Red Tide & you

START

Preserving Our Coastal Waters

START1.ORG

Solutions To Avoid Red Tide

START is a 501 (c) 3 grass roots, non-profit citizens organization launched during the 1995 nearly year-long Red Tide bloom by Longboat Key Mayor, General Jim Patterson.

OUR MISSION:

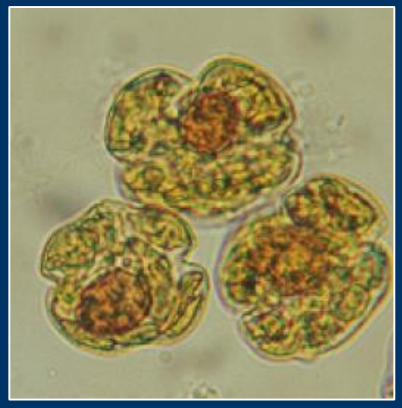
Working to reduce the excess nutrients in our waterways that feed Red Tide

GULF COAST COMMUNITY FOUNDATION

START is a Member of the
Gulf Coast Community Foundation
Nutrient Initiative

What causes a Red Tide?

Red Tide is caused by the Karenia brevis (K. brevis) algae.



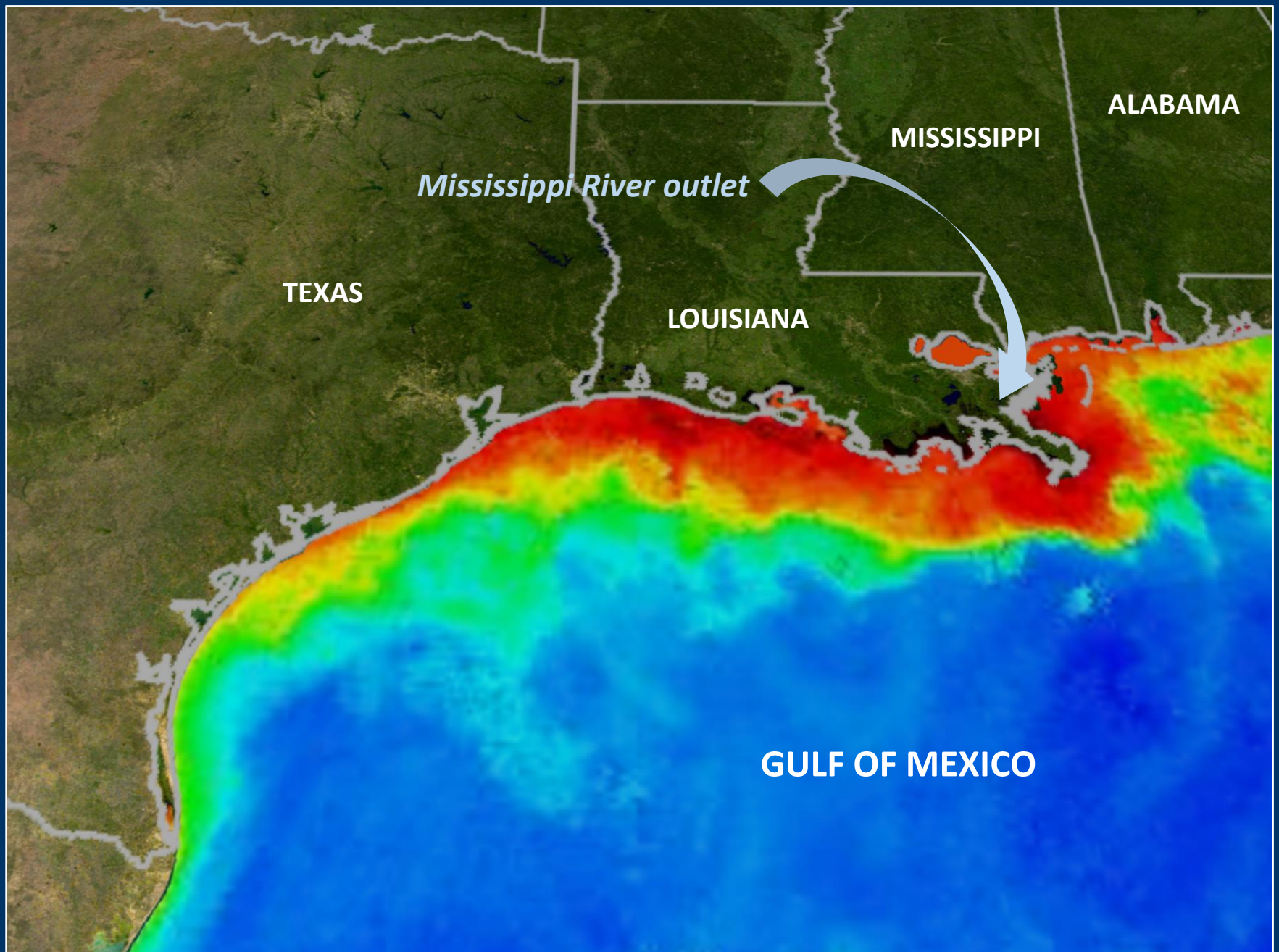
- **A Dinoflagellate, it moves using two flagella**
- **Normally found in trace amounts in Gulf waters**
- **Its Ideal living conditions are:**
    1. Water temperature of 59 – 85 ^{0}F
    2. Salinity from 31% – 34%
    3. Some to bright sunlight
- **It expands into a Red Tide bloom when it encounters an inordinately large source of nutrients** *(nitrogen and phosphorus)*

Why is the Suncoast a hot spot for Red Tide?

- **The Suncoast has its preferred living conditions: water temperature, salinity level and abundant sunlight**
- **We live between the two largest largest sources of excess nutrients in the Gulf of Mexico**

The Mississippi River Delta empties nutrient-rich water from a huge agricultural and industrial area into the Gulf of Mexico.

This produces a major nutrient-laden Dead Zone in the Gulf.

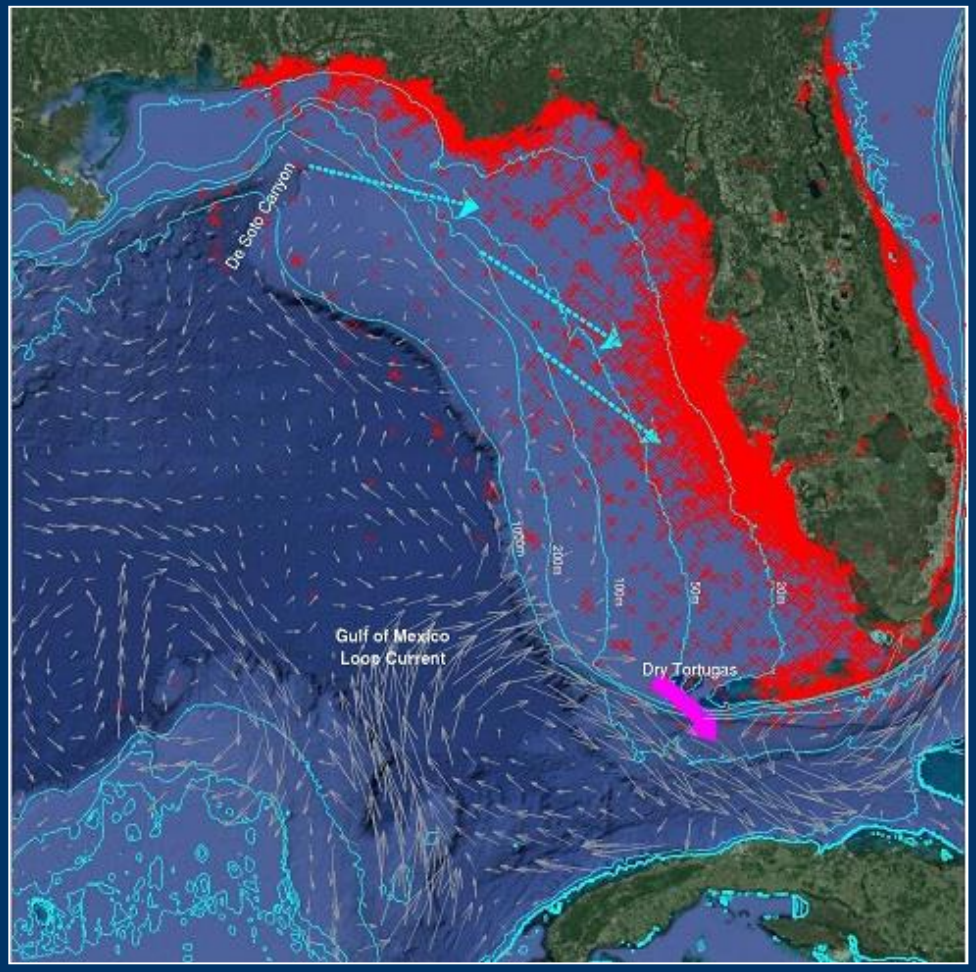


Florida's Lake Okeechobee is so polluted with excess nutrients that it regularly develops toxic blue-green algae blooms.

Polluted releases from Lake Okeechobee travel downstream and feed Red Tide blooms along Florida's coast.

How do these and other nutrient sources combine to form a Red Tide bloom?

A Red Tide bloom happens when:



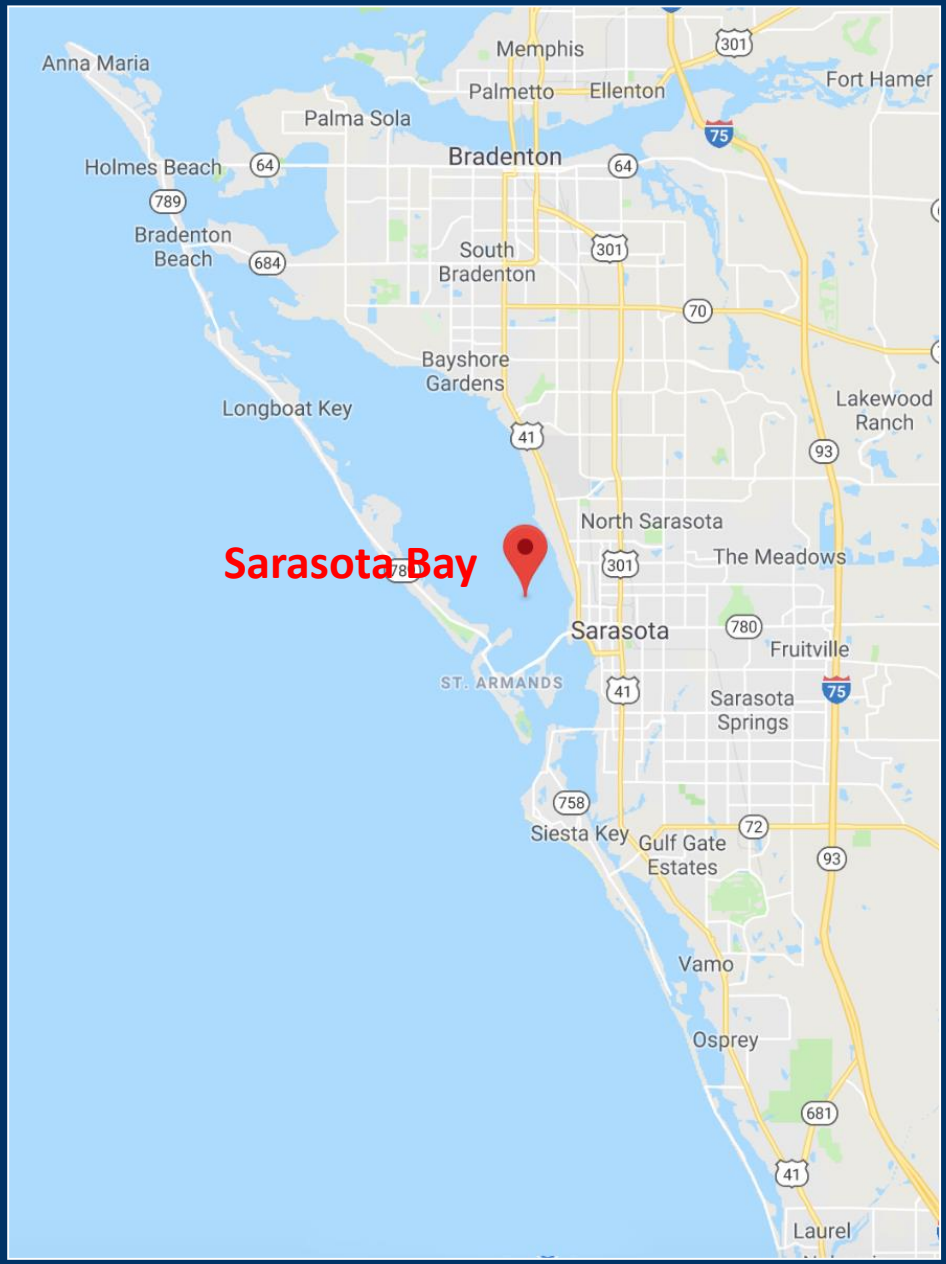
- Nutrient sources enter the Gulf and are driven by its Loop Current to an area near the West Florida Shelf
- At the Shelf, periodic upwellings drive the nutrients up the water column, where they are consumed by K. brevis cells and initiate a bloom
- Currents and wind drive the forming bloom towards our shore
- As the bloom moves nearer the shore, it is further enriched by the additional nutrients from urban runoff

Why is Sarasota Bay particularly vulnerable?

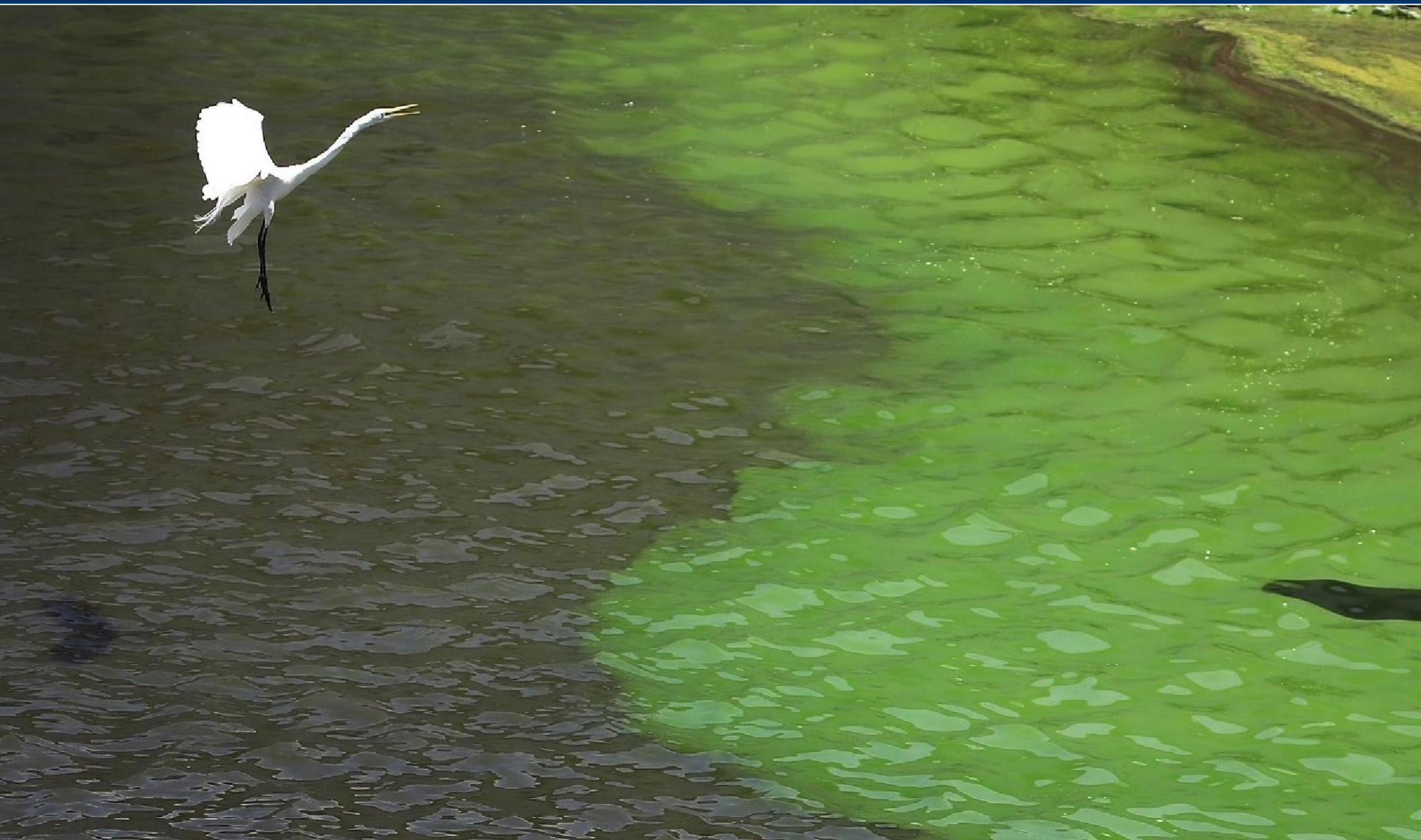
Because Sarasota Bay:

- **Has a higher salinity than most other estuaries** *(fewer fresh water sources)*
- **Has a greater degree of flushing in and out**
- **Is affected by Climate Change – fewer cold winter nights keep the water temperature in a favorable range for Red Tide**

All this adds up to more intense and longer-lasting blooms.



Where do these nutrients come from?



Natural Nutrient Sources

Dead and decaying plants and sea life

Airborne Nutrient Sources

- Power plants
- Automotive exhaust
- Agricultural & mining dust
- Red dust from Africa

Urban Runoff

- Effluent from sewage treatment plants
- Seepage from septic systems

Urban Runoff

Impaired stormwater holding ponds

Red Tide impacts US …

but WE also impact Red Tide.

What has been done so far?

The Sarasota County Administration Center

But much more needs to be done.

1. **Converted 2/3 of the septic systems to sewers**

2. **City of Sarasota *"Ready for 100"* Program** *(100% renewable energy by 2040)*

3. **Upgraded Water Quality Treatments:**

- Manatee County *(50% less nitrogen in effluent)*
- Sarasota County:
  a. Bee Ridge Plant (AWT)
  b. City Grease Ordinance
  c. Donna Bay Hydrologic Restoration Project

What is START doing to help control nutrients that feed Red Tide?

Public Education

- Presentations & Programs to help reduce excess nutrients in our waterways
- Website: *start1.org*
- Monthly E-Newsletter
- PSAs on local TV
- Activity Brochure

Water Quality Outreach With Policy Makers

Promoting State legislation that reduces nutrients in our waterways

1. **Addressing the polluted Lake Okeechobee releases**

2. **Requesting funding for local governments to:**

- Upgrade wastewater treatment plants
- Convert more septic systems to sewers
- Improve *Reclaimed Water Standards (AWT)*

The Tallahassee State Legislature

Water Quality Outreach

Encouraging county and municipal governments to continue upgrading aging infrastructure

The Manatee County Administration Building

- **Wastewater treatment plants**
- **Septic systems to sewers**
- **Cleaner *Reclaimed Water (AWT)***
- **Improve stormwater treatment**
- **Bobby Jones Park *(water quality elements)***

Using Natural Nutrient Control

Oysters – Nature's water filterers

- Each oyster filters 9 – 50 gallons of water per day
- Important part of the food web
- Resistant to Red Tide

Natural Nutrient Control

Gulf Coast Oyster Recycle & Renewal (GCORR) Program

Partners: START, The Chiles Restaurant Group,
Manatee County Department of Parks and Natural Resources,
Gulf Shellfish Institute, Florida Sea Grant Program

- **Restaurants saved shells from diners in special storage bins**
- **Volunteers carted the shells to Perico Preserve for curing**
- **Cured shell was bagged by volunteers, and then set in water as a structure to build new oyster reefs**

Natural Nutrient Control

Gulf Coast Oyster Recycle & Renewal (GCORR) Program

- 30 tons of fresh shell was kept out of landfill
- 30 tons of shell was saved and cured for new oyster reefs
- New fresh shells attracted 23% more oyster spat than more typically-used fossil shells

Natural Nutrient Control

Gulf Coast Oyster Recycle & Renewal (GCORR) Program

Eleven participating restaurants:
Anna Maria Oyster Bars, Beach House, Grove LWR, Mar Vista, Pier 22, The Sandbar, Seafood Shack *and* Swordfish Grill

SHUCK 'N SAVE

- **Professional shell carting by Waste Pro USA**
- **Estimated 80 tons of fresh shell for new oyster reefs; avoids landfill use**
- **Self-sustaining program by participating restaurants; no government subsidy**

Manatee County now has the largest self-funding restaurant recycling program in Florida.

Natural Nutrient Control

START helps fund the:

Sarasota Bay Watch
Clam Seeding Program

- **Fifth year of involvement**
- **The purchase, nurturing and cultivation of clams**
- **Clams seeded into Sarasota Bay**
- **Each clam filters over 10 gallons of water a day**

Natural Nutrient Control

The expanded *Clam Seeding Program*

- **Expanded to Bradenton Beach Pier area** *(200,000)*
- **Mature** *(after-market)* **clams**
- **Predator resistant**
- **Major brood stock**
- **Red Tide mitigation for clam farmers**

There are now over one million seeded clams in Sarasota Bay!

New Direction for START

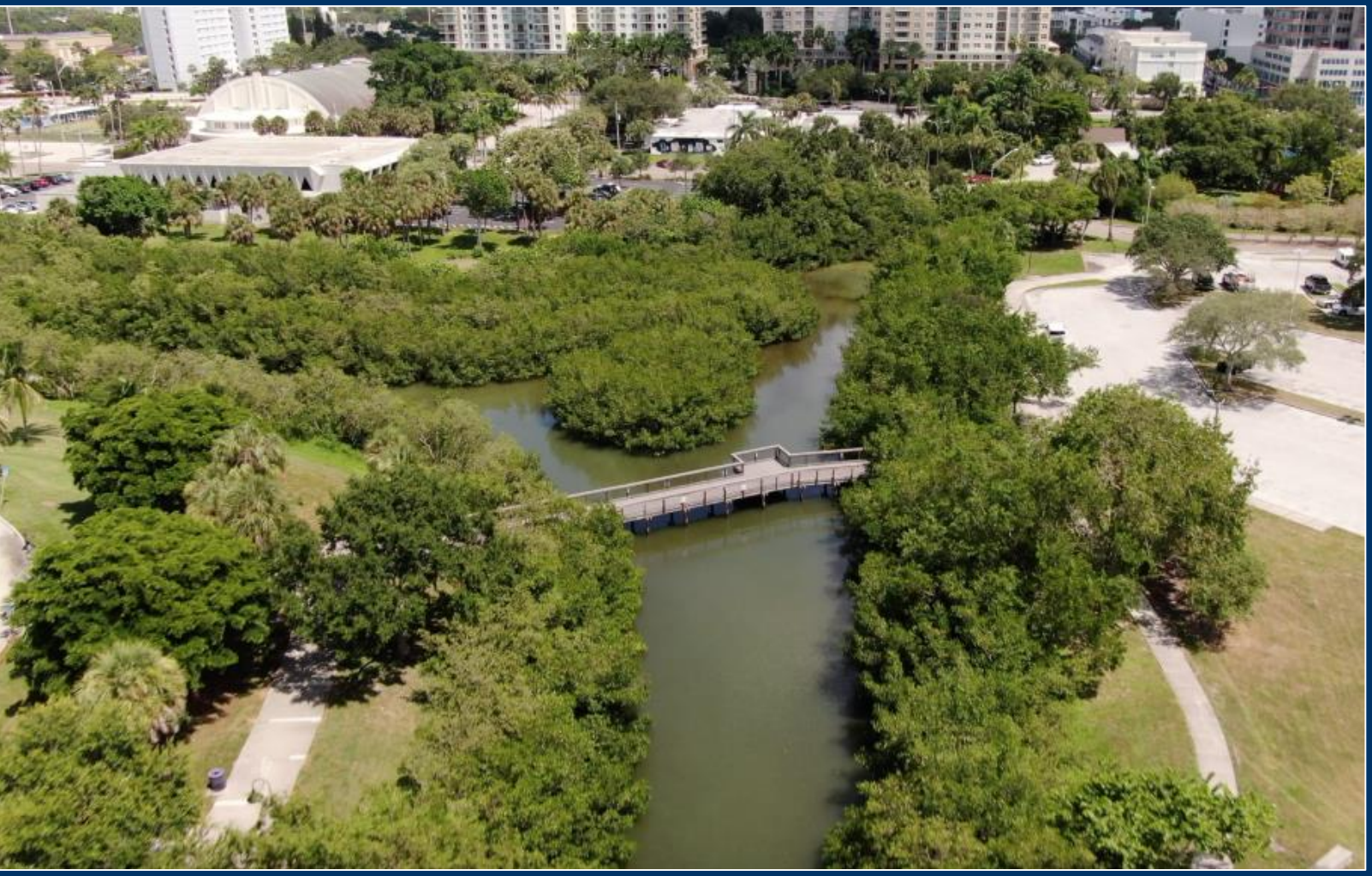
Focus on stormwater

- The amount of Nitrogen in Sarasota Bay has doubled since 2000
- Seagrass and fish stocks are down
- Harmful algal blooms like Red Tide are more prevalent
- Stormwater is a major contributor to excess nutrients in the Bay

New Direction for START

Cleaning up stormwater

- 53-Acre Bay Park on Sarasota Bay
- Landmark Stormwater Filtration System



The Four-Part Nutrient Reduction System:

1. Carbon-Life denitrification barrier
2. *GCORR Oyster Restoration Program*
3. *Sarasota Bay Watch Clam Seeding*
4. Mini Reefs and Reef Balls

Microforest at the Celery Fields

Sarasota Urban Reforesters

- Veterans For Common Sense Foundation
- Sarasota Bay Rotary Club
- Sarasota-Manatee Chapter of the Florida Native Plant Society
- START

Microforest:

A tight grouping of trees, shrubs and herbaceous plants providing:

- Flood control
- *Filtration of excess nutrients*
- *Habitat for birds and wildlife displaced by urbanization*
- Carbon sequestration as a hedge against climate change

Focus on Impaired Stormwater Ponds

- Nitrogen in Sarasota Bay has doubled since 2000
- Seagrass is down by over 30%
- Declining fish stocks
- Stormwater is a major source of pollutants and excess nutrients
- Most stormwater ponds are only functioning at about 40% efficiency
- 95% privately owned

Pond Restorations Make A Difference

- Better Flood Control
- Fewer Excess Nutrients
- More Wildlife Habitat
- More Attractive Waterscapes
- Cost Effective
- Improved Property Values

Water Quality Improves Significantly

Results Achieved In Just 20 Months:*

- **Water Clarity** + 50 %
- **Chlorophyll** - 51 %
- **Phosphorus** - 30 %
- **Nitrogen** - 22 %

** Cormorant Lake at Lakeshore Village* (above); *the 20 Months = December 2017 to August 2019*

Why are these natural nutrient projects so important?

Because we have replaced our natural shoreline ...

with hardened shorelines.

The elimination of mangroves and other shoreline vegetation has caused:

- Reduced filtration of nutrients running into the Bay
- Less food and habitat for fish and other sea life
- Fewer fish and other sea life to consume nutrients in the Bay
- Urbanization/hardening of shorelines adds still more nutrient runoff
- More nutrients in the water-way with fewer plants, fish and other sea life to consume it

The Result: **Lower water quality and more nutrients to feed Red Tide**

How can YOU help?

If your pond looks like this:

Because it will soon look like this:

Your ponds should look like this:

START Pond Restoration Program

1. **Public Education Program:**
   - *Sarasota County NEST Program*
   - Southface Florida House
   - Manatee County Neighborhood Connections

2. **Project Monitoring**
   - Trained Community Volunteers
   - University of Florida IFAS *LAKEWATCH Program*

3. **Neighborhood Funding Support**
   - Sarasota County Neighborhood Grants
   - *Sarasota Bay Estuary Program*
   - *Coastal and Heartland National Estuary Partnership (CHNEP)*
   - Florida Native Plant Society
   - SWFWMD *Water Incentives Supporting Efficiency (WISE)*
   - START (Plant Stock)

Lower your own nutrient footprint.

Fertilize responsibly

- **Follow the fertilizer ordinance:**
  (use nitrogen-limited products)

  1. Don't fertilize during the summer
     (June – September, rainy season)
  2. Don't fertilize within 10 feet of
     a waterway
  3. Use slow-release fertilizer products

- **Keep grass cuttings on your lawn, not on walkways, and out of waterways and storm drains**

- **Create compost and use less fertilizer**

- **Create a chemical-filtering no-mow buffer zone around each body of water: Let your grass grow 18" tall x 3'–10' wide**

Lower your own nutrient footprint.

Pick up after your pet

- Their waste can contain harmful bacteria and parasites
- Rain and irrigation water wash pet feces into ponds and streams, contaminating our waterways
- This can spread diseases like E. Coli, Giardia and Salmonella, causing serious illness in humans and other pets

Lower your own nutrient footprint.

Clean off leaf litter and debris from stormwater drains

- This helps keep excess nutrients and other pollutants out of our waterways
- Clogged storm drains lead to flooding
- Please bag and dispose of this waste responsibly

Lower your own nutrient footprint.

Use less water

- Direct your sprinklers so that the water goes onto the grass, not the sidewalk or the street
- Use a Rain Gauge with your irrigation system
- Don’t irrigate during or after a rain event
- Check flapper valves in your toilets

- Let your dishwasher do the work
- Don’t run the water while you are brushing your teeth

Lower your own nutrient footprint.

Minimize water runoff from your yard

- **Direct downspouts beyond your sidewalk or driveway, and into lawn or plant beds**
- **Use permeable paving for driveways and walkways**

To right, the **Tilt 'N Drain Downspout Extender,** ***available online***

Lower your own nutrient footprint.

Dispose of kitchen waste responsibly

- Pour cooking fats, oils and grease into your trash, NOT into your sink drain. They will accumulate in your pipes and stop up your plumbing, and will do the same to the city's sewer pipes

- All these things cause blockages and spills that will end up adding excess nutrients to our waterways

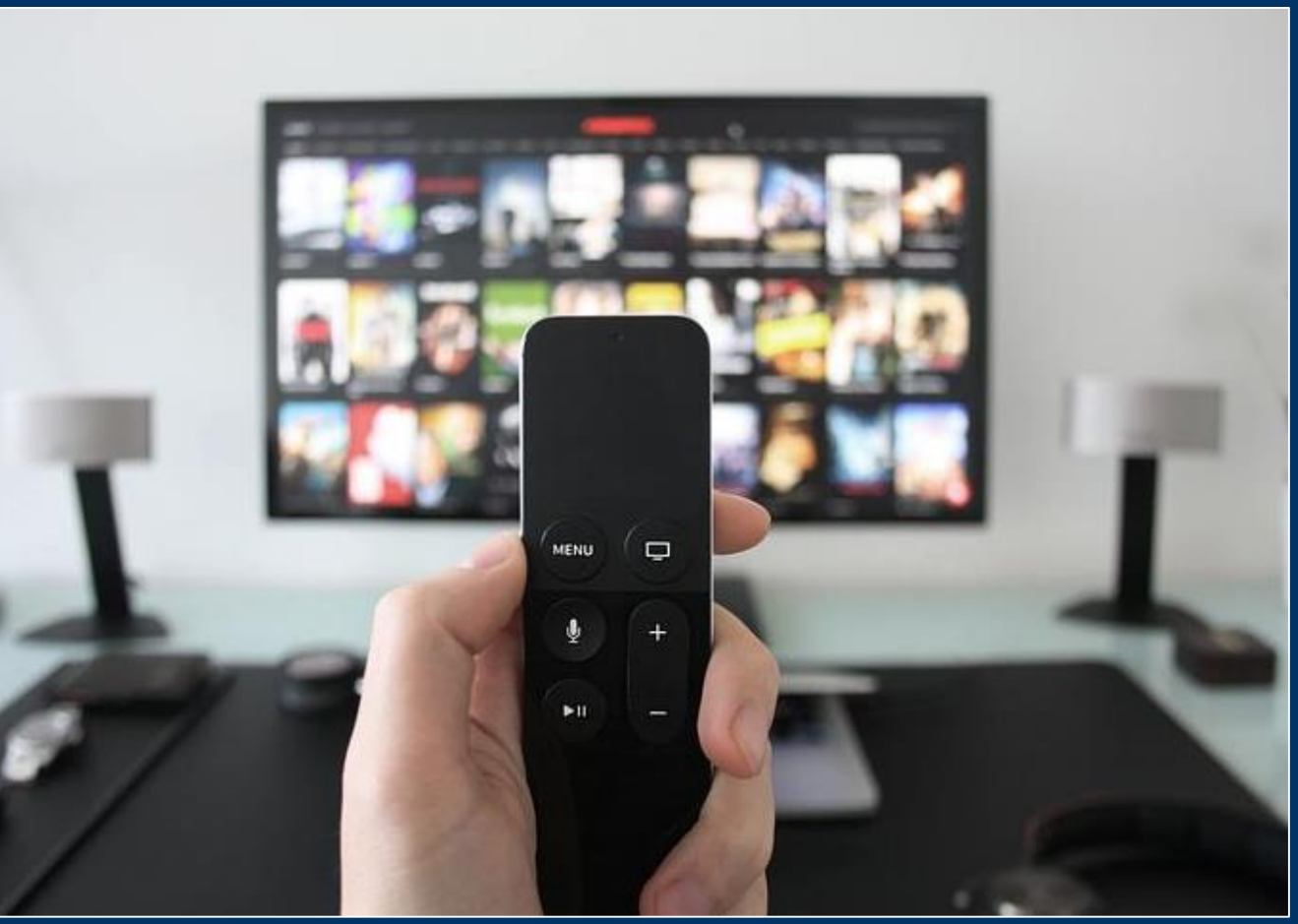
Lower your own nutrient footprint.

Dispose of bathroom waste responsibly

- **ONLY put toilet paper into your toilet; DON'T ever flush tissues, wipes, diapers, tampons or other items, which will stop up your plumbing**

- **All these things cause blockages and spills that will end up adding excess nutrients to our waterways**

Lower your own nutrient footprint.



Use less electricity

- Turn off the TV and the lights when you leave the room
- Switch to LED lighting
- Install Rooftop Solar Panels for water and pool heating
- Consider using solar or geothermal systems to cool and heat your home

Lower your own nutrient footprint.

Soften your shoreline

- **Consider a "living seawall" when it's time to replace yours**
- **Add a "mangrove facing" to your existing seawall** *(right)*

How do we know that reducing nutrients will improve our waterways?

Because it’s being done successfully in a number of other places, like the Chesapeake Bay …

Puget Sound …

and Long Island Sound.

As seen on *60 Minutes:*

- **Water quality improved by reduced nutrient runoff**
- **Now has a thriving seaweed and shellfish aquaculture**

The damages of Acid Rain …

were restored to this.

Acid Rain was eliminated by replacing this …

with this.

Now it's OUR turn.

***Join* START *and be part of the Solution at*: www.start1.org**

Solutions To Avoid Red Tide