficient water clarity for seagrasses to grow. The Tampa Bay Nitrogen Management Consortium – an alliance of local governments and key industries bordering the bay – has collectively invested more than $500 million in projects to reduce nitrogen pollution since the 1990s. And several communities have adopted strict limits on the amount and type of fertilizer that can be applied to lawns to prevent summer rains from washing fertilizer residues into the bay.

"Continued progress towards Tampa Bay's seagrass recovery goal is one of our strongest indications that nutrient management actions being implemented by homeowners, agencies, businesses and industries are working to restore the bay" said TBEP Executive Director Holly Greening.

Middle Tampa Bay showed the largest acreage increase from 2010 to 2012, with 817 acres, a 10% boost. But, surprisingly, the largest percent increase, 73.2 percent or 612 acres, was in Hillsborough Bay — which surrounds densely developed Tampa and its large industrial port....

Seagrasses – which generally grow in waters less than 6 feet deep – are an important barometer of the bay's health because they require relatively clean water to flourish. They are the nurseries of the bay, sheltering and supporting a variety of juvenile fish and other marine creatures.

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Mapping and Monitoring Recommendations

- Continue biennial imagery acquisition and mapping. The most recent imagery was acquired in December 2013 and January 2014, and photo-interpretation and mapping efforts were completed in spring 2015.
- Continue seagrass monitoring carried out annually or quarterly by several agencies, including the Southwest Florida Water Management District (SWFWMD), Pinellas County, Manatee County, the Florida Department of Environmental Protection, and the Fish and Wildlife Research Institute of the Florida Fish and Wildlife Conservation Commission.

Management and Restoration Recommendations

- Continue reducing nitrogen inputs to the region to return phytoplankton productivity to low levels and to improve water clarity.
- Focus on trouble areas where seagrass cover is not increasing and determine why expansion is not occurring.
- Monitor the impact of propeller scarring and develop a proactive strategy for reducing impacts. Restore scarred seagrass beds as funding becomes available.
- Use the recently completed boating and angling guides for waters in the region to improve boater education and awareness of seagrass beds and to reduce propeller scarring.

Seagrass Status and Potential Stressors in the Tampa Bay region

Status indicator	Status	Trend	Assessment, causes
Seagrass cover	Green	Steady gains	All areas except Boca Ciega Bay
Seagrass meadow texture	Green	Stable	No significant changes
Seagrass species composition	Green	Stable	No significant changes
Overall seagrass trends	Green	Improving	Improving water quality
Seagrass stressor	**Intensity**	**Impact**	**Explanation**
Water clarity	Yellow	Improving	Affected by runoff and storms
Nutrients	Yellow	Relative low	
Phytoplankton	Orange	Moderate levels	Responsive to nutrients in storm runoff
Natural events	Yellow	Minimal impact	El Niño, tropical cyclones
Propeller scarring	Orange	Extensive	Heavy boat traffic

Table 1 Seagrass acreage in the Tampa Bay region, 1950–2014. Data from Photo Science Inc. and Kaufman (2015).

Bay Segment	1950	1982	1996	1999	2004	2006	2008	2010	2012	2014	Change 2012–2014 Acres	Change 2012–2014 %	Change 1950–2014 Acres
Hillsborough Bay	2,300	0	193	192	566	415	810	836	1,448	1,973	525	36%	-327
Old Tampa Bay	10,700	5,943	5,763	4,395	4,636	5,434	5,829	6,687	6,999	10,273	3,274	47%	-427
Middle Tampa Bay	9,600	4,042	5,541	5,639	6,269	5,089	6,659	8,208	9,025	9,694	669	7%	94
Lower Tampa Bay	6,100	5,016	6,381	5,847	6,319	6,578	6,322	6,862	6,959	7,638	679	10%	1,538
Boca Ciega Bay	10,800	5,770	7,699	7,464	7,731	8,961	8,457	8,554	8,544	8,880	336	4%	-1,920
Terra Ceia Bay	700	751	973	929	1,055	1,007	932	998	1,011	1,180	169	17%	480
Manatee River	200	131	366	375	448	814	638	752	655	656.3	1	0%	456
Total	**40,400**	**21,653**	**26,916**	**24,841**	**27,024**	**28,299**	**29,647**	**32,897**	**34,642**	**40,295**	**5,653**	**16%**	**-105**

Monitoring assessment

Field monitoring data from quadrats located on fixed transects suggest that seagrass beds in BCB were stable from 1998 through 2015 and that most quadrats contained seagrass (84%, on average). The most common seagrass species were shoalgrass and turtlegrass with FO varying between 37% and 65% (Table 2). Manateegrass was observed much less frequently in BCB. Some transects showed a temporary decrease in density from 2004 to 2005, most likely an effect of tropical storms during that time (Meyer and Hammer Levy 2008). In Clearwater Harbor, data from 2010–2012 show that about half of all quadrats were bare of seagrass and that, as in BCB, shoalgrass and turtlegrass were most common. The FO for all seagrass species in BCB increased significantly between 1998 and 2015 (Table 3; Johansson 2016)

Watershed and bay management

In 1987, the Florida Legislature passed the Surface Water Improvement and Management (SWIM) Act to protect, restore, and maintain Florida's highly threatened surface water bodies. Western Pinellas estuaries are included in the Tampa Bay SWIM plan of the SWFWMD (SWFWMD 1999; https://www.swfwmd.state.fl.us/sites/default/files/medias/documents/tampabay-swim.pdf). The Tampa Bay SWIM plan included the following goals, taken from the Comprehensive Conservation and Management Plan (CCMP) of the Tampa Bay Estuary Program (TBEP)

- Limit loading of nitrogen to Tampa Bay to average levels measured in 1992–1994 to increase seagrass cover to 38,000 acres.
- Protect clean parts of the bay from contamination by toxins, and minimize risks to marine life and humans from contaminants already impacting other areas.
- Increase and preserve seagrass communities in the bay,
- Restore and protect low-salinity tidal marshes, mangroves, salt marshes, and salt barrens.

The Pinellas County/Boca Ciega Bay Aquatic Preserves will publish a management plan in 2019 (http://publicfiles.dep.state.fl.us/CAMA/plans/Pinellas-County-Boca-Ciega-Bay-AP-Management-Plan.pdf). Management priorities for seagrasses include reducing mechanical damage to seagrasses by boats, mainly by propeller scarring, encouraging and assisting with inventories and research, and providing regulatory review of projects that might impact seagrasses.

2. Seagrass status and potential stressors in Western Pinellas County

Status indicator	**Status**	**Trend**	**Assessment, causes**
Seagrass cover	Green	Stable	Losses in St. Joseph Sound, northern Clearwater Harbor
Seagrass meadow texture	Green	Stable	
Seagrass species composition	Green	Stable	
Overall seagrass trends	Green	Stable	
Seagrass stressor	**Intensity**	**Impact**	**Explanation**
Water clarity	Yellow	Poor in Boca Ciega Bay	Storm runoff; wastewater releases
Nutrients	Orange	Increasing	
Phytoplankton	Yellow	Variable	Responsive to nutrients in storm runoff
Natural events	Yellow	Low and sporadic	El Niños, tropical cyclones
Propeller scarring	Yellow	Regional	Near high-use areas

Table 1. Seagrass acreage in western Pinellas County, 2006–2016 (data source: PhotoScience Inc. and SWFWMD 2017).

							Change, 2014–2016	
Bay segment	2006	2008	2010	2012	2014	2016	Acres	%
Clearwater North	3,522	3,784	3,759	3,526	3,496	3,452	−44	−1.2%
Clearwater South	914	1,000	907	743.2	769.6	802	32	4.2%
St. Joseph Sound	10,546	12,639	12,819	12,914	13,068	12,993	−75	−0.57%
Boca Ciega Bay	8,961	8,457	8,554	8,544	8,880	9,070	190	2.1%
Total	23,943	25,880	26,039	25,727	26,214	26,317	103	0.4%

August 27, 2019

The benefits of seagrass beds as a valuable shared resource are well known. Our Bay is a protected and restoration target area for sea grass recovery in Boca Ciega Bay. Federal, State and County agencies monitor and regulate water quality, water clarity and sea grass acreage throughout Pinellas County.

Sea grass isn't static. GIS aerials map the changes in sea grass acreage every 2 years. Aerial photos and mapping show an amazing rebound in our area in 2006 then down in acreage again in 2010 with slow but steady increases since then.

These maps show areas with sea grass and tufts of sea grass but don't include the living benthic bottom and root system that extends out horizontally from the dark "edge". Protecting this root system is essential for sea grass beds to survive cumulative stressors such as changes in salinity, water temperature, excess nutrient runoff, algae blooms, storms, prop scar damage, boat wake turbidity and boat wake edge erosion.

Biscayne Bay like our area is heavily developed with lots of boat traffic. Now their seagrass beds are rapidly dying. Marine life has fled and with every passing boat, mud swirls up from the bottom. Some areas have become a dust bowl, only underwater.

It's a major concern because they may not be able to save them. Die off of seagrass affects water clarity and lowers oxygen in the water resulting in a shift to poor water clarity that results in die offs of natural ecosystems in a Bay which then kills even more sea grass. Eventually it reaches a tipping point like is now happening in Biscayne Bay.

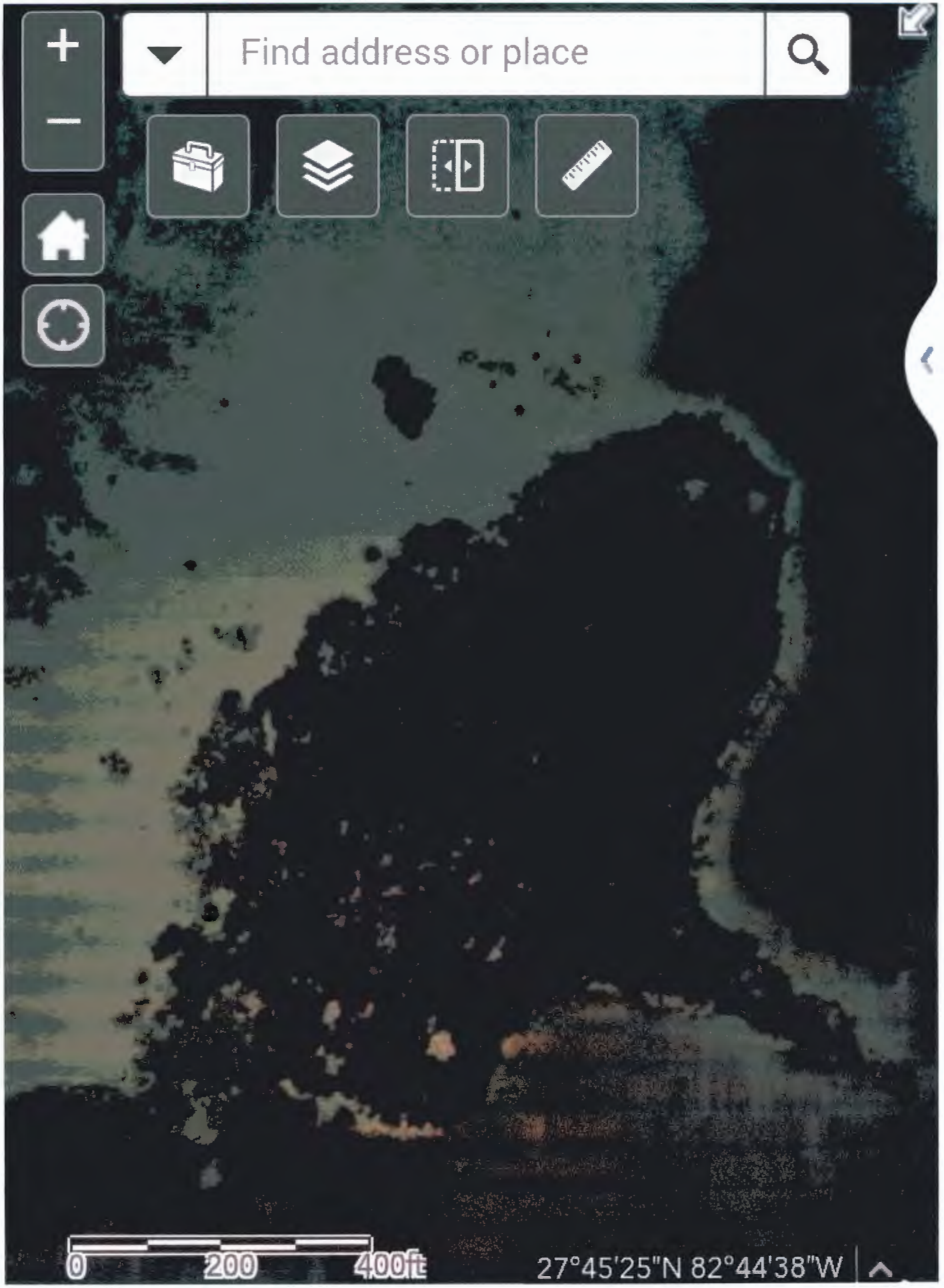
The aerial photos of Biscayne Bay also show deep boat prop scars that never healed - they grew wider. We also have prop scar damage on our sea grass beds. The entire center of our Bay is very shallow - 1 ft MLW on current NOAA charts making the sea grass beds here extremely vulnerable to prop damage and boat wake erosion.

I've included information from a study in Sarasota Bay that concluded using buoys to "protect" sea grass beds from prop scarring is ineffective. Sea grass losses continued with total acreage lost reduced at most by 1/2%.

Everything ever permitted around Biscayne Bay is permitted basically the same as here. Reports like this and many others clearly show our reliance on some aspects of the state permitting process to protect our local resources is failing us. So it's up to us to protect them or lose them.

Sea grass is also an important food source for manatees - they're seen feeding along the east edge daily. Manatees are chubby and need water depths in the channel next to the grass beds well below the loaded drafts of boats to be able to avoid boat strikes and propeller cuts as they drop down off the the grass beds into the channel to migrate north and south.

Loss of seagrass degrades recreational water quality and clarity which then negatively impacts surrounding property values.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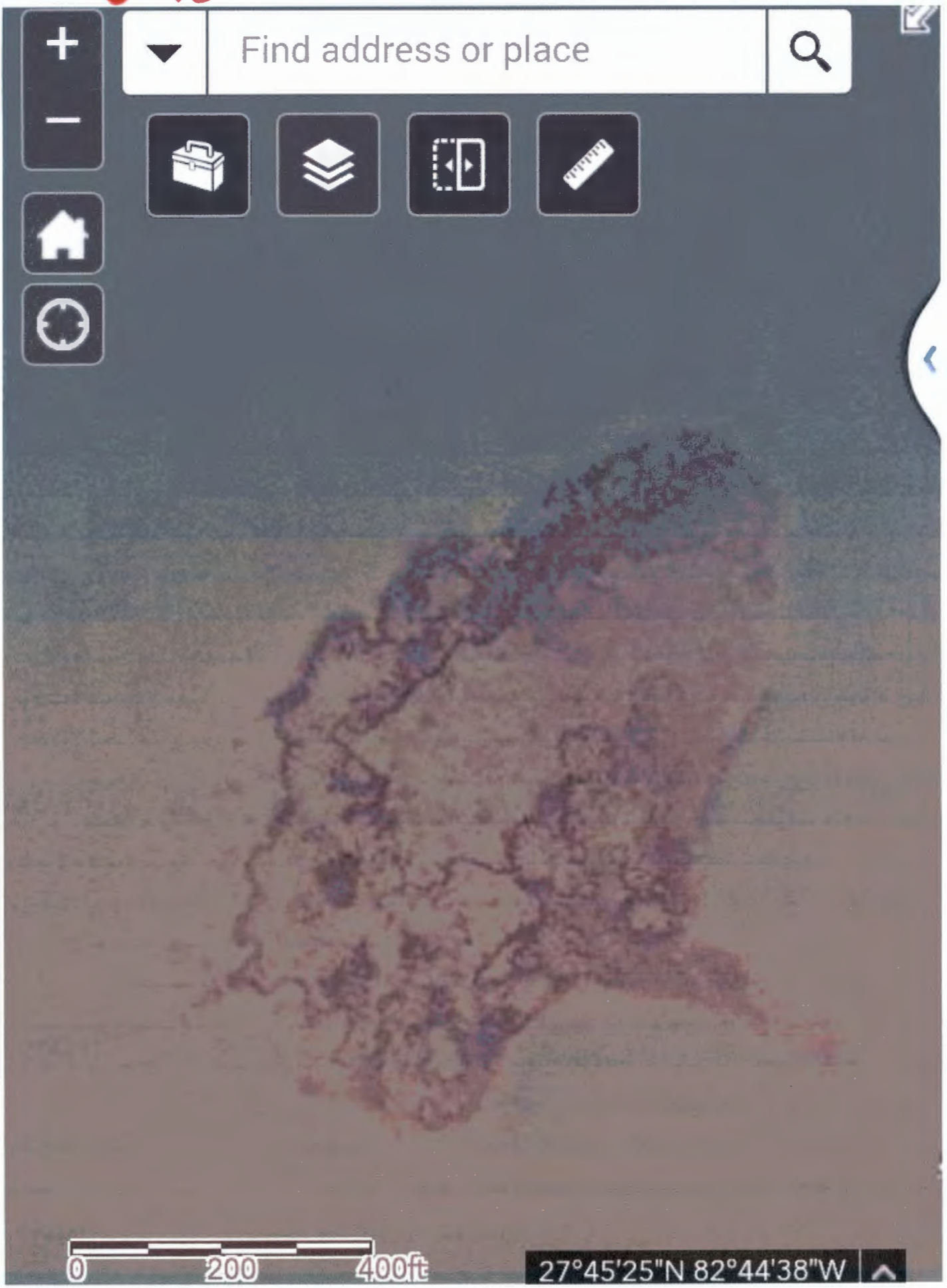
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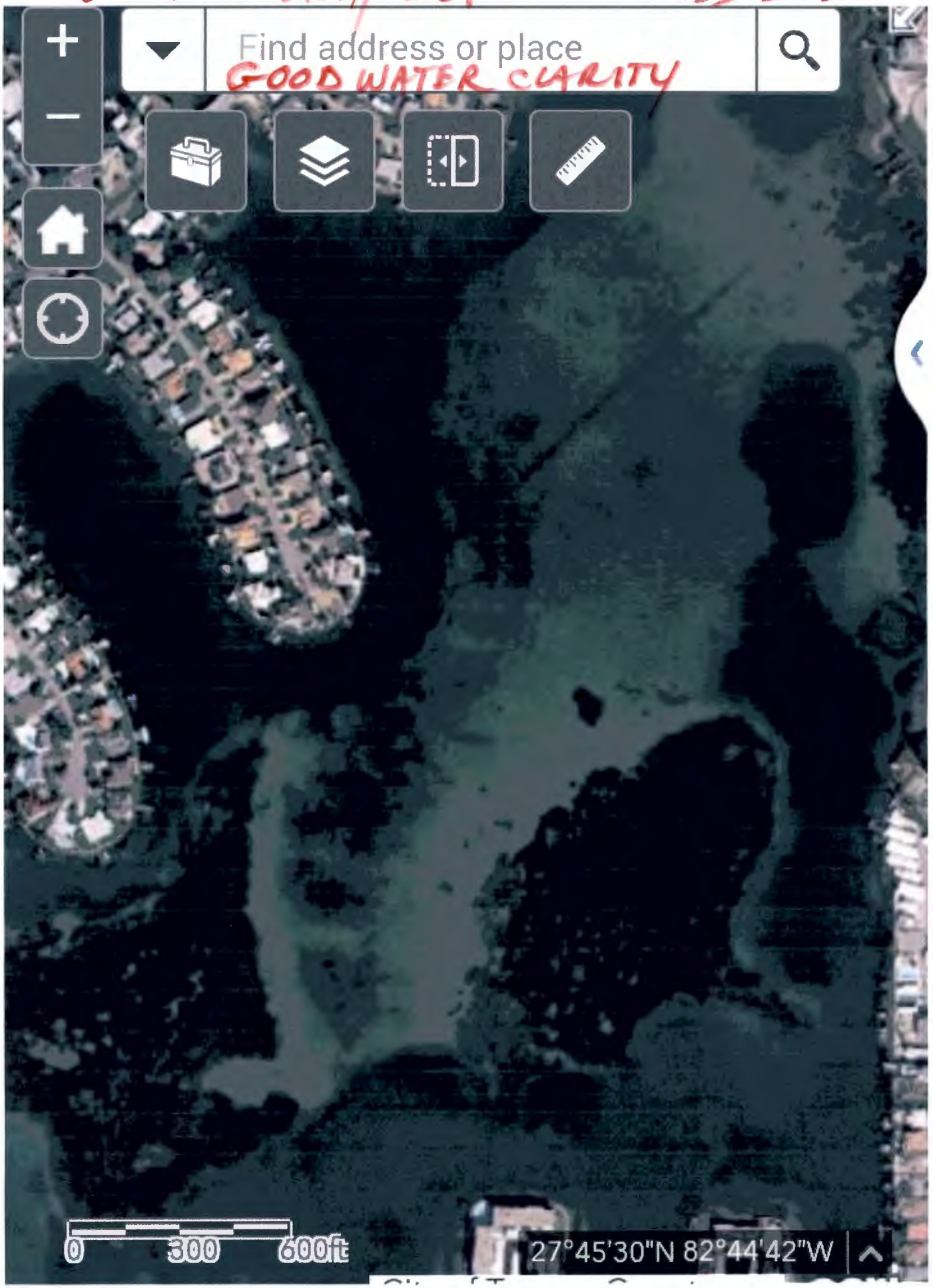

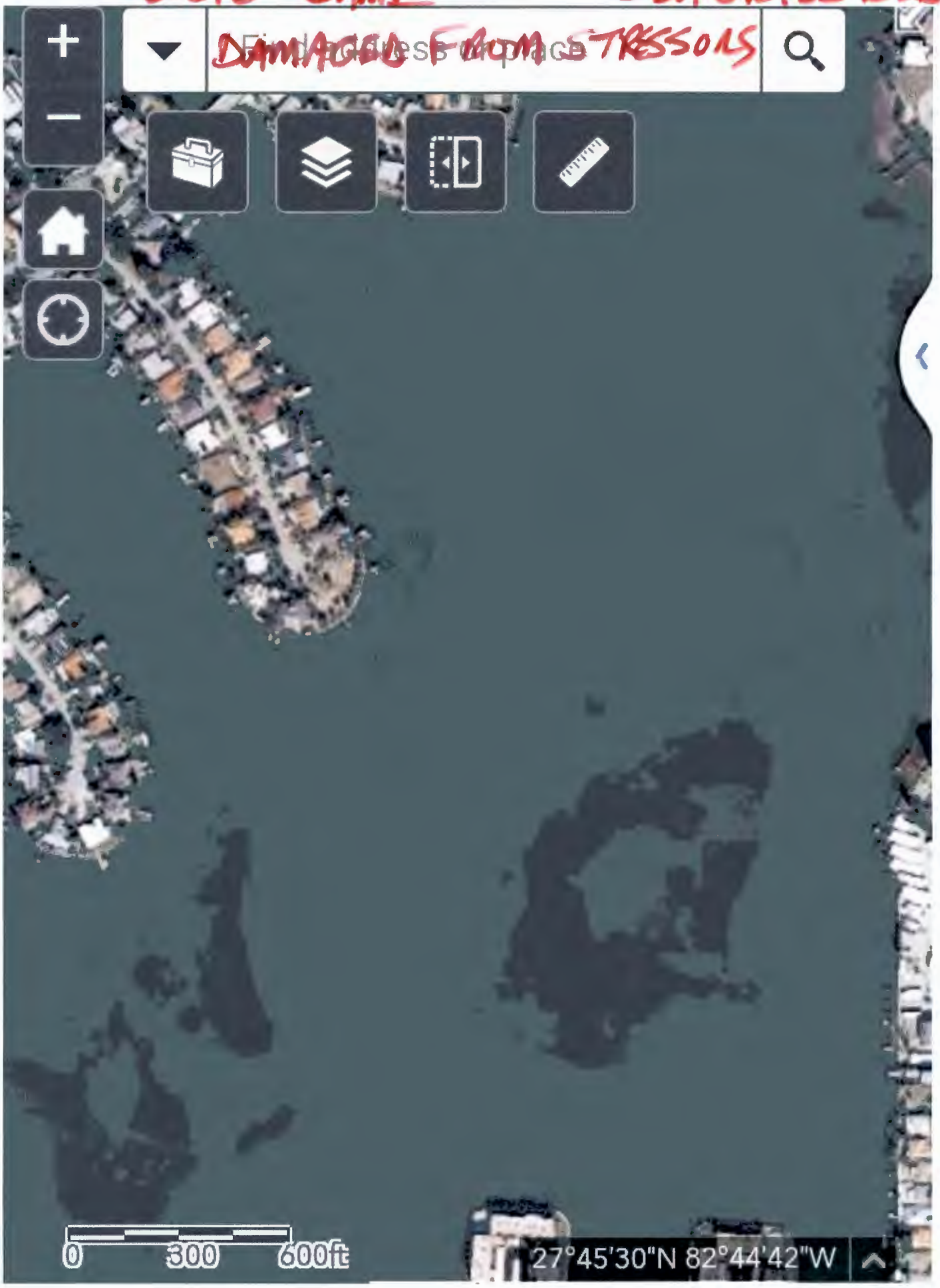
2010 - SAME
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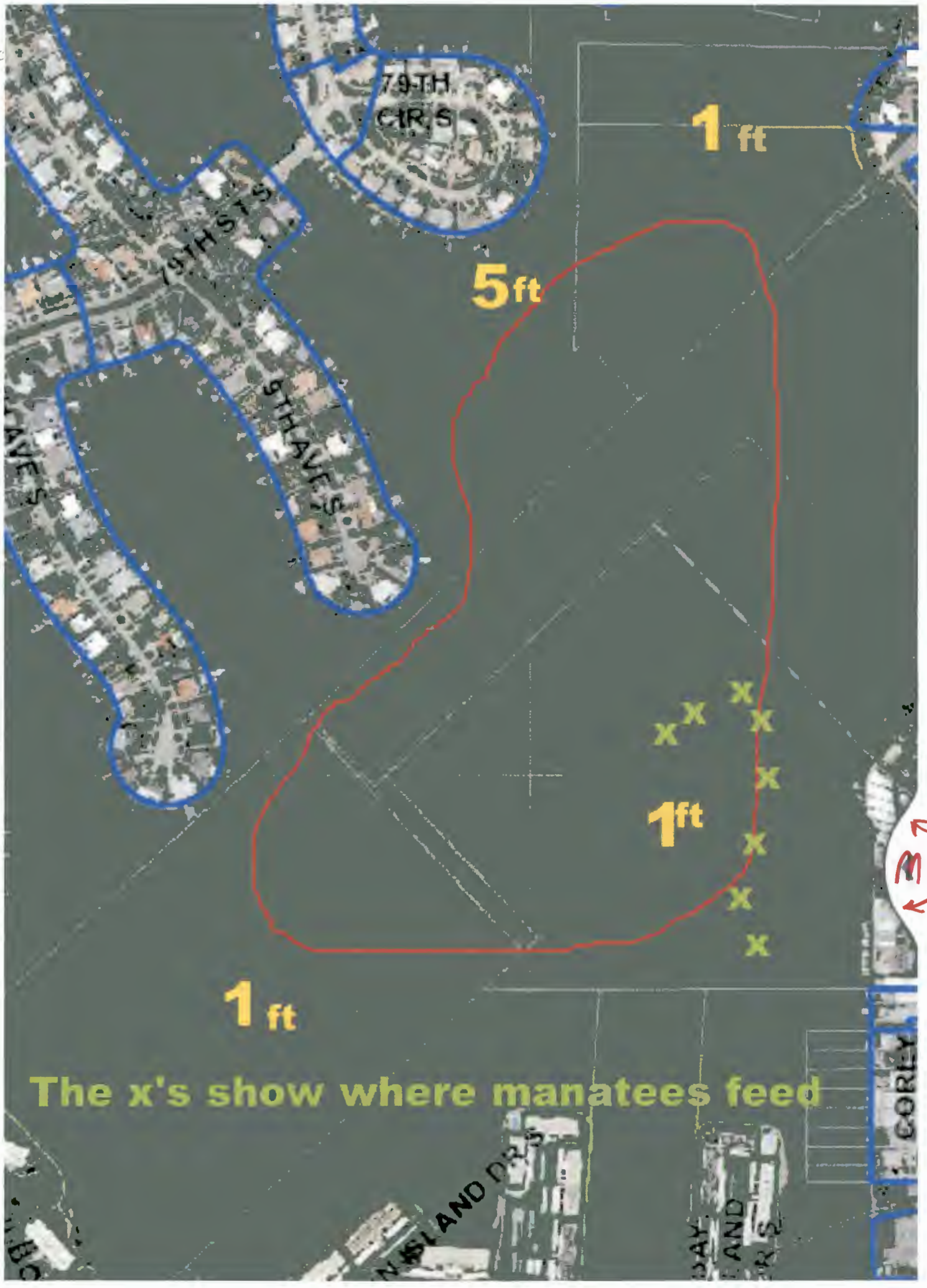
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The x's show where manatees feed
MHP
COREY
2016 - SEA GRASS BED RECOVERING

Oysters Home
Oyster Monitoring Program
Oyster Life Cycle
Oyster Mapping Summaries
Habitat Types
Oysters & Water Quality
Harvesting & Consumption
Research Studies
Methods Manual
Interactive Map

Healthy oyster reefs provide a wide range of ecosystem services, and one of the most important is the ability to improve water quality. Studies have shown that adult oysters have the capability of filtering between 30 and 60 gallons of water per day. During the filtration process, oysters remove phytoplankton and zooplankton (vital food sources) as well as suspended sediments and excess nutrients such as nitrogen and phosphorus. While nutrients are a necessary food source for plankton, excessive levels can result in harmful algae blooms, a reduction in water clarity, the depletion of dissolved oxygen which leads to fish kills, and an overall degradation of water quality. A recent study in the Choptank River in Maryland (Denitrification and Nutrient Assimilation on a Restored Oyster Reef) further supports the significance of the role that healthy oyster reefs play in water quality improvement. The study determined that oyster reefs remove a considerable amount of nitrogen through the denitrification process. In fact, one acre of a restored reef was shown to remove up to 543 pounds of nitrogen per year.

Time-lapse video demonstrating oysters removing pollutants from water:

BE SURE TO VIEW THIS EYE OPENING VIDEO OF OYSTERS FILTERING THE WATER!

Additional information on oysters & water quality

- 2012-2013 Florida Gulf Coast Oyster Disaster Report
- A surprising benefit of oyster beds in the Chesapeake Bay
- Denitrification and nutrient assimilation on a restored oyster reef
- Ecosystem services related to oyster restoration
- Effects of Intertidal Oyster Reefs on Water Quality in a Tidal Creek Ecosystem
- News Release: Study shows restored oyster reef worth its weight in nutrients
- The Importance of Habitat Created by Molluscan Shellfish to Managed Species along the Atlantic Coast of the United States

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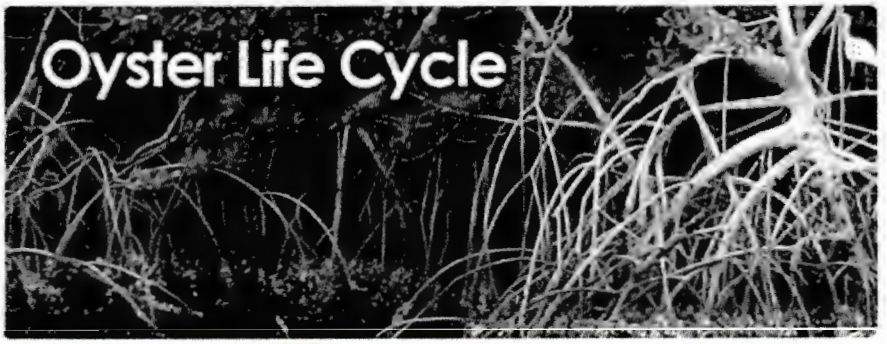


Adult oysters are stimulated to spawn by changes in the water temperature. Along the Southwest Florida coast, the Eastern Oyster begins to spawn in the spring when water temperatures reach about 68°F; it continues to spawn throughout the summer and into the fall; and stops spawning when water temperatures fall below the 68°F threshold. Eggs and sperm are released into the water where fertilization takes place. The eggs hatch within 24 hours after undergoing several embryonic stages and develop into free-swimming, planktonic trochophore larvae. Hair-like cilia on the surface of the larvae allow them to navigate horizontally and vertically in the water column to remain at the optimum salinity range. Over a 2-3 week period, the trochophore larvae remain free-swimming while undergoing 2 more larval stages before settling and becoming adults. Within 12-24 hours trochophore larvae begin to develop a shell and a foot and are called veliger larvae. The veliger larvae finally develop into pediveliger larvae which have a well-developed foot and eye spots that allow the larvae to find an appropriate place to settle out as spat – newly attached juvenile oysters. Depending upon conditions, it takes from 1-3 years for spat to grow into adult oysters.

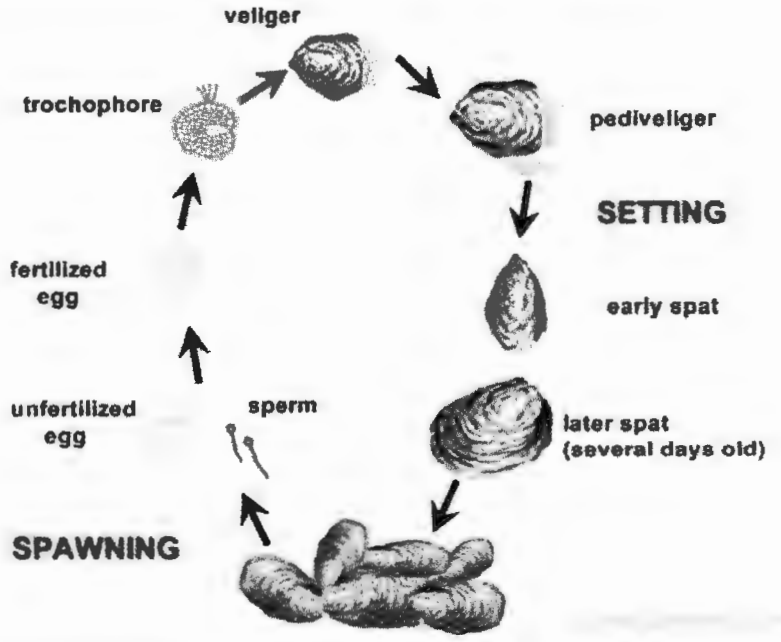


Photo credit: Auburn University, Marine Extension and Research Center

Additional information on oyster biology & life cycle

- *Biology of the Oyster*
- *Mortality of Oysters and Abundance of Certain Associates as Related to Salinity*
- *Observations and Experiments on the Growth of Oysters*
- *Oyster Biology & Ecology* - South Carolina Oyster Restoration and Enhancement (SCORE)
- *Population Biology, Ecology, & Ecosystem Contributions of the Eastern Oyster*
- *Species Profile: American Oyster*
- *The life cycle of the Eastern Oyster* - Barnegat Bay Shellfish

The Tampa Bay Estuary Program recently awarded a $5000 mini grant to Tampa Bay Watch for a year long monitoring program of oyster gardens that began in Gulfport in June 2019.

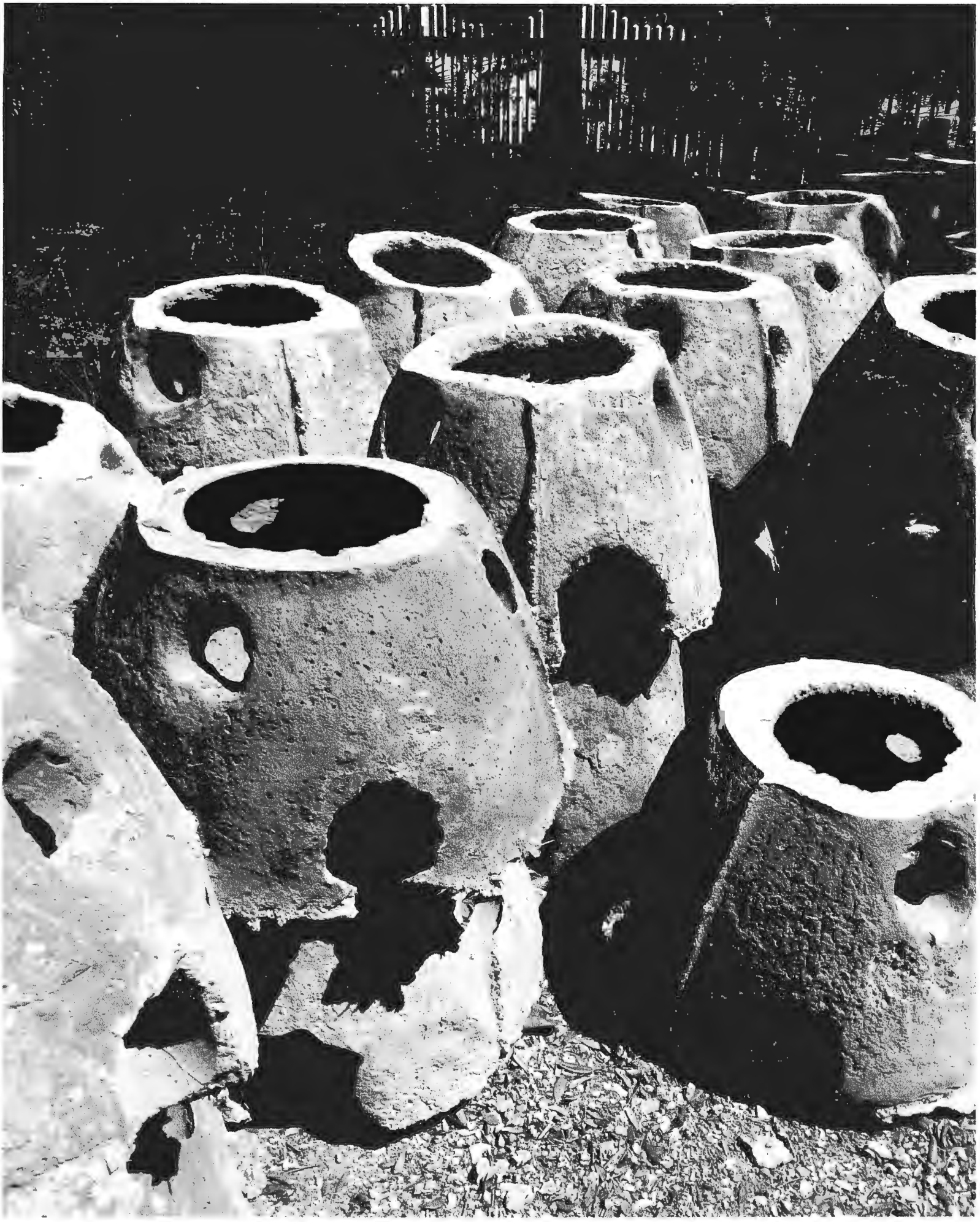
They installed oyster gardens in the public marina and at private waterfront homes to help fight red tide and filter the water in their area of Boca Ciega Bay.

Water sampl... See More

THEGABBER.COM

Volunteers Create Vertical Oyster Gardens for Gulfport

A new effort is working to help clean the salt water that surrounds Gulfport and raise environmental awareness about the Tampa Bay estuary.



OYSTER REEF BALLS

Oyster "gardens" work very well to help filter bay water. Anyone with water front property can have oyster gardens - no permit required.

Four oyster... See More

)000025180-01

Tampa Bay Times
Published Daily

STATE OF FLORIDA
COUNTY OF Pinellas } ss

Before the unersigned authority personally appeared **Deirdre Almeida** who on oath says that he/she is **Legal Advertising Representative** of the **Tampa Bay Times** a daily newspsper printed in St. Petersburg, in Pinellas County, Florida; hat the attached copy of adertisment, being a Legal Notice in the matter **RE: Ordinance** was published in **Tampa Bay Times: 10/11/19** in said newspaper n the issues of **Baylink Pinellas**

Affiant further says the said **Tampa Bay Times** is a newspaper published in Pinellas County, Florida and that the said newspaper has heretofore been continuously published in said Pinellas County, Florida each day and has been entered as a second class mail mater at the post office in said Pinellas County, Florida for a period of one year next preceding the first publication of the attached copy of advertisement, and affiant further says that he/she neither paid not promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Signature Affiant

Sworn to and subscribed before me this .**10/11/2019**

Signature of Notary Public

Personally known X or produced identification

Type of identification produced

NOTICE OF PUBLIC HEARING
PROPOSED ORDINANCE AMENDING THE PINELLAS COUNTY CODE

The Pinellas County Board of County Commissioners proposes to amend the Pinellas County Code by Ordinance.

A public hearing on the Ordinance will be held on **October 22, 2019**, at **6:00 P.M.** in the County Commission Assembly Room, Fifth Floor, Pinellas County Courthouse, 315 Court Street, Clearwater, Florida 33756.

Interested parties may appear at the hearing and be heard regarding the proposed Ordinance.

1. **PROPOSED ORDINANCE TO AMEND THE PINELLAS COUNTY CODE:**

AN ORDINANCE OF THE COUNTY OF PINELLAS, PROVIDING THAT THE PINELLAS COUNTY CODE BE AMENDED BY ADDING DIVISION 4 EQUINE RIDING AND SEAGRASS DAMAGE TO ARTICLE X AQUATIC PRESERVES OF CHAPTER 58 ENVIRONMENT; PROVIDING FOR THE PROHIBITION OF EQUINE RIDING WITHIN AQUATIC PRESERVES; PROVIDING FOR THE PROHIBITION OF UNPERMITTED SEAGRASS DAMAGE WITHIN AQUATIC PRESERVES; PROVIDING FOR COUNTYWIDE APPLICABILITY; PROVIDING FOR SEVERABILITY; PROVIDING FOR INCORPORATION INTO THE COUNTY CODE; AND PROVIDING FOR AN EFFECTIVE DATE.

The proposed amendment to the Pinellas County Code can be inspected by the public at the Pinellas County Board Records Department, 315 Court Street, Fifth Floor, Clearwater, Florida 33756. Comments may be sent to this same address or call (727) 464-3458.

Persons are advised that if they decide to appeal any decision made at the meeting/hearing, they will need a record of the proceedings, and, for such purposes, they may need to ensure that a verbatim record of the proceedings is made, which record includes the testimony and evidence upon which the appeal is to be based.

IF YOU ARE A PERSON WITH A DISABILITY WHO NEEDS ACCOMMODATION IN ORDER TO PARTICIPATE IN THIS PROCEEDING, YOU ARE ENTITLED, AT NO COST TO YOU, TO THE PROVISION OF CERTAIN ASSISTANCE. WITHIN TWO (2) WORKING DAYS OF YOUR RECEIPT OF THIS NOTICE, PLEASE CONTACT THE OFFICE OF HUMAN RIGHTS, 400 SOUTH FORT HARRISON AVENUE, SUITE 500, CLEARWATER, FLORIDA 33756, (727) 464-4880 (VOICE), (727) 464-4062 (TDD).

KEN BURKE, CLERK TO
THE BOARD OF COUNTY COMMISSIONERS
By: Norman D. Loy, Deputy Clerk

October 11, 2019 0000025180

JEAN M MITOTES
NOTARY PUBLIC
STATE OF FLORIDA
State of Florida-Notary Public
Commission # GG009269
My Commission Expires
July 06, 2020

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