



Stormwater Pollution and the Indian River Lagoon

Carlos J. Cuevas

**Brevard County Natural Resources Management Department
Stormwater Program, Outreach Coordinator**

www.Brevstorm.org

www.LagoonLoyal.com



Clean Water Act & NPDES



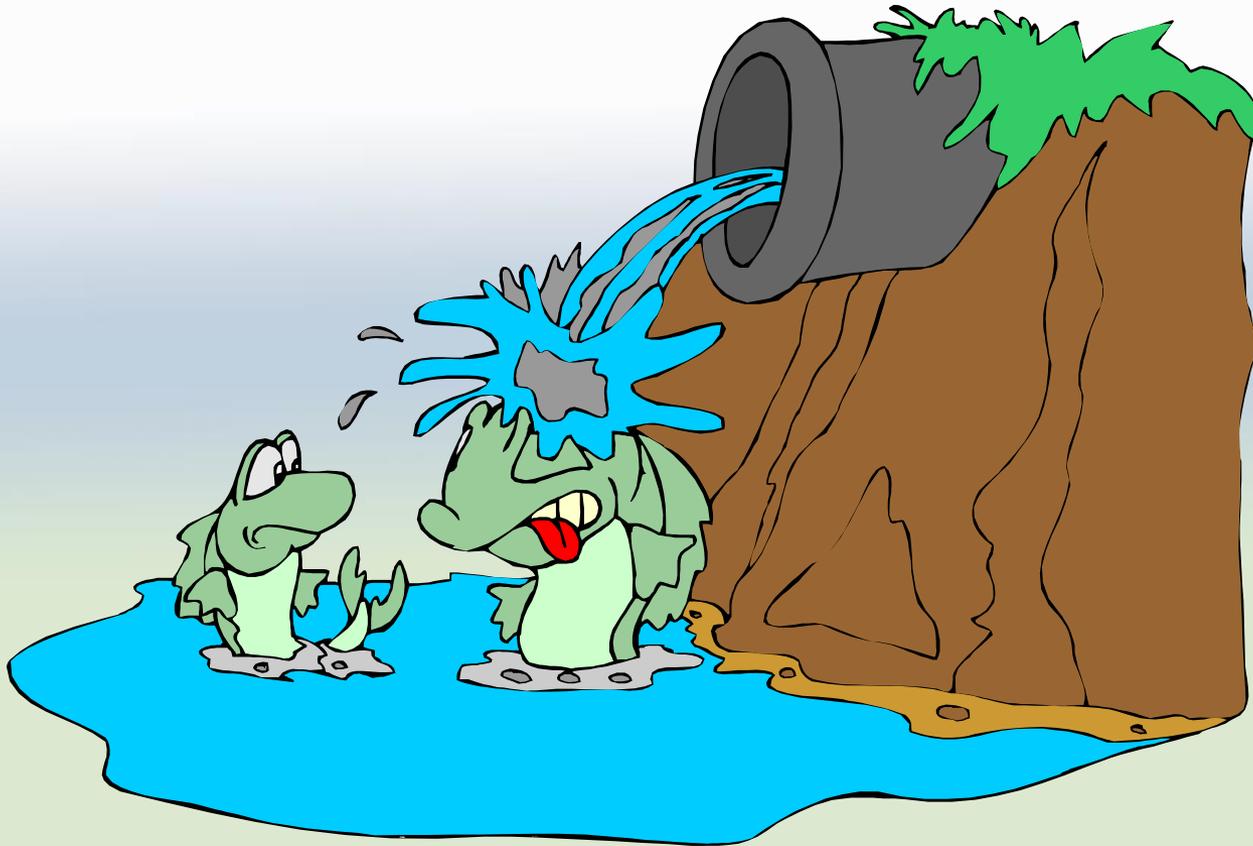
National Pollutant Discharge Elimination System (NPDES)

This permit program addresses water pollution by regulating point sources that discharge pollutants to waters of the US. It was created in 1972 under the Clean Water Act. The program is authorized to state governments by EPA to perform many permitting, administrative, and enforcement aspects of the program.

Stormwater Runoff



Storm water runoff goes mostly untreated to our waterbodies!



Swales & Culverts



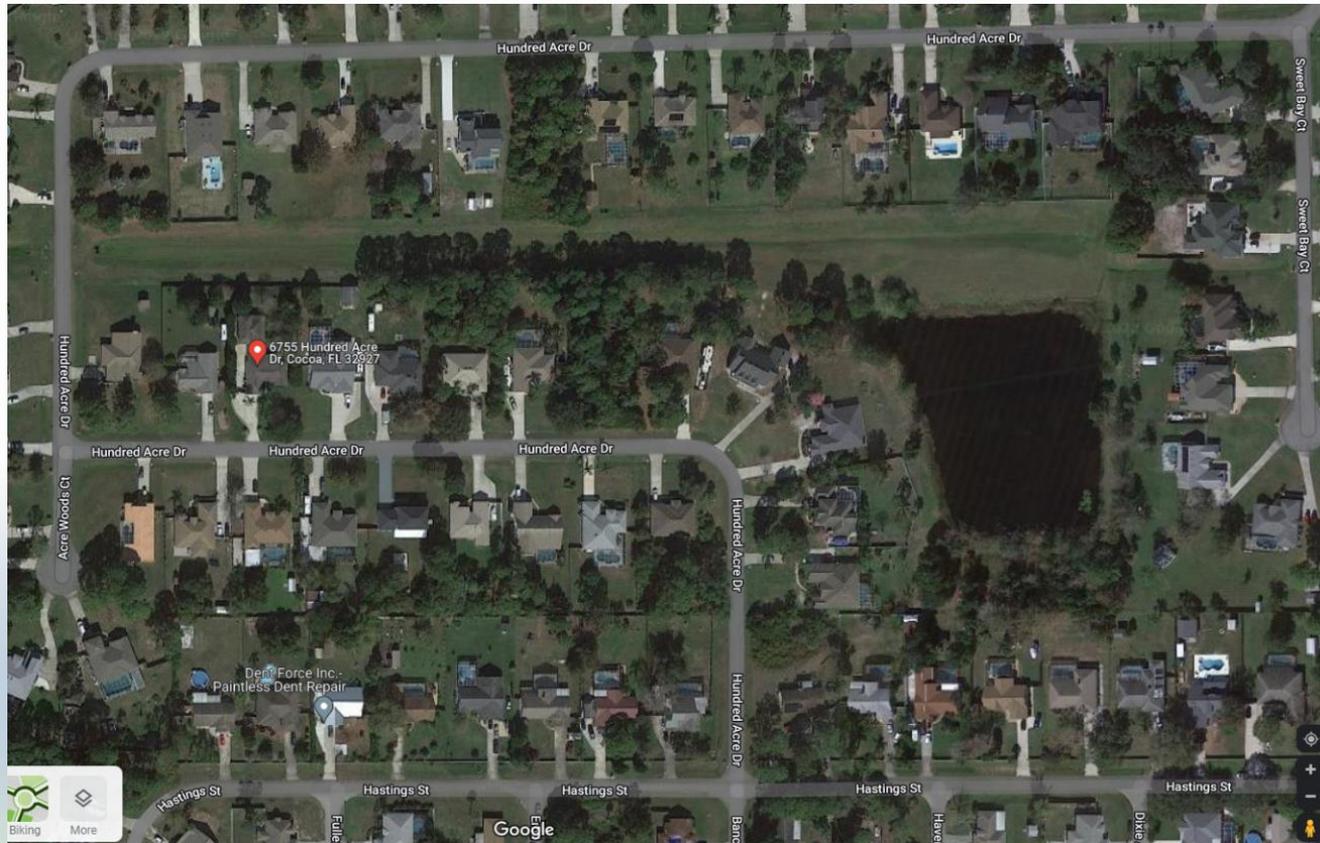
- Essential to prevent flooding and to remove nutrients before water reaches the Lagoon.
- Home owners are responsible for the general maintenance of the swales and culverts (CO 93-22, sections 2.1 and 2.2 http://brevardcounty.elaws.us/code/coorbrcoflvoii_ch62_a_rtx_div6_sec62-3756)

Swales & Culverts



- **Improperly maintained swales and culverts.**
- **Look for clogged pipes, overflowing swales, impaired stormwater drains and, anything slowing the flow of water.**

Swales & Culverts



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Our Waterways

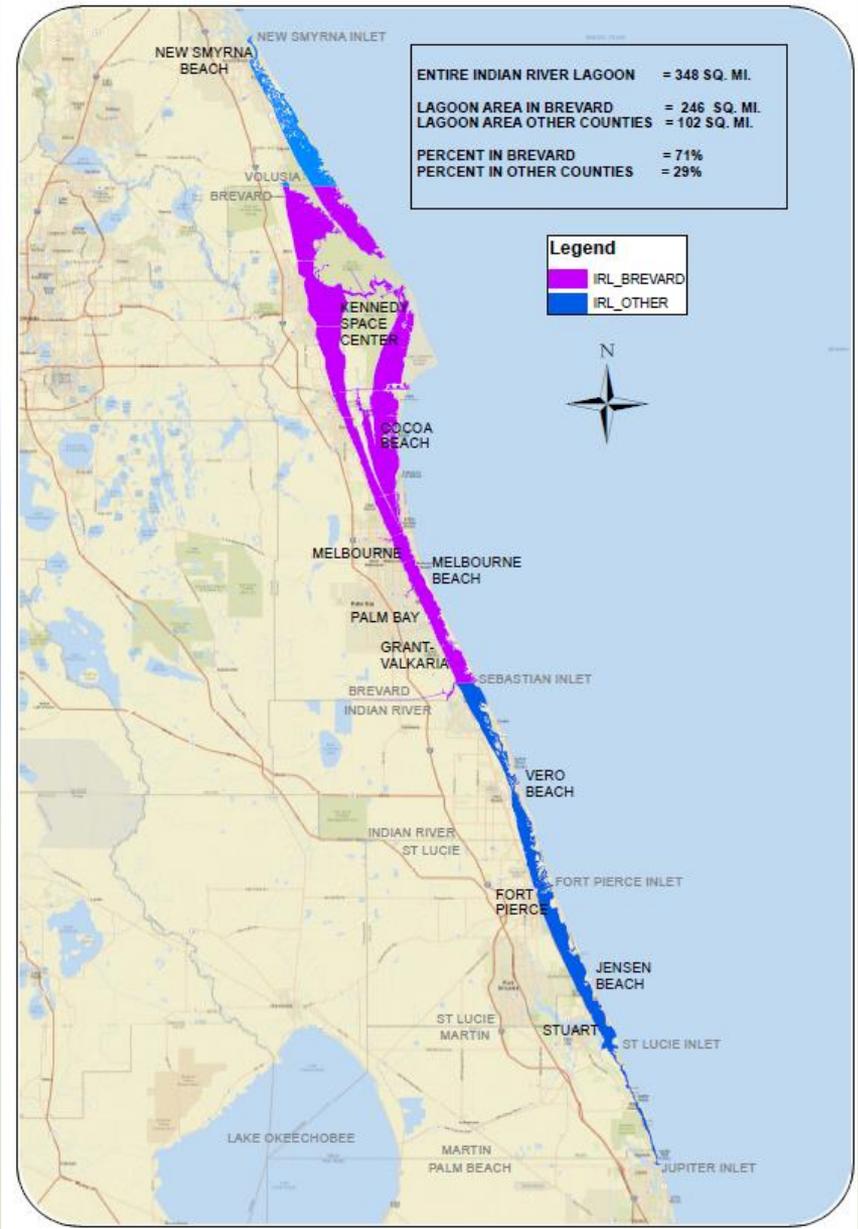


- Watersheds:
 - St. Johns River
 - Mosquito Lagoon
 - Indian River Lagoon System
- IRL Tributaries:
 - Addison Creek
 - Sykes Creek
 - Horse Creek
 - Eau Gallie River
 - Crane Creek
 - Turkey Creek
 - Goat Creek
 - Sebastian River

Indian River Lagoon



- 156 Miles Long
- Covering 6 counties
- 71% in Brevard
- 246 Sq. Miles
- Home to over 4,000 animal & plant species



Factors Affecting the Lagoon



Yard Waste

- Avoid blowing yard clippings into the street or dumping them down the storm drain
- Leave grass clippings on your lawn after mowing or



LET'S BE CLEAR...
A CLEAN LAGOON STARTS WITH FERTILIZER WISDOM.

NEVER Fertilize: JUN » SEP

NEVER Fertilize: BEFORE RAIN

If using fertilizer OCT » MAY:

Scan or snap photo for a list of lagoon-friendly fertilizers.

ALWAYS Skip Fertilizer: [10-25'] NEAR WATER

ALWAYS Sweep Up: ANY SPILLS

ALWAYS Choose: N 16 P 0 K 8 ZERO PHOSPHORUS (P)

ALWAYS Choose: AT LEAST 50% SLOW-RELEASE NITROGEN (N) (unless N = 0)

LAGOON LOYAL

GET LAGOON POINTERS & GET REWARDS!
LagoonLoyal.com

reward THE REWARD PROGRAM FOR THE LAGOON

Save LAGOON

- Choose fertilizers with at least 50% slow-release nitrogen
- Follow the fertilizer ban (June 1st to Sep 30st)
- Compost leaves, grass clippings and household wastes for soil enhancement
- **More is NOT better!!**

Lawn Fertilizers

Pet Waste





Stormwater runoff from land enters the lagoon

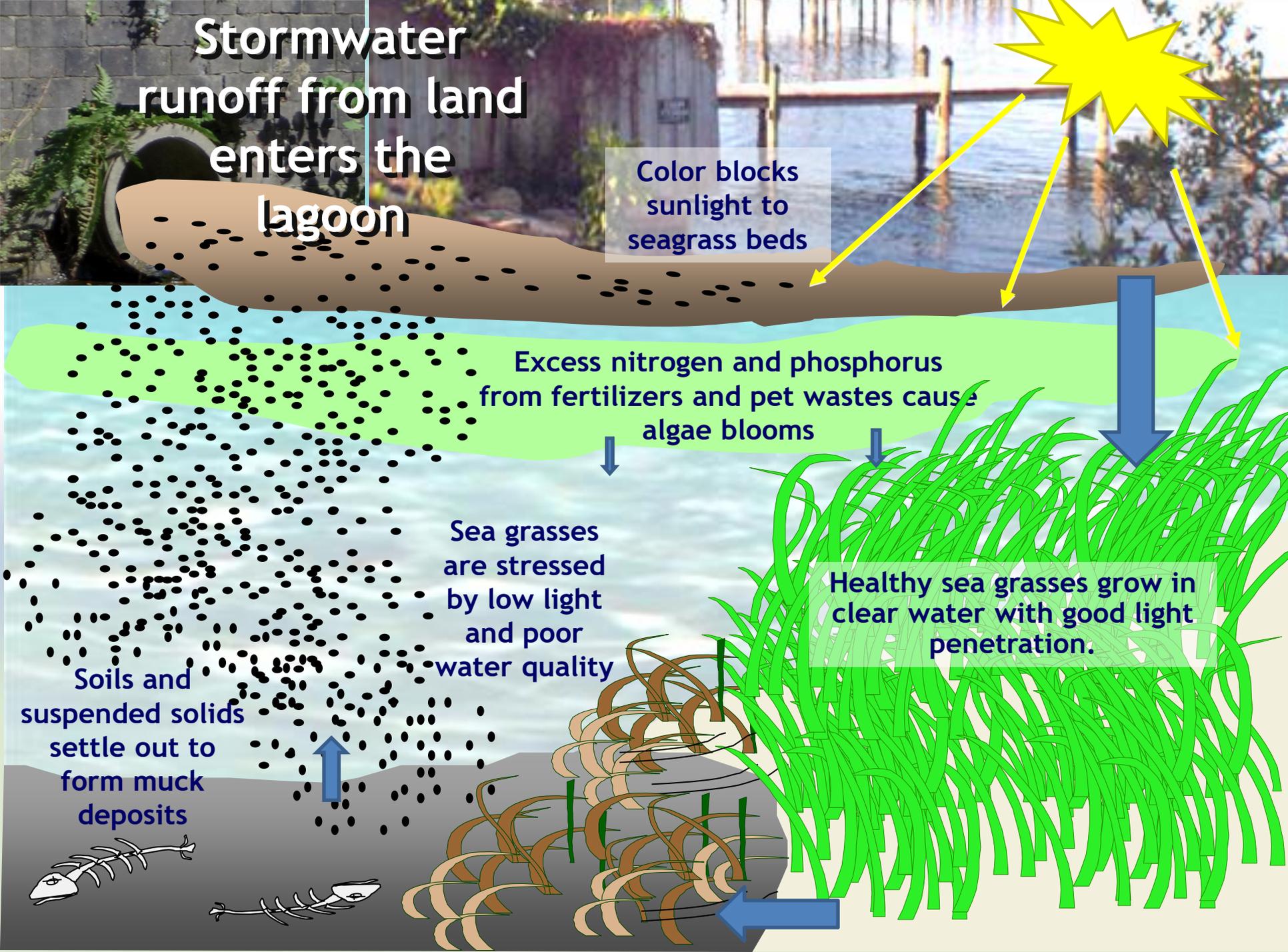
Color blocks sunlight to seagrass beds

Excess nitrogen and phosphorus from fertilizers and pet wastes cause algae blooms

Sea grasses are stressed by low light and poor water quality

Healthy sea grasses grow in clear water with good light penetration.

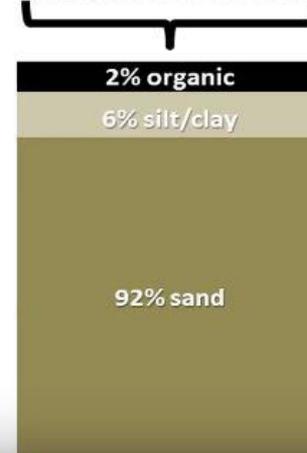
Soils and suspended solids settle out to form muck deposits



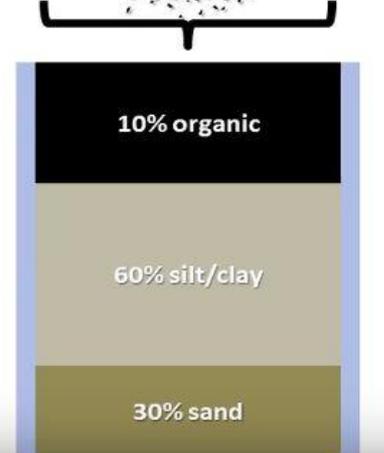
What is “Muck”?



Normal Sediment



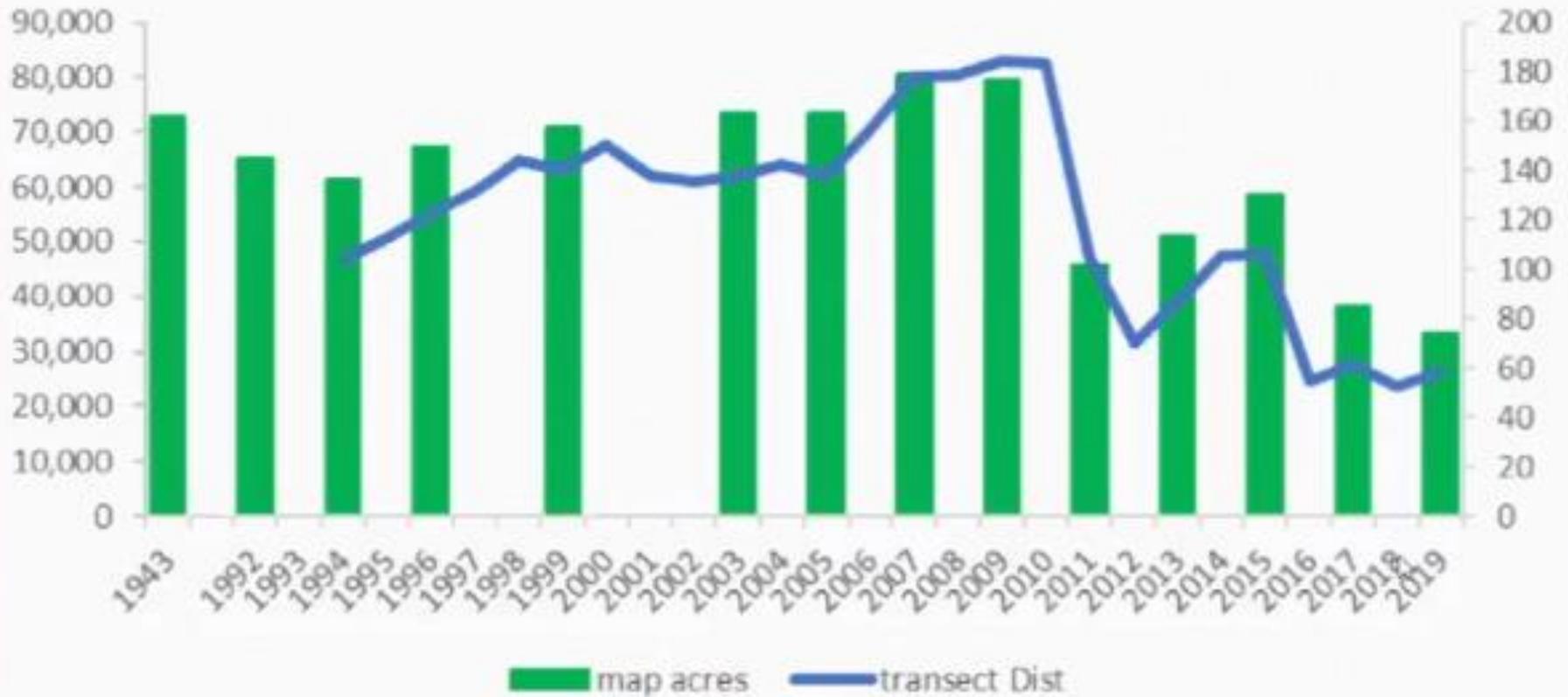
Muck



- Increased bacteria, phosphates and nitrates stimulated growth of organic matter from 2% to 10%.
- Increased erosion (silt) and dirt stimulated the increase from 6% to 60%.



Mapped seagrass (acres) and mean transect distance (m)



St. Johns River Water Management District Data, 2020



HOW DO WE GET TO A HEALTHY LAGOON?



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

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.

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.

RESPOND to New Information

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

Save Our Indian River Lagoon (SOIRL)



- The ½ cent county tax initiative, November 2016.
- Spearheaded by the IRL Coalition
- SOIRL Plan
- www.brevardfl.gov/SaveOurLagoon
- Citizen's Oversight Committee

Reduce



Public Education



Baffle Boxes



Pond Water Treatment



Rain Barrel

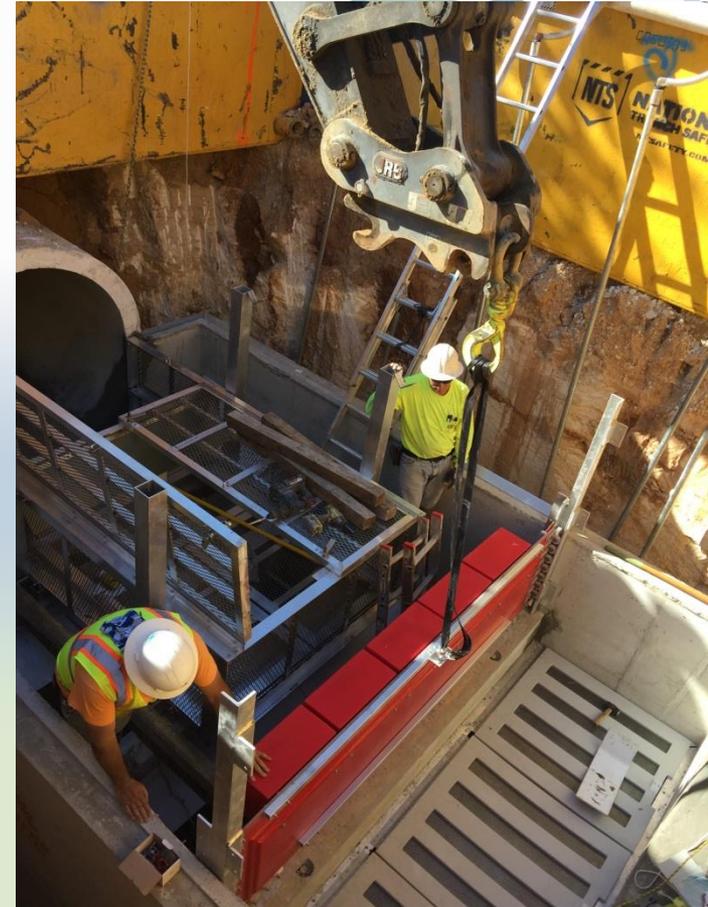


12 REDUCE Projects Completed

- Breeze Swept Septic to Sewer - \$881K
- MIRA Phase 1 Septic to Sewer - \$302K
- Bayfront Stormwater Ponds - \$31K
- Central Blvd Baffle Box - \$35K
- Church Street Baffle Box - \$21K
- Gleason Park Reuse Expansion - \$4K
- Long Point Park Denitrification - \$22K
- Grass Clippings Campaign Phase I - \$20K
- Coleman Pond MAPS – \$35K
- Titusville South Street Baffle Box - \$87K
- Titusville St Teresa Baffle Box - \$273K
- Titusville La Paloma Baffle Box - \$208K

<http://www.brevardfl.gov/SaveOurLagoon/Maps>

<http://www.brevardfl.gov/NaturalResources/WatershedProgram/ConstructionProjects>



Muck Removal



- **Five sites** (Mims, Cocoa Beach, Sykes Creek, Satellite Beach, Turkey Creek)
- **\$41 million in State grant in 2016**
- **Remove 1.4 million cubic yards**



3 REMOVE Projects Completed



- Turkey Creek Hurricane Dredge - \$215K
- Mims Muck Dredging Interstitial Treatment <\$400K
- Cocoa Beach Phase III Muck Dredging - \$981K





7 RESTORE Projects Completed



- Riverview Senior Resort Oyster Bar - \$30K
- Bomalaksi Oyster Bar - \$9K
- Bettinger Oyster Bar - \$11K
- Gitlin Oyster Bar - \$16K
- Cocoa Beach Country Club Living Shoreline - \$16K
- Lagoon House Living Shoreline - \$24K
- Marina Isles Oyster Restoration - \$28K





8 Respond Projects

3 Outreach Campaigns

RESPOND

- Annual Plan Updates
- Leaky Lateral Monitoring
- Living Shoreline Monitoring
- County Groundwater Monitoring
- Micco Septic to Sewer Monitoring
- Muck Capping Performance Monitoring
- Breeze Swept Septic to Sewer Monitoring
- Long Point Park Denitrification Monitoring

OUTREACH

- Fertilizer Management Outreach
- Grass Clippings Outreach
- Septic Maintenance Outreach

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LAGOON

Save the LAGOON

How Can You Help?



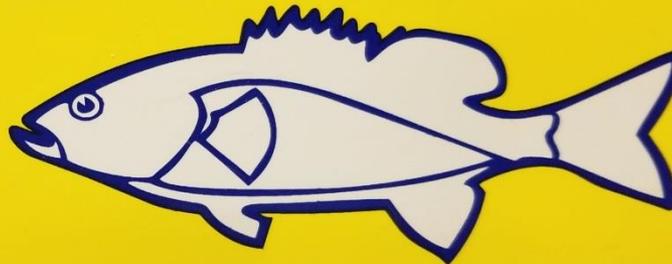
- **Stay informed**
- **Talk to Neighbors, Friends and Family**
- **Support Citizen Oversight Committee**
- **Reduce Waste and Pollution**
- **Take the Lagoon Quiz - *LagoonLoyal.com***
- **Volunteer**

Volunteer Opportunities



LET ONLY RAIN

DOWN



THE STORM DRAIN

Brevard County Natural
Resources Management Office
www.brevstorm.org
321-633-2016

Other Resources



IFAS

<https://sfyl.ifas.ufl.edu/brevard/>

Keep Brevard Beautiful (KBB)

www.keepbrevardbeautiful.org

Brevard Zoo

<https://brevardzoo.org/contact-us/>

Thank You!!!



Questions???

Contact:

Carlos.Cuevas@BrevardFL.gov

321 350 8408



Sykes Creek Dredge Area

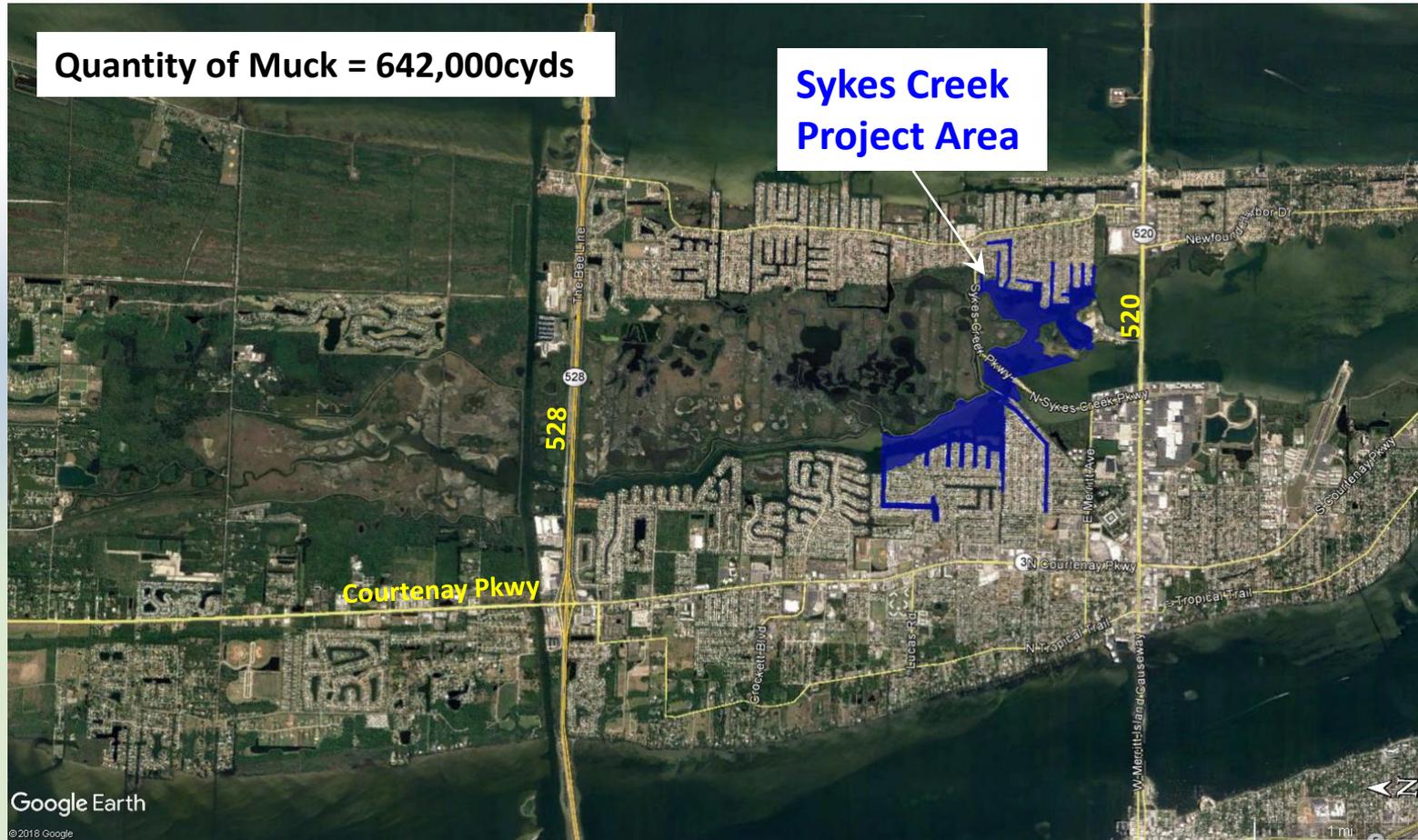


Sykes Creek Dredge Area



Quantity of Muck = 642,000cyds

Sykes Creek
Project Area

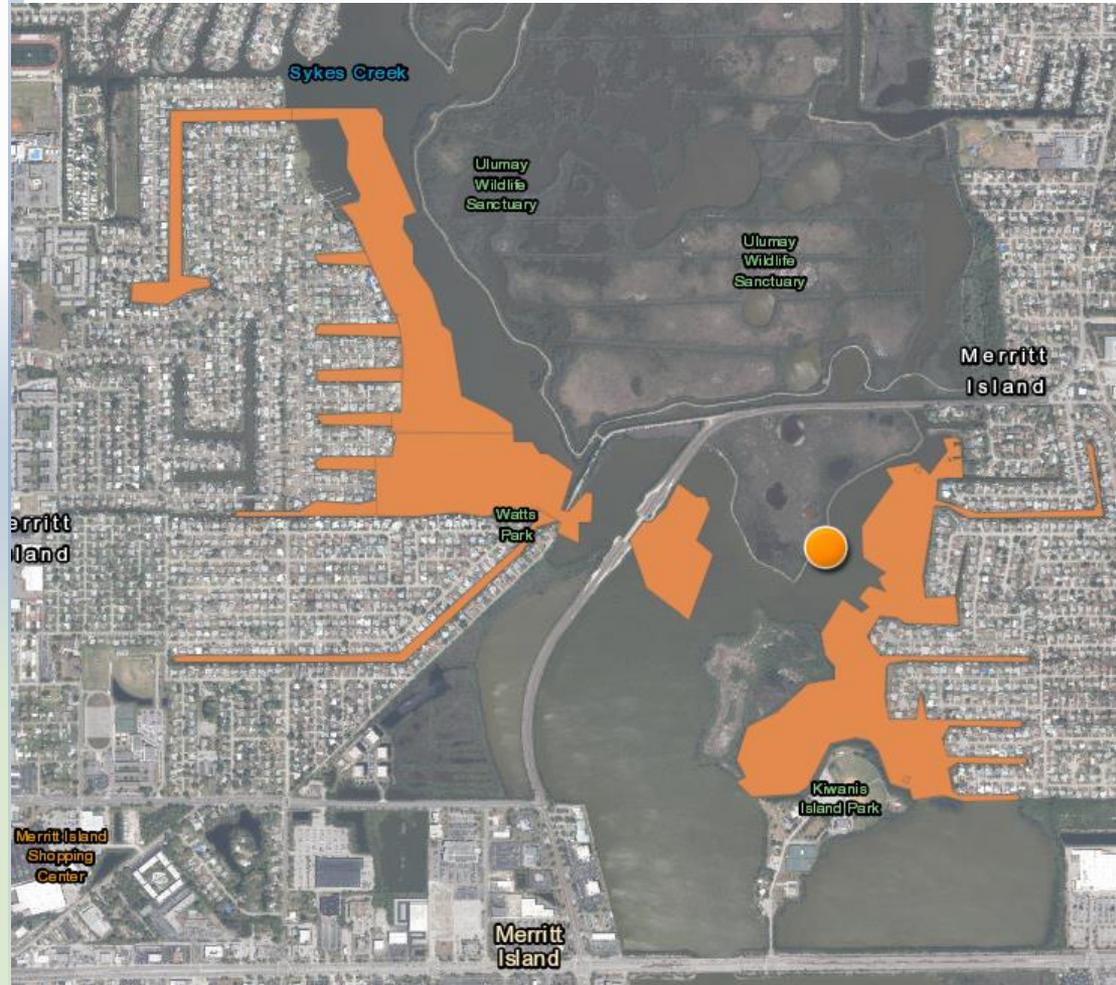


Sykes Creek Dredge Project



- **Limitations on permitted dredged material management area (Kiwanis Island)**
 - **Capacity**
 - Approximately 110,000 cyds
 - 1/6 of total project volume
 - **Offloading of Dredged Material**
 - Limited use of Kiwanis Island Park
 - No offloading of dredged material at Park
- **No other permitted DMMA or offloading site**

Sykes Creek Dredge Area



**Estimated total Nitrogen removal
11,676 lbs/year**

**Estimated Phosphorus removal
1,510 lbs/year**

Sykes Creek Dredge Project

Request for Proposals



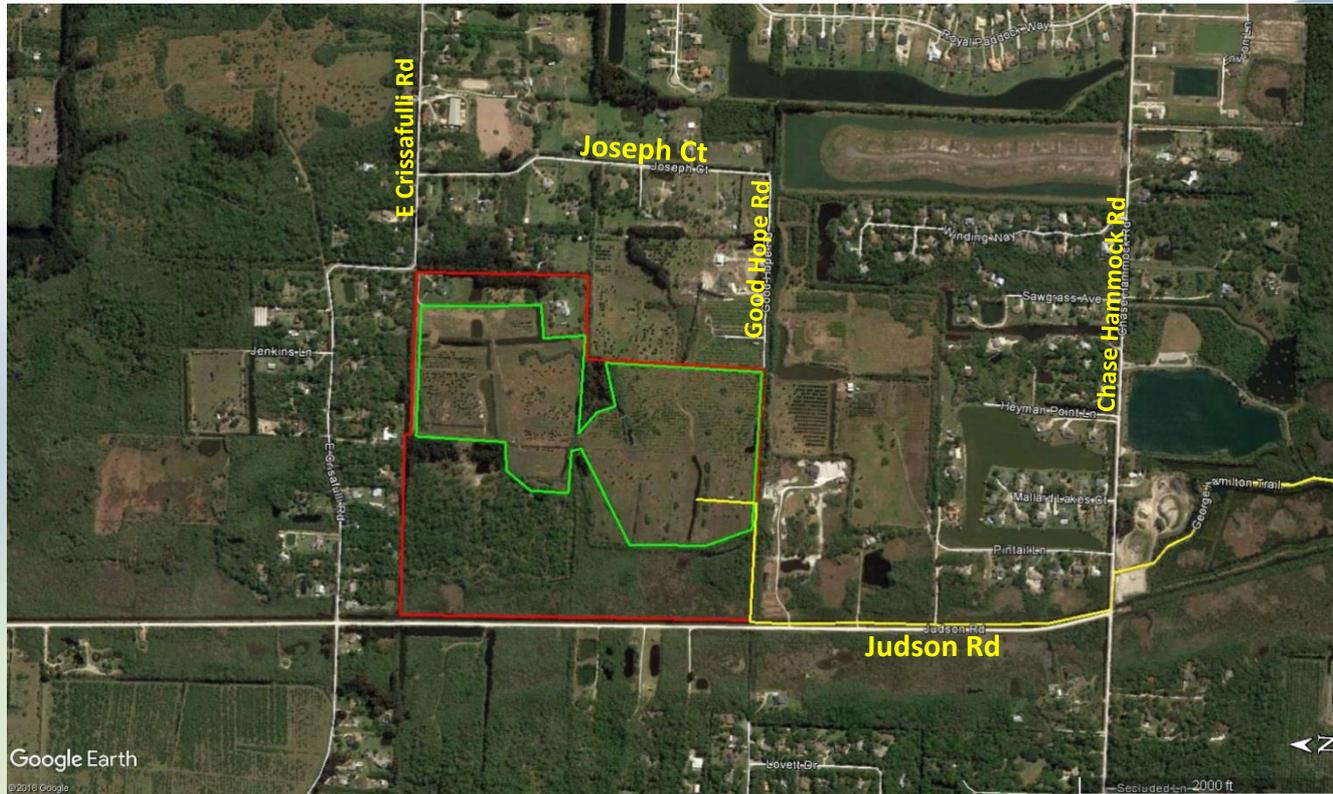
- **Allowed for contractors to propose alternate DMMA sites and offloading techniques**
- **Contractor selection criteria**
 - **Low bulk project unit price**
 - **Technical approach**

Sykes Creek Dredge Project



- **Three proposals received**
 - All proposed different DMMA sites
 - All proposed different technical approaches
 - Permanent DMMA facility
 - Temporary Site - Rapid Dewatering
 - Transport of muck slurry via enclosed tanker trucks

Sykes Creek Dredge Project



Sykes Creek Dredge Project



- **Where Do We Go From Here??**
 - Multiple alternatives will be presented to the BOCC
 - April 24th BOCC Meeting

What have we done so far?



- **REDUCE** incoming new pollution
- **REMOVE** old accumulated pollution
- **RESTORE** natural pollution filters
 - **6 Completed Projects**
 - Bayfront Stormwater Ponds – Palm Bay
 - Breeze Swept Septic to Sewer – Rockledge
 - Central Blvd Baffle Box Upgrade – Cape Canaveral
 - Gleason Park Reuse Water Expansion – Indian Harbour Beach
 - Long Point Park Denitrification Barrier – Brevard County South Beaches
 - Turkey Creek Hurricane Redredging Project – Palm Bay
 - **24 Projects underway**



Responsive Management



- **March 2017 Plan Update provided accelerated funding for 42 projects**
- **63 Projects are Funded in FY 17-18**
 - Located from Mims to Micco on the Mainland, Merritt Island and the Beaches
- **March 2018 Plan Update may add:**
 - 1 Reclaimed Water Treatment Upgrade
 - 3 Septic to Sewer Projects
 - 6 Stormwater Treatment Projects
 - 3 Muck Removal Projects
 - 14 Living Shoreline/Oyster Bar Projects
- **Monitoring Performance/Measuring Success**
 - Installing over 50 groundwater monitoring wells



Established Transparent Lines of Communication



- **Televising Monthly Citizen Oversight Committee Meetings on SCGTV**
- **Posting Plan Updates and Progress Reports on the Save Our Lagoon Website**
<http://www.brevardfl.gov/SaveOurLagoon/Home>
- **Project Highlights on Facebook**
 - <https://www.facebook.com/BrevardCountySaveOurLagoon/>
- **Instagram**
 - <https://www.instagram.com/saveourlagoon/>
- **Informational Videos on YouTube**
 - <https://goo.gl/GBh6xU>

Keep tabs on Progress with a Glance at our online Dashboard



24

Projects In Contract

143

Projects In Plan

(plus 1387 septic tank upgrades)

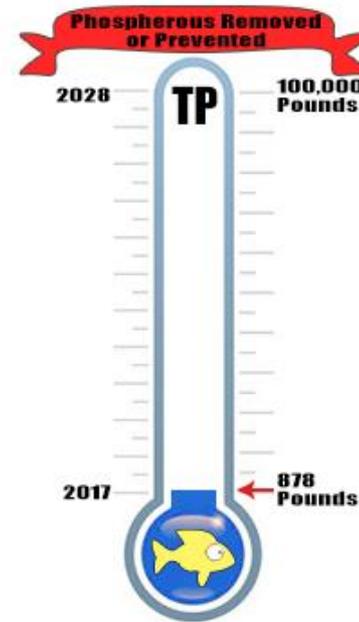
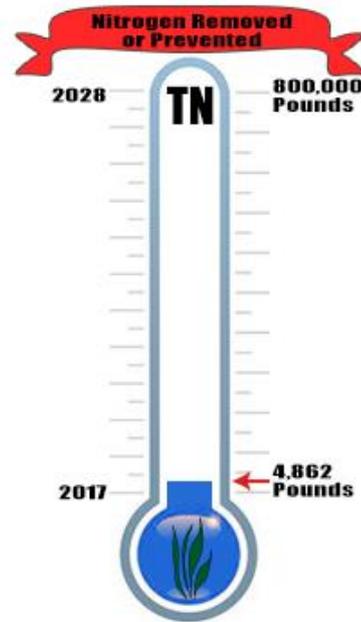
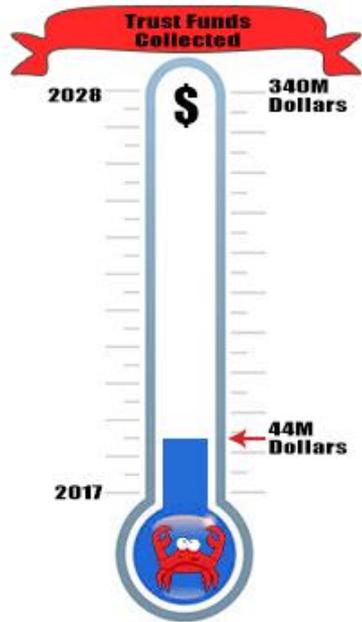
\$44M

Tax Dollars Collected

\$340M

Revenue Projected

Graphics show where we are relative to 10 year goals for pollution reduction





Vision of Success

Healthy Lagoon

Economically Responsible Actions

Strategically Sequenced Timeline

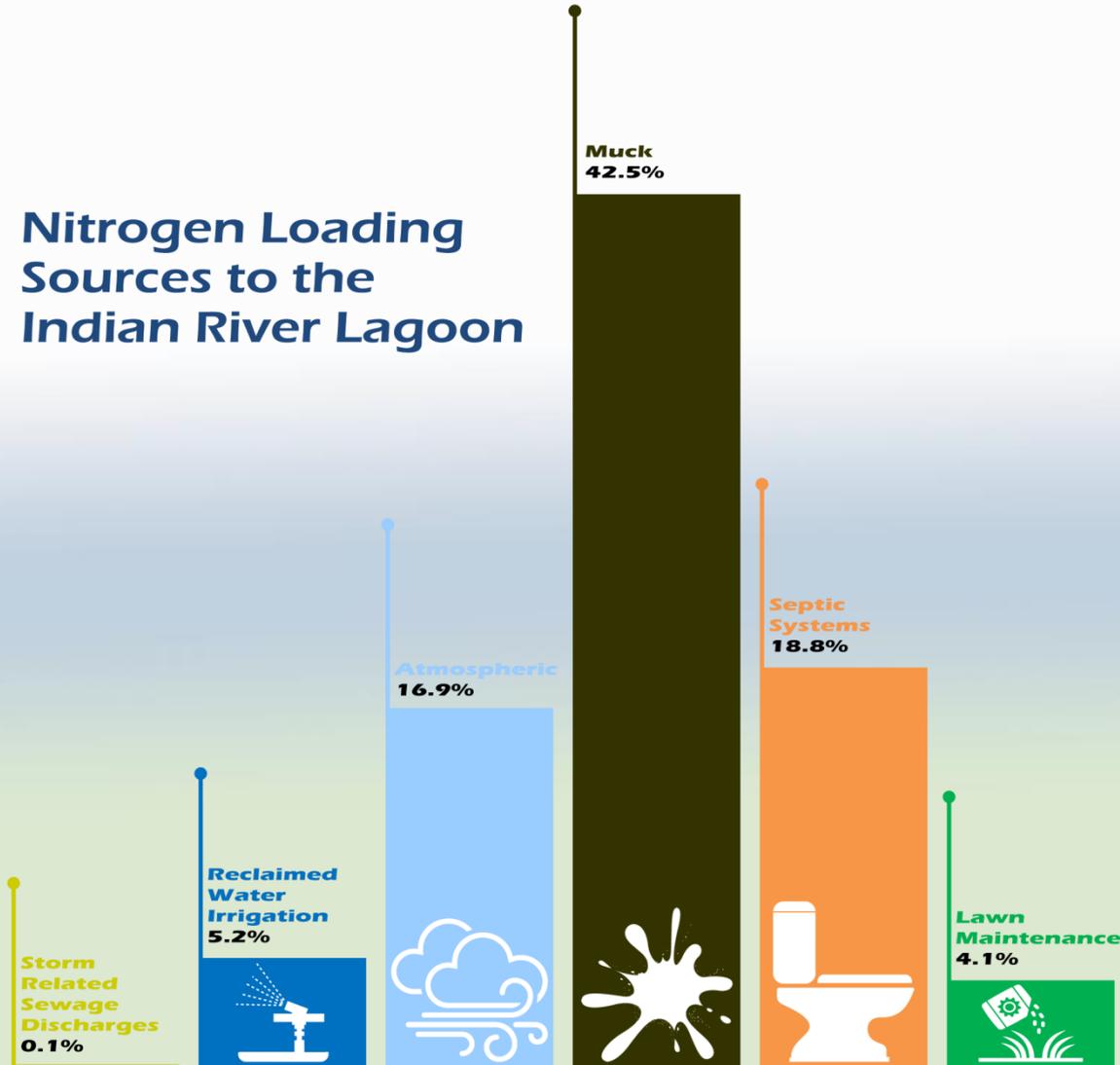
Science-Based, Data-Driven Decisions

Responsive & Transparent Citizen Oversight

Nitrogen Inputs to the IRL



Nitrogen Loading Sources to the Indian River Lagoon



Brevard County Natural Resources Management Department
Save Our Indian River Lagoon Program 2018

Information collected from Save Our Indian River Lagoon Project Plan www.brevardfl.gov/SaveOurLagoon
Infographic does not display Other Non-Point Pollution (11.3%) & Point Source Pollution (1.0%)