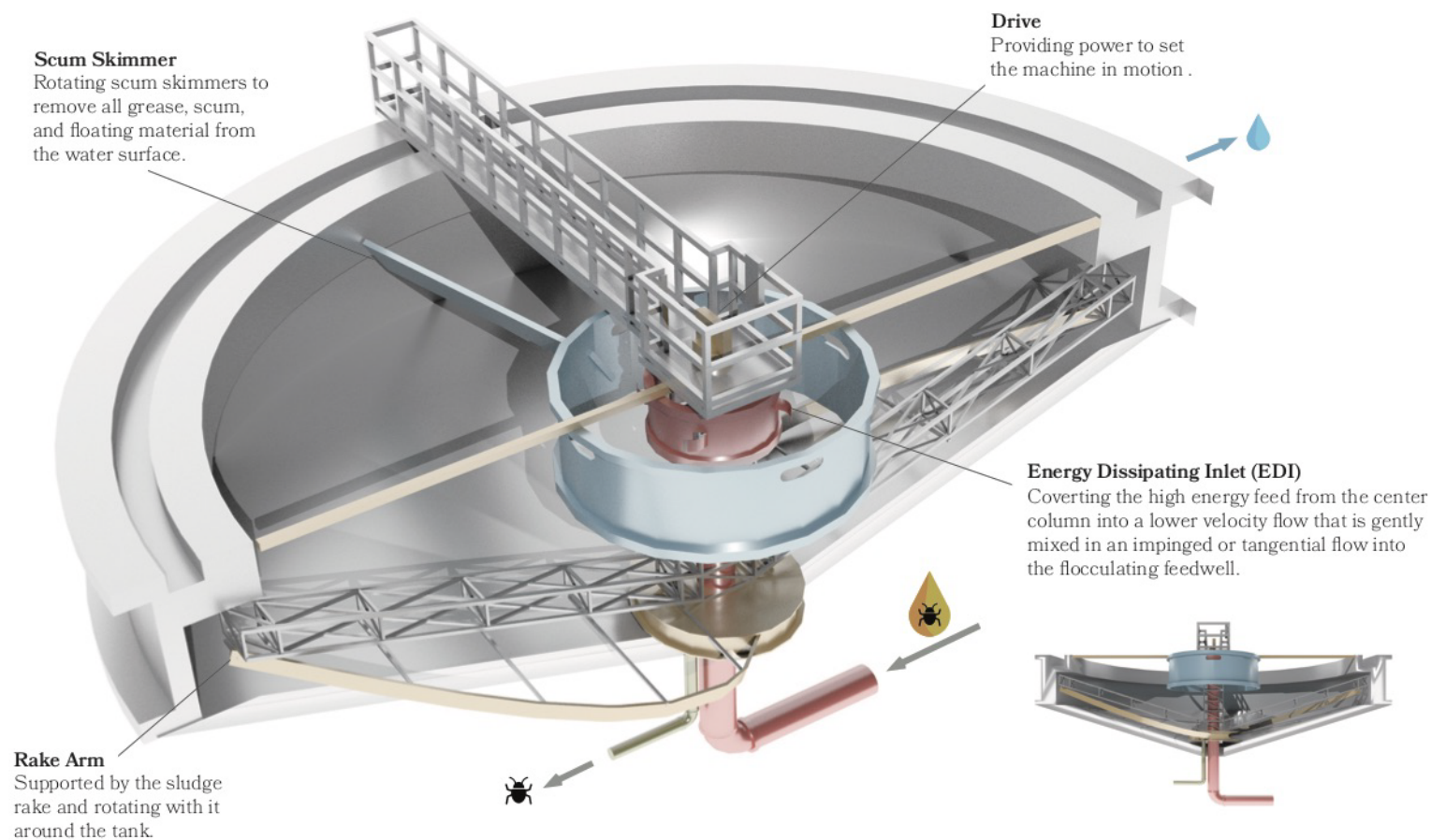


Where Did Your Daily Wastewater Go?

Have you ever thought about where water goes when you flush your toilet? Do you think somebody is going to use the water after you wash your hands? Water use is 140.24 Gallons per person per day in Miami-Dade County (As of 2017). At this rate of usage, how do we recycle the waste water efficiently and effectively? Here's the catch. All waste water in Miami Dade County will go through the Miami-Dade Wastewater Treatment Process. This process concern is a concern for our environment.

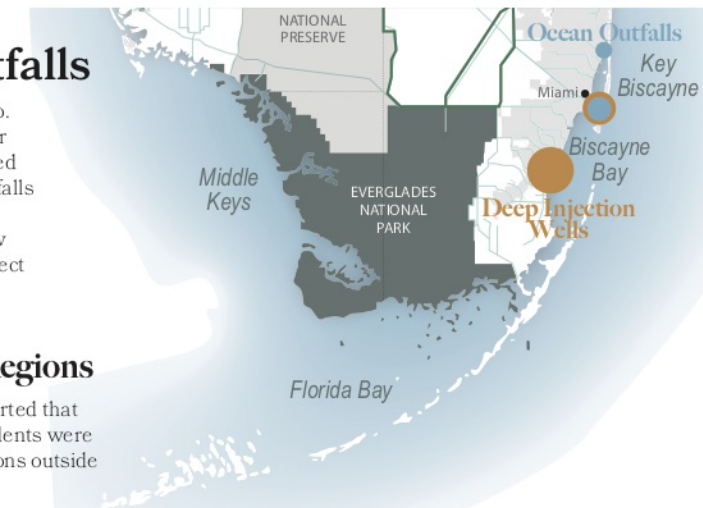
CLARIFIER BASICS

Clarifiers are settling tanks used to remove solids and organics discharged through stirring. Used to treat wastewater since 2000, they are often used during pre-treatment and secondary treatment processes. Primary clarifiers create a sludge which is the result of solids suspended through sedimentation. Secondary clarifiers use microorganisms to remove biodegradable material and bacteria in the remaining wastewater, thus producing cleaner water.



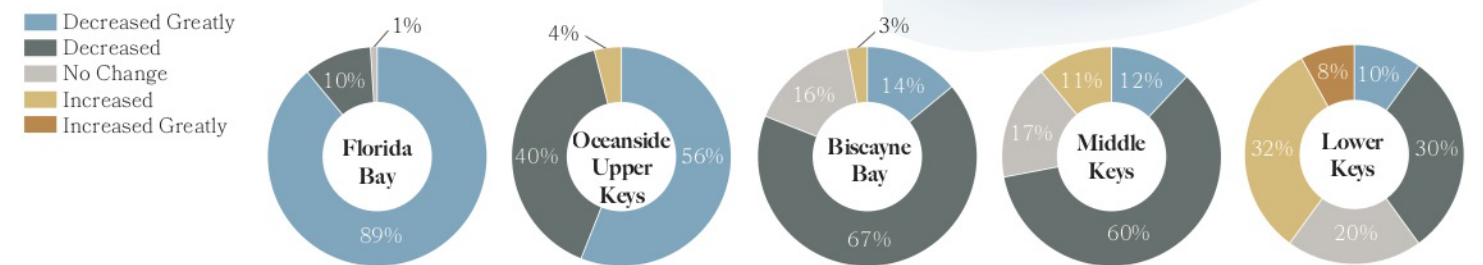
Dangers of Ocean Outfalls

There are two destinations for treated water to go. One is disposed into deep injection wells. Another destination is disposed into the sea, which is called **ocean outfalls**. As shown in the map, ocean outfalls will be pushed into North and Central Districts. However, solving problems sometimes cause new problems. Ocean outfall can have a significant affect to creatures in the ocean.



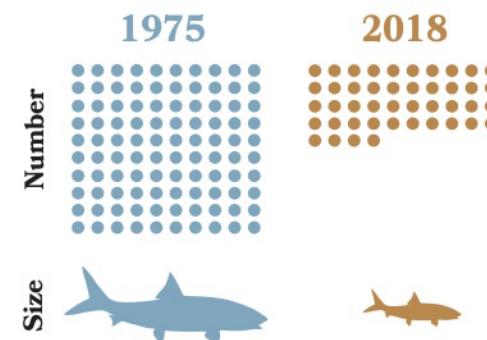
Perceived Variance in Bonefish Abundance in Florida Regions

There is a dramatic reduction in bonefish abundance in recent years. Some experts reported that bonefish no longer inhabited flats that they used to frequent within Florida Bay. Respondents were asked to describe the change in bonefish abundance during their angling careers in regions outside Florida Bay by selecting from five qualitative descriptions.

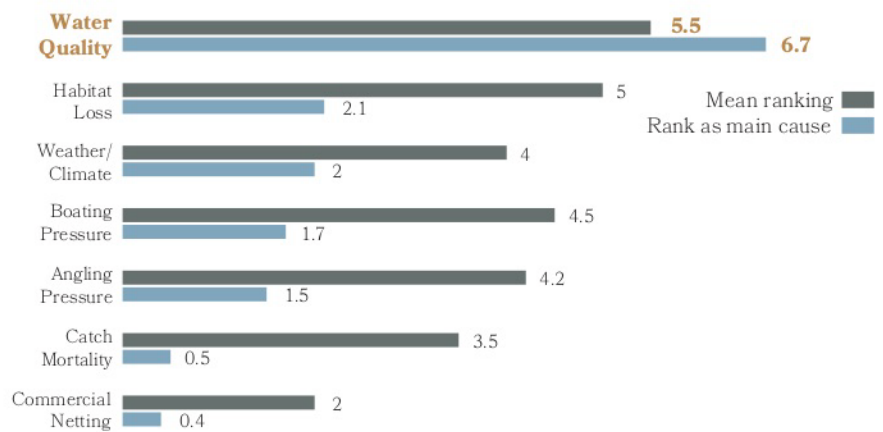


Bonefish's Number and Size

This is the comparison of number and size of Bonefish since 1975 to 2018, which shows a perceived 56% decrease in bonefish number, and a 45% decline in bonefish size since 1975.



Perceived Significance of Potential Causes of the Bonefish Decline in Florida Bay



PRE-TREATMENT

Upon arriving at the WWTP, the water enters the pretreatment process.

- Influent Screens**
Large solids such as plastics, wood, and rags are removed.
- Grit Remover**
Small particles such as sand, pebbles and grit are removed.

SECONDARY TREATMENT

Settling Tank (Clarifier)
The bacteria settles to the bottom of the tank. The rest of sludge is sent to the solids handling process. The treated water is removed from the top of the tank and sent to the next treatment process.

Aeration Basin
Oxygen is added to promote the growth of helpful bacteria that eats food particles.

TERTIARY TREATMENT

Sand Filter
The clean water is pumped to a sand filter where any remaining particles are removed.

Chlorine Contact Basin
Chlorine is added to disinfect the water and neutralize harmful bacteria.

LIQUID WASTE DISPOSAL

Liquid Waste Pump Station
Treated effluent is pumped to deep injection wells.

Ocean Outfalls
Treated water is pumped into the sea.

Deep Injection Wells
Treated effluent is disposed approximately 2,800 feet below the earth's surface, within a confined geological zone.

