Name_____**Date**_____

Activity: Simulating Ocean Currents and Their Effect on Coral Reefs

Objective:

Students will model ocean currents and observe how water movement helps corals receive nutrients, oxygen, and maintain clear water.

Materials Needed (Per Group):

- **Large clear container (e.g., a plastic tub or aquarium tank)**
- **Warm water (to represent surface currents)**
- **Cold water (to represent deep ocean currents)**
- **Food coloring (to track water movement)**
- **Small lightweight objects (paper bits or fish food, representing plankton/nutrients)**
- **Straws or hand-held fans (to simulate wind-driven currents)**
- **Sand or fine sediment (to demonstrate sediment movement)**

Procedure:

A. **Set Up the Ocean Model:**

Fill a large container with **room-temperature water** to represent the ocean.

Sprinkle a small amount of **sand or fine sediment** at one end of the container.

Drop **small paper bits or fish food** at the opposite end to represent plankton/nutrient sources.

B. **Introduce Currents:**

Wind Currents Simulation: Use straws or fans to create **gentle surface currents** by blowing across the water. Observe how nutrients move.

Temperature-Driven Currents:

- Carefully pour **warm water on one side** and **cold water on the other side** to create **deep and surface currents**.
- Add **food coloring** to see how different temperatures affect water movement.

Observe & Record:

1. What happens to the nutrients (plankton)? Do they move toward corals (represented by one side of the tank)?

2. How does sediment behave with and without currents?

3. Does warm or cold water move faster?

4. Discuss how currents help corals survive by keeping their environment clear and nutrient-rich.

Discussion Questions:

1. How do ocean currents help corals receive food and oxygen?

2. What happens to reefs when there is too little or too much water movement?

3. How do mangroves help reduce sediment flow into coral reefs?

4. How does this experiment relate to maintaining proper water circulation in the **HelloReef Aquarium**?

Key Takeaways:

- Ocean currents **deliver nutrients and oxygen**, allowing coral reefs to thrive.
- **Too little flow** can cause **sediment buildup**, smothering corals.
- **Too much flow** can **damage delicate coral structures**.
- **HelloReef Aquariums** use **pumps and wavemakers** to mimic natural ocean currents for coral health.