

**Comments for  
Citizens for a Better Marco Committee  
Meeting  
December 2, 2022  
by**

Clean Marco Waters, LLC   
*Citizens For Cleaner Water*

<https://cleanmarcowaters.com/>

# Who We Are

- Clean Marco Waters, LLC

## Co-Managers:

- Dave Rasmussen
- Bob Roth
- Andrew Tyler
- Rick Woodworth

# Dave Rasmussen

- I have lived on Marco island since 2002. I have a technical background from my Bachelors of Mechanical Engineering from University of Wisconsin and a business background from my MBA from Kent State. I was a technical and financial advisor to the City of Marco as a member of the Utilities Advisory Committee.
- I have been a technical advisor to multiple City of Marco Councilors, Utility Department Head and City Managers. I live on Caxambas pass and have observed the environmental degradation of the waters in and around our island. My goal is to reverse this so that future generations can enjoy our Island's natural environment.

# Bob Roth

- I first visited the island in the early 1980's. I eventually bought my Marco dream home on a canal in 2010. Prior to retiring to Marco in 2016 I worked as a licensed professional engineer, serving as president and managing partner of a mid-size consulting firm located in Westchester County, NY. The firm specializes in civil engineering, surveying, landscape architecture, planning and environmental studies and is active throughout much of the US.
- As someone who is keenly aware of water quality, I was appointed to the Marco Island Waterways Advisory Committee where he served from 2017 to 2021. In 2020 I was appointed as one of Marco Islands three representatives to the Collier County Coastal Advisory Committee where I currently chair a sub-committee on water quality.

# Andrew Tyler

- I grew up in England and following graduation from the University of Manchester with a specialty in analytical chemistry.
- We became part-year residents in 2014 and moved here full-time in 2016.
- I have volunteered with numerous organizations, including: The Friends of Fakahatchee, Naples Botanical Garden, and Audubon of the Western Everglades, and served for one year on Marco's Beach and Coastal Resources Advisory Committee.

# Rick Woodworth

- After a career in real estate management and development in the Midwest, I bought a home in Marco Island in 2016 and moved to Marco full time in 2017. I became interested in water quality because of the deteriorating condition of the water in the canal behind my home.
- I was appointed to the Marco Island City Council Waterways Advisory Committee (WAC) in July,2018 and appointed Chairman from February 2019 to November 2020. I was also appointed to the Marco Island Audit Advisory Committee in February 2020.
- During my tenure as Chairman, the WAC sent many recommendations to City Council including supporting the choice and funding for the Environmental Research and Design(ERD) Water Quality report published in 2021.
- I was also instrumental in getting the local Magistrate to order Affordable Landscaping to use bolsters to cover canal drains while cutting and blowing grass down Collier Blvd.

- Clean Marco Waters, LLC

Formed  
October, 2021

- **“Dedicated to restoring, preserving and protecting Marco Island’s and surrounding communities’ canals, marine ecosystems and habitats through community outreach, public education, science-based research and advocacy.”**

# Our Mission

All Citizens and property owners of Marco Island need to be aware of the issues affecting our waterways. The nutrient pollution that is affecting our waters is not a new problem and the science behind it has been around for decades . Marco Island City Council and City staff need to take prompt and measurable effective action to improve our water quality. It is the lifeblood of Marco Island and so vital to our canals, sea life, community, our businesses, our health, our lifestyle, and our home values. The time for decisive action is now before our waters are beyond saving.



# Our Goals

In August 2019, Marco was notified by the FDEP that its waterways were officially impaired. In January 2020, the City hired an outside consultant Environmental Research and Design (ERD) to determine where the excess nutrients came from that were measured in our canals. The City hasn't fully accepted the conclusions.

We fully concur with ERD's recommendations and believe the City should start with the two largest nutrient contributors: excessive phosphorus and nitrogen, which are:

**Reducing Nutrients from Reuse Water and over fertilizing landscape.**

Unfortunately, what might appear to be simple solutions are quite complicated from a public policy perspective.

# How the Problems Started

From the Federal Department of Environmental of Environmental Protection Agency (EPA):

**“Nutrient (aka nitrogen and phosphorus) pollution is one of America’s most widespread, costly and challenging environmental problems. The primary sources of nutrient pollution are fertilizer, animal manure, sewage treatment plant discharge, detergents, stormwater runoff, failing septic tanks and pet waste. Excessive nitrogen and phosphorus in water and the air can cause health problems, damage our land and water, and take a heavy toll on the economy.**

- **Nutrient pollution damages the environment and harms water quality. Algal blooms consume large amounts of oxygen that fish, shellfish and other organisms need to survive. Algal blooms can make water cloudy, reduce the ability of aquatic life to find food, and clog the gills of fish. Some algal blooms produce toxins that can cause illnesses or death for animals like turtles, seabirds, dolphins, fish and shellfish. Nutrient pollution causes green slime that affects drinking water, recreation, businesses and property values.**

- **Algal blooms can also negatively impact waterfront property values.”**



# Green Marco Yards Leads to Green and Brown Canals



# Algal Bloom in Marco Canal 2021

An aerial photograph showing a vast expanse of water completely covered with a thick, brownish-green algal bloom. The water's surface is textured with the irregular shapes of the algae, creating a mottled appearance. The bloom extends across the entire visible area of the water body.

# More Marco Algae

# Marco Grass Clippings and Vegetative Debris

Grass Clippings In  
Canals Leads to More  
Algae and Sediment  
Runoff and Seepage  
From Yard Fertilizer  
Highest Source of  
Algae



# Marco Island Water Quality

From City of  
Marco  
Island's  
Website

## **Marco Island Water Quality Information**

- Water quality is a top priority for the Marco Island City Council. The City has over 100 miles of waterways that are used extensively by residents and visitors. In recent years, citizens have become concerned about declining water quality. As a result, in 2019 the City Council hired a consultant to evaluate nutrient sources in the water and make recommendations for water quality improvement. This website includes the final report and presentation, as well as a work plan for our City staff, advisory committees and the City Council.

TABLE ES-1

## RECOMMENDED MANAGEMENT OPTIONS FOR MARCO ISLAND

ISSUE	RECOMMENDATION	COST (\$)
Internal Sediment Nutrient Recycling	Sediment removal is prohibitively expensive; most feasible option is to reduce the rate of nutrient release by improving water quality by managing other sources to maintain aerobic conditions in waterways	189,820,000
Stormwater Management	a. Install shallow swale blocks in swales to increase retention of runoff	\$300/swale block
	b. Install denitrification beds beneath existing swales during maintenance or regrading projects.	8,400/100 ft for media
	c. Continue current inlet filter system to assist in removing solids and debris from waterways	Included in current program
	d. Consider stormwater management requirements for single-family homes such as rain gardens	Low
Seepage Management	Install denitrification beds adjacent to seawalls during repair or replacement; add to new seawalls during construction	27,000 per 100 ft of seawall
Reuse Irrigation	a. Evaluate alternative methods for reuse disposal which do not increase loadings to groundwater or surface water	Unknown
	b. Conduct routine inspection and repair of the reuse irrigation system to prevent areas of overspray	
	c. Provide an educational program to inform residents about nutrients contained in reuse irrigation and potential water quality impacts	
Golf Course	a. Evaluate potential reduction in irrigation rates	Unknown/Low
	b. Reduce fertilizer applications to account for nutrients in irrigation	
Recirculation	a. Locate and clean existing interconnecting culverts, if present	Unknown/High
	b. Conduct a hydraulic study to identify optimum areas for interconnecting culverts to increase recirculation	
	c. Install additional culverts, as necessary	
Street Sweeping	City to purchase regenerative air sweeper in 2022; increase sweeping to all City streets.	Low
Fertilizer Ordinance	a. Assist retailers with educational signage regarding summer season ban	Low
	b. Increase enforcement and revoke license from repeat offenders	
	c. Modify ordinance to require consideration of nutrients in reuse	
Public Education	a. Conduct public education program to inform residents of link between personal activities and water pollution	Low
	b. Conduct a dedicated educational program regarding responsible fertilizer use.	
Stormwater Utility	Adopt a Stormwater Utility to provide a dedicated funding source for water quality improvement projects	Unknown/Low
Regulatory Issues	The City should submit documentation for a 4e designation which would allow the City to control the process rather than FDEP	Low
Water Quality Monitoring	a. The City should continue the current monthly monitoring program to provide documentation on water quality improvements; improvements are recommended to enhance the existing program	Low
	b. Contract with a qualified water quality consultant to conduct annual reviews of data and trends and provide guidance on implementation of water quality improvement projects	

# RECOMMENDED MANAGEMENT OPTIONS FOR MARCO ISLAND



# City of Marco Island Water Quality Matrix

## 9/14/2022

Issue	Recommendation	Cost	Owner	Disposition	Follow-up Action	Progress Expectation	Council Action?	Target for Council Action	
<b>Internal Sediment</b>	Sediment Removal - Dredging	\$189,820,000	N/A	Presumed Cost Prohibitive - Set	Refer to Public Works Staff	25 swale-blocks at outfalls restored to date	No		Key
<b>Stormwater Management</b>	a. Install shallow swale blocks to increase retention of runoff	\$300/swale block	Martin	Implement	Refer to Public Works Staff	25 swale-blocks at outfalls restored to date	No		No Further Action Expected
	b. Install denitrification beds beneath existing swales during maintenance or regrading projects	\$8400/100ft for media	Gewirtz	Verify budget availability/Implement	Refer to Public Works Staff	Prototype in design	No		Action Completed or Ongoing
	c. Continue current inlet filter system to assist in removing solids and debris from waterways	Included in current programming	Martin	Continue current program/ lift moratorium on new installations	Public Works Staff	New vendor being sought, Suntree no longer exists	No		Preliminary Work in Progress
	d. Consider stormwater management requirements for single-family homes such as rain gardens	Low	Gewirtz	Refer to: WAC, and Planning Board	Staff to provide prototype ordinance	Not approved by Planning Board or City Council	Yes		
<b>Seepage Management</b>	Install denitrification beds adjacent to seawalls during repair or replacement; add to new seawalls during construction	\$27,000 per 100 ft of seawall		Refer to WAC and Planning Board	Staff to provide prototype ordinance	Dismissing as cost prohibitive			

	a. Evaluate alternative methods for reuse disposal which do not increase loadings to groundwater or surface water	Unknown	Poteet	Commissioned Jacobs Engineering Report	Report completed and delivered	Recommendations under study relative to Dr. Harper's report	Yes	TBD	
<b>Reuse/irrigation</b>	b. Conduct routine inspection and repair of the reuse irrigation system to prevent areas of overspray	Unknown	Poteet/Martin	Utilities/Public Works Staff	Begin immediately	1) Review of medians completed, adjustments ordered 2) Condo zone inspections 50% complete	No		
	c. Provide an educational program to inform residents about nutrients contained in reuse irrigation and potential water quality impacts	Unknown	Poteet	Staff/WAC		Materials in use	No		
<b>Oil Course</b>	a. Evaluate Potential reduction in irrigation rates b. Reduce fertilizer applications to account for nutrients in irrigation	Unknown/Low	Poteet	Utilities Staff	Staff to work with NCC staff	a. Completed b. Completed			
	a. Locate and clean existing interconnecting culverts, if present	Unknown	Martin		Staff to identify actual locations	Building inventory of how many and where they are			

<b>Recirculation</b>	Identify optimum areas for interconnecting culverts to increase recirculation	Unknown/high	Martin						seeking State funding for hydraulic study	
	c. Install additional culverts, as necessary	Unknown/high	Martin					In Design	TBD	
<b>Street Sweeping</b>	City to Purchase regenerative air sweeper in 2022; increase sweeping to all city streets	Low	Martin	Public Works Staff				In 2021/2022 Adopted Budget	Purchase Order issued, delivery summer 2022	Yes
	a. Assist retailers with educational signage regarding summer season ban	Low	Grigsby	Staff/WAC					In Place by 05/2023	No
<b>Fertilizer Ordinance</b>	b. Increase enforcement and revoke license from repeat offenders	Low	Code Enforcement	Staff/WAC/BAC					Targeted enforcement continues weekly	Yes
	c. Modify ordinance to require consideration of nutrients in reuse	Low	Grigsby	Staff/WAC/BAC					Recommended eliminating as unenforceable through ordinance	Yes
<b>Public Education</b>	a. Conduct public education program to inform residents of link between nutrient fertilizer and water		Grigsby	Staff/WAC/BCRAC					In Development	No
	b. Conduct a dedicated educational program regarding responsible fertilizer use		Grigsby	Staff/WAC/BAC					In Development	No
<b>Stormwater Utility</b>	Adopt a Stormwater Utility to provide a dedicated funding source for water quality improvement projects	Unknown/Low	McNeese	Staff/WAC					Staff to identify appropriate party to present an overview to City Council	Yes
<b>Regulatory Issues</b>	The City should submit documentation for a 4e designation which would allow the City to control the process rather than DEP	Low	Martin	Public Works Staff				Work with DEP to outline process	4e process initiated	TBD
<b>Water Quality Monitoring</b>	a. The City should continue the current monthly monitoring program to provide documentation water quality improvements; improvements are recommended to enhance the existing program	Low	Martin	Public Works staff/WAC				In 2022/2023 Budget	Adding additional offshore and upriver sampling for 2022/2023	Yes
	b. Contract with a qualified water quality consultant to conduct annual reviews of data and trends and provide guidance on implementation of water quality improvement projects	Low	Martin	Public Works staff/WAC				Develop Proposal	TBD	Yes
										TBD

## Five Recommendations for Reversing the Declines in our Waterways

- Based on the “Recommended Management Options for Marco Island “ matrix presented in the conclusion of the ERD report in August 2021, and as discussed within the Position Paper prepared by Clean Marco Waters LLC, there are five major points we believe that, if adopted, would contribute to improving the quality of the waters surrounding Marco Island.
- We also believe that these five points represent the minimum that the City should put in place ASAP, and that certain other practical recommendations within the ERD report should be considered and implemented.

# #1 Reuse Irrigation

- > 2.4-3 million gallons per day (mgd) of partially treated wastewater is produced by the sewer plant and should not be disposed of on vegetation 365 days / year, especially in rainy season, when plants can't use it.
- Improve the sewer plant to produce a cleaner reuse water product versus the minimum standard required by the State and in the current Wastewater Permit. Reuse water is a chronic source of nutrients that are damaging the waterways.
- Install rain sensors to direct excess reuse water to the existing deep injection wells when not needed.

# Revised Active Reuse Areas



# Pollution from Deeply Discounted Reuse Water

(60-70% less than Potable Water)

	<u>Per Day</u>	<u>Per Year</u>	<u>As 10-0-0 Fertilizer</u>	<u>As 0-4-0 Fertilizer</u>
Average Gallons of Reuse Water	2,400,000 2.4mgd	900,000,000 900mgd		
Pounds of Nitrogen	144	52,935	525,350 pounds	
Pounds of Phosphorus	87	31,840		796,000 pounds

# #2 Fertilizer Ordinance

- Strengthen the existing law and enforce it. Make sure all landscapers and fertilizer applicators are registered.
- Stop landscapers from blowing grass clippings and other vegetative debris in the canals.
- Significantly restrict the application of fertilizers and herbicides on Marco Island.
- Set a goal. Reduce fertilizer use by X% in Y years. Direct the Stormwater/Environmental utility to see to it.

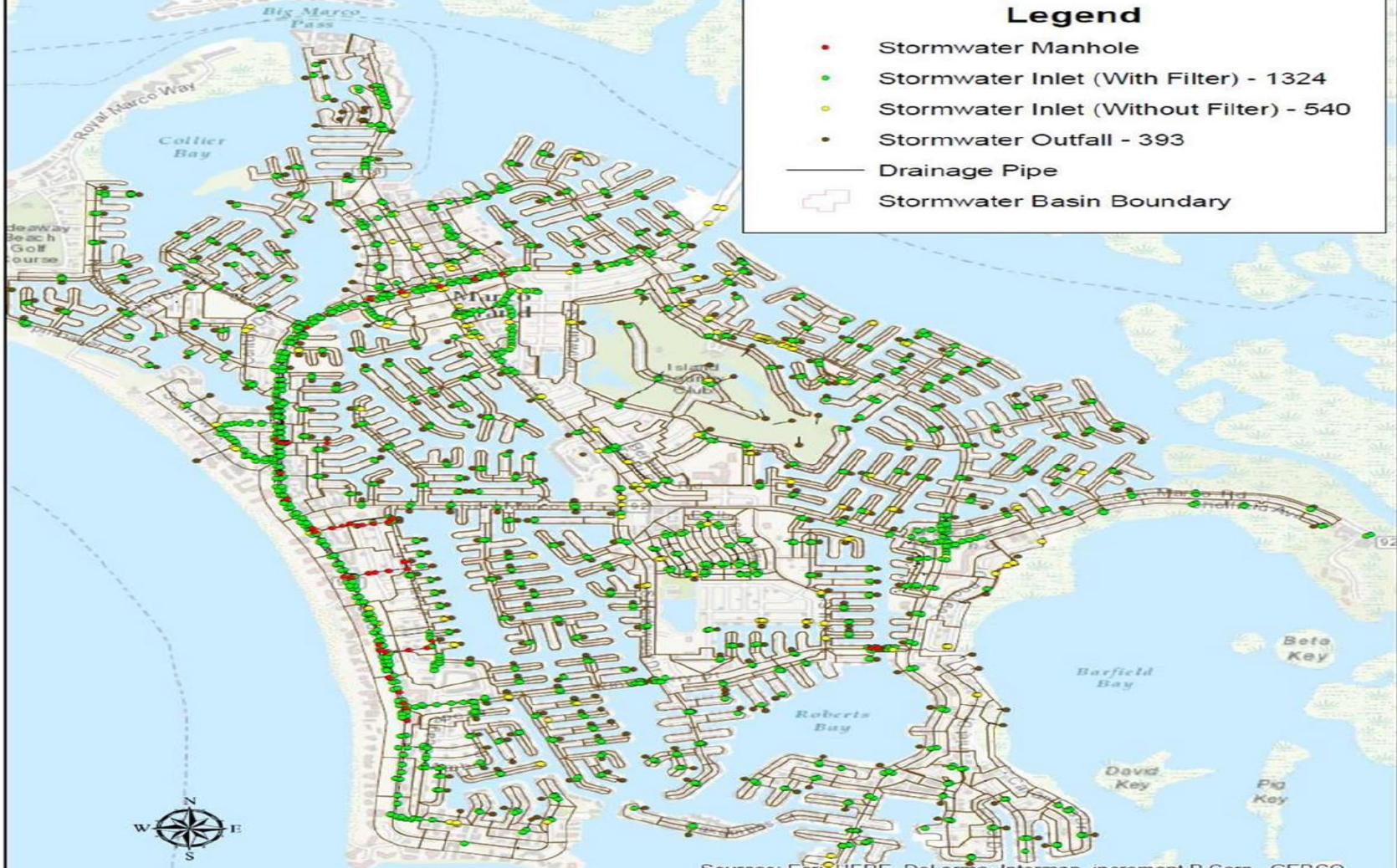
# Marco Island Fertilizer Ordinance

- **In March 2016 Marco Island has adopted a Fertilizer Ordinance that restricts the amount and timing of fertilizer applications**
  - Prohibits application of P unless a soil test identifies a deficiency
  - Summer season ban (June-Sept), except for commercial applicators
- **Prohibitions on discharge of grass clippings, vegetation debris, and fertilizers onto impervious surfaces**
- **Fertilizer free zones**
  - Fertilizer shall not be applied within 10 ft of waters or storm drains
  - Fertilizer shields required when next to impervious surfaces
- **Education and outreach**
  - The City will provide educational materials and 2 educational sessions per year
  - Retailers must post notice of Ordinance in conspicuous place
- **Enforcement provisions**
  - First violation = NTE \$150, then increasing to NTE \$300
- **Does not require consideration of nutrients in reclaimed water**
  - Recommend modifying Ordinance

# City of Marco Island Stormwater Management Program Major Drain Basins

## Legend

- Stormwater Manhole
- Stormwater Inlet (With Filter) - 1324
- Stormwater Inlet (Without Filter) - 540
- Stormwater Outfall - 393
- Drainage Pipe
- Stormwater Basin Boundary



1 inch = 3,000 feet

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community



# # 3 Public Education

- Conduct programs to inform residents of the link between personal activities and water pollution.
- Increase public contact through the City web site, social and printed media.
- Encourage adjacent communities to follow Marco's lead in environmental advocacy.
- Encourage the elimination of septic systems in adjacent communities by connections to the sewer system.

## #4 Water Quality Monitoring

- Continue current water quality monthly monitoring program and expand coverage to monitor adjacent offshore areas.
- Retain outside expertise to help monitor status and to conduct additional investigations as may be warranted.

# #5 – Stormwater Utility

- Create a municipal stormwater utility for all of Marco Island.
- Hire true stormwater environmental staff, funded by the future district revenue to create a new City **Dept. of Stormwater/ Environment**.
- As indicated in the ERD report, it is likely that such a utility district will have access to grant money otherwise not available to Marco in its current structure. Possibly for sewer plant upgrades.
- Over 170 other Florida cities already have a similar utility district and dedicated staffing.

# Stormwater Utility

## Stormwater Utility Facts:

1. The average monthly stormwater utility rate in Florida in 2022 was approx. \$8.05/month or \$96.60 per year.
2. Based on 20,000 Marco residents it could generate \$1,932,000 annually.
3. Would help manage stormwater pollution from fertilizer and other toxic contaminants.
4. Would provide a dedicated source of funding and staffing.

# Summary

The City of Marco Island needs to do the following:

1. Upgrade the wastewater plant to produce cleaner reuse water.
2. Enforce its current Fertilizer Ordinance and reduce fertilizer application.
3. Increase public awareness through better education about our water quality issues.
4. Continue expanded water testing and hire outside professionals to advise on progress and solutions.
5. Create a Stormwater Utility to fund water quality programs and a Department of the Environment.

# Source Documents on Best Practices for Environment, Stormwater Initiative and First Steps on Pollution Reduction and Waterbody Restoration

11/10/2022

- **Marco Island Nutrient Source Evaluation-ERD Dr. Harvey Harper**
- [https://www.cityofmarcoisland.com/sites/default/files/fileattachments/waterways\\_committee/page/76451/marco\\_island\\_final\\_report\\_-\\_september\\_2021.pdf](https://www.cityofmarcoisland.com/sites/default/files/fileattachments/waterways_committee/page/76451/marco_island_final_report_-_september_2021.pdf)
- **City of Marco Island Turrell Hall Report 2019**
- [https://www.cityofmarcoisland.com/sites/default/files/fileattachments/growth\\_management/page/60218/turrellhallreport2019.pdf](https://www.cityofmarcoisland.com/sites/default/files/fileattachments/growth_management/page/60218/turrellhallreport2019.pdf)
- **City of Marco Island Fertilizer Ordinance**
- [https://www.cityofmarcoisland.com/sites/default/files/fileattachments/growth\\_management/page/5971/fertilizer\\_ordinance\\_16-02.pdf](https://www.cityofmarcoisland.com/sites/default/files/fileattachments/growth_management/page/5971/fertilizer_ordinance_16-02.pdf)
- **Stormwater Ordinance**
- <https://www.cityofmarcoisland.com/sites/default/files/fileattachments/ordinance/59381/18-07.pdf>
- **Department of Environmental Protection**
- <https://www.epa.gov/sites/default/files/2015>

Thank you!

<https://cleanmarcowaters.com/>