Name: Date:

HOW'S MY WATERWAY?

WATER QUALITY DATA WORKSHEET

Testing our waterways helps determine if they are safe for humans and animals to use and enjoy. In North Carolina, we look at specific "parameters", or characteristics, that can highlight problems and pollutants in the water. If the test results are outside of the standard range, that waterbody is "not meeting standards" and needs attention. Swimming advisories, fish kills, and shellfish harvest closures are examples of what can happen when a waterbody needs attention to improve water quality.

The table below shows the safe guidelines and ranges for saltwater waterways in North Carolina, such as the Intracoastal Waterway. Unique tests are used to measure each parameter, so you may see different measurement units used for each standard.

SALTWATER WATER QUALITY STANDARDS

Parameter	Standard to Meet
Dissolved Oxygen (DO)	Above 5 mg/L
Turbidity (suspended sediment)	Below 25 NTU
Fecal Coliform Bacteria (for shellfishing waters only)	Below 14 CFU
Enterococcus Bacteria (for recreational waters)	Below 35 enterococci/100 mL
Chlorophyll a (algae)	Below 40 ppb
pH (acidity)	Between 6.8 and 8.5

ABBREVIATIONS

CFU - Colony Forming Units
NTU - Nephelometric Turbidity Unit
mg --- Milligrams
ppb - Parts Per Billion
mL - Milliliters
L - Liter

PROBLEMS WHEN WATER QUALITY STANDARDS ARE NOT MET

What Causes Poor Water Quality?

Many nonpoint source pollutants, such as pet waste, fertilizer, and sediment, can be easily picked up by stormwater runoff and washed into our local waterways. These pollutants can contribute to algal blooms, high bacteria levels, turbidity, and low dissolved oxygen, as some examples. Point sources, such as pipes from factories, can also contribute pollution, but are more easily controlled through state and federal regulations.

The table below shows some of the potential problems that can occur if a waterbody is not meeting all of the safe water quality standards.

Parameter	Potential Problems
Dissolved Oxygen (DO)	Not enough oxygen to support aquatic wildlife - fish kill is likely
Turbidity (suspended sediment)	Sediment can smother fish eggs, make it difficult for fish to find food, block sunlight for aquatic plants and other organisms, and carry other pollutants, like bacteria and heavy metals
Fecal Coliform Bacteria (for shellfishing waters only)	Unsafe to harvest and eat shellfish - can cause stomach problems and illness if eaten
Enterococcus Bacteria (for recreational waters)	Can cause infections in open wounds and digestive issues if water is swallowed
Chlorophyll a (algae)	Algal bloom likely occurring - can be toxic to humans, pets, and wildlife; blocks light for aquatic plants; can lead to fish kill when bloom decays
pH (acidity)	Too high or too low can cause water toxicity and harm aquatic plants and wildlife

Name:

Date:

DATA REVIEW

Time to be a water quality researcher! Samples taken from two saltwater waterways were run through several water quality tests. The labs sent you the results, which are included in the two tables below.

You learn that Shiloh Creek is classified for harvesting shellfish, like oysters, clams, and mussels. Pilot Bay is classified for recreation, which can include swimming, boating, and surfing.

Use the tables below and from Pages 1 and 2 to answer the following questions.

Shiloh Creek
(Shellfish "Harvest"Water)

Parameter	Test Results
DO	6.8 mg/L
Turbidity	6 NTU
Fecal Coliform	83 CFU
Chlorophyll a	3 ppb
pH	7.1

Pilot Bay
(Recreational "Swimming" Water)

Parameter	Test Results
DO	3.4 mg/L
Turbidity	4 NTU
Enterococcus	34 CFU
Chlorophyll a	70 ppb
pH	7.5

1. Which parameters are not being met Shiloh Creek, if any?

2. Which parameters are not being met in Pilot Bay, if any?

3. Do you think it is currently safe to harvest oysters from Shiloh Creek? Why or why not? How can North Carolina's economy be affected by not being able to harvest and eat shellfish?

4. Would you swim in Pilot Bay? Why or why not?

5. Why is it important to collect water quality data and set standards for waterways in North Carolina?

6. As a citizen, what are some actions you might take after seeing these water quality results? How about if you were the Mayor?