



# Water Sampling Case Study



Lake Worth Waterkeeper is a 501(c)(3) dedicated to the advocacy of the Lake Worth Lagoon watershed, which encompasses most of Palm Beach County between and including Lake Okeechobee to the west and the Atlantic ocean to the east. The Lake Worth Lagoon and its watershed is a northern estuary of the Greater Everglades ecosystem, thus it suffers many of the same environmental issues found throughout the Everglades.

Lake Worth Waterkeeper is a member of Waterkeeper Alliance, a 501(c)(3) protecting our right to **drinkable, fishable, and swimmable water** worldwide. Water quality monitoring is common to most Waterkeepers as it is an effective tool in **fighting pollution**. The data collected from monitoring often leads to infrastructure fixes and **policy changes** needed to fight pollution.

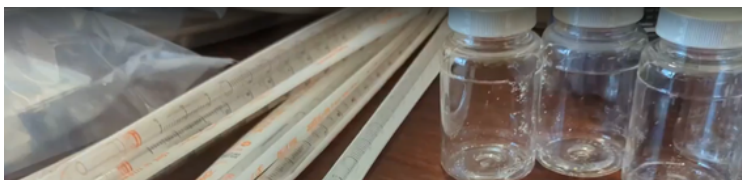
Lake Worth Waterkeeper's water quality monitoring program was one of our first major efforts organized from a humble beginning. Our water quality monitoring bolstered our organization's **voice in the community**, and has been the driving force behind much of our growth since. In our early days, our organization was largely a one-man operation with your Waterkeeper, Reinaldo. Thus began our start of **building solid partnerships** to help us become effective with limited resources.

## CHALLENGES

- Lack of monitoring for inshore waters
- Need for public education on water pollution issues
- No policies in place for water protections

## BENEFITS

- Educated and informed community
- Science-backed policy changes
- Clean water supply



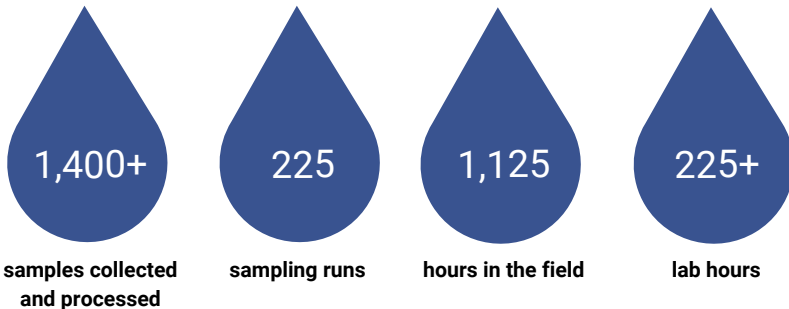


One of those key partnerships is with Surfrider Foundation’s Palm Beach County Chapter and the Gale Academy of Environmental Science at Forest Hill High School.

Surfrider does their own enterococcus bacteria sampling along our beaches, and they partner with Gale Environmental Academy where students process their samples. They needed someone to process their samples throughout the summer when students were not in school. So **Lake Worth Waterkeeper stepped up** to process the samples during the summer. This was critical for us to get our own program started throughout the Lake Worth Lagoon because we had Surfrider’s lab equipment installed in our office, and they were thrilled to allow us to do our own sampling with their equipment.

That first summer **we started with just 10 samples** in the lagoon a week. The data from those few months were instrumental in us getting our first major grant, which enabled us to acquire our own high-end equipment and tools so we can run our program year-round.

Today we sample up to **16 sites a week** throughout the Lake Worth Lagoon. And in the fall of 2021, we were able to **expand our program** with paid staff and expand our sampling with 6 freshwater sites upstream in our watershed.



**13,500 MILES TRAVELED**



### TESTING EXPLAINED

Lake Worth Waterkeeper uses industry-standard tests and standards used by many organizations and government agencies to detect enterococcus and fecal indicator bacteria like E. coli in water samples. We utilize our Waterkeeper Alliance partnership with IDEXX to purchase our Enterolert and Colilert tests at a discount. We acquire nearly all of our other testing supplies in bulk with discounts as well. And as a nonprofit NGO, we have a streamlined process that allows us to be highly cost-effective in our water quality monitoring compared to others who use the same tests.

The **Beaches Environmental Assessment and Coastal Health Act** (BEACH Act) was an amendment to the Clean Water Act that set forth the standards used and is instrumental in local Department of Health offices undertaking bacteria testing through a grant program. However, as the BEACH Act name suggests this is usually limited to oceanside public beaches. Therefore, Lake Worth Waterkeeper is **filling an important void** by monitoring inshore coastal estuary and freshwater lakes. Further, our sampling is **not limited** to public use beach areas, because in addition to the public warning aspect our water quality monitoring is primarily designed to search for problematic pollution sources.

Water quality data is used to aid in advocacy and policy reform to protect clean water. Additionally, it is used as a tool to educate those locally about the watershed and to inform other partners of the water quality that may be affecting their work.

- Enterococci and E. coli defined: these bacteria are found in the digestive system of most animals, including humans, thus they can be found in nearly all waters of the world.
- Enterococci is the standard for estuary and marine water, fecal indicator and E. coli is tested in freshwater environments.
- Both bacteria respond to nutrient pollution, phosphorus and nitrogen especially. Which acts as a food source that gives the bacteria energy to bloom to unsafe numbers.
- Nutrient pollution is commonly sourced from things like agriculture and landscape chemicals, sewage leaks, stormwater runoff, and more.
- Additionally, areas of poor habitat quality with little to no sub aquatic vegetation often allow bacteria to bloom. Thus overdevelopment and runoff of herbicide chemicals that affect sub-aquatic vegetation such as seagrass is a major concern.

## RESULTS

Lake Worth Waterkeeper's water quality monitoring has been **noticed by many** throughout the community, including government agencies and other organizations. For example, Palm Beach County's Environmental Resource Management's Department Director, Deborah Drum, mentioned our water quality monitoring as **an example of effective partnerships** between government agencies and NGOs. We are also similarly described in the Lake Worth Lagoon Management Plan. And recently, we are directly linked to on the **Lake Worth Lagoon Initiative's Water Quality Dashboard** online, a distinction shared only with the South Florida Water Management District.



Our water quality monitoring is leading to **real substantial changes** in our community. We are currently working with the city of Lake Worth Beach after we discovered a likely major sewage leak into the Lake Worth Lagoon. Our data has pointed out a likely underground **infrastructure leak** into a stormwater management drain. This data was collected as a science fair project by one of our high school interns from the Gale Environmental Academy at Forest Hill High School. This student has **learned how to sample water**, process the bacteria tests, and correlate that data with environmental DNA samples that pointed out the bacteria bloom was associated with human sewage. The city is now working towards resolving this issue.

## CONCLUSION

The Lake Worth Lagoon is known internationally for its great snorkeling, scuba diving, fishing, kayaking, and paddleboarding and our mission is to protect that reputation. We ask for your support so that our highly successful water quality monitoring can continue to progress.

Lake Worth Waterkeeper has always prided itself on being financially efficient while addressing serious problems. We'll be able to accomplish so much more with your support.

## CONTINUING NEEDS

- Hourly full-time employment for water samplers
- Supplies breakdown:
  - Tests and Quantitrays
  - Sterile mixing bottles
  - Sterile pipettes
  - Water sample bags
  - Calibration solutions

**\$18.89**  
weekly cost -  
lagoon sample

\*Numbers based on  
19 weekly samples.  
(12 lagoon and 7  
freshwater)

**\$20.40**  
weekly cost -  
freshwater  
sample

## MAJOR ASKS

- Company vehicle for water sampling runs and other fieldwork
- Shallow water skiff to expand into more scientific research opportunities
- Another YSI Meter for our samplers
- Autoclave and supplies to start using reusable glass pipettes