Lesson 21- Earth’s Water

1. Water covers more than \_\_\_\_\_\_\_ % of Earth’s surface. The composition of all living things is more than \_\_\_\_\_\_\_ % water. Living things need clean \_\_\_\_\_\_\_\_\_\_\_\_\_\_ to survive.

2. The **hydrosphere** is made up of all the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Most of the water is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. About \_\_\_\_\_\_\_\_\_ % of Earth’s water is found in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The remaining 3% is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Water found in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ state is found in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Liquid water is found \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

3. Most of Earth’s freshwater is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

4. Nearly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of Earth’s freshwater is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which is located below the Earth’s surface. An \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a rock layer that collects and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ water. The freshwater we \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ often comes from aquifers.

5. Water that collects above ground is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Most of the surface water is located in streams, rivers, lakes and wetlands. **Wetlands** act as natural \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in an area. They can:

6. Surface water includes **runoff**, which is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Runoff carries substances like non-point source pollutants (fertilizers, litter, etc.) into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which all eventually drain to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

7. A w**atershed** is an area of **land** that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. How is this different than a river basin? Larger or smaller?

8. Estuaries are places where \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Much of NC’s freshwater drains to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

EOG Practice: 1.\_\_\_\_\_\_2.\_\_\_\_\_\_3.\_\_\_\_\_\_4.\_\_\_\_\_\_ 5.\_\_\_\_\_\_

Lesson 22- Earth’s Oceans

1. Earth’s make one continuous ocean. The ocean can be divided into regions called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The main basins are:

2. The ocean floor contains many different features including \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

3. Why is the ocean salty?

4. **Salinity** is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a body of water. Salinity can vary place to place but is usually \_\_\_\_\_\_\_\_%. Salinity may be less in areas where a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ releases a lot of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ into an ocean. Salinity may be higher where there is more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

5. Name **ocean resources**:

6. What activities threaten the ocean resources?

7. Where is most of the water stored in the **water cycle**? When it rains, where does most of the water fall? (hint: the answer is the same for both of those questions)

EOG Practice: 1.\_\_\_\_\_\_\_2. \_\_\_\_\_\_\_\_ 3.\_\_\_\_\_\_\_\_ 4.\_\_\_\_\_\_\_\_

Lesson 23- Marine Ecosystems and Estuaries

1. Almost half of the known species of organisms live in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. (That number could be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, because so much of the ocean is unexplored.) Different kinds of organisms live in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the ocean.

2. Producers in marine (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) environments are important to all life on Earth. In the ocean, as on land, energy flows \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from producers to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

3. Populations in the ocean can be affected by oceans currents called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. An \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ carries \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from deep in the ocean up to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. This water is rich in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Producers at the surface use the nutrients and their populations will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

4. The ocean can be divided into **3 major ecosystems** (list and describe with lots of details):

\*Note that other books and resources may describe the regions of the ocean as the intertidal zone, neritic zone, oceanic zone and benthic zone- or temperature zones- or even depth zones. Know the **general characteristics** of all zones.

5. **Estuaries** are bodies of water which \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Organisms in estuaries must be able to tolerate changes like \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

6. Estuaries are protected from ocean waves by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and other plants provide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for many organisms. Estuaries are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for many animals.

EOG Practice: 1.\_\_\_\_\_2.\_\_\_\_\_\_3.\_\_\_\_\_\_4.\_\_\_\_\_\_

Lesson 24- Water Pollution

1. **All organisms**, including humans need \_\_\_\_\_\_\_\_\_\_\_\_\_\_ to carry out their life processes. Following practices that protect Earth’s resources is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

2. A pollutant is any \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

3. Point-source pollution comes from a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Non-point source pollution comes from many places or an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ source. Acid rain is an example of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pollution.

4. Identify as **point source pollution** (PS) or **non-point source pollution** (NPS)- a) damaged pipes b) chemical/storm water runoff c) wastewater from water treatment plants d) leaking oil tankers

5. Runoff carries fertilizers into water systems. Pet waste also adds **excess nutrients** into the water system. Too many of these nutrients in water systems may cause an extremely \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, called an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. They cause water to become cloudy, and block \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from plants farther down in the water. Excess nutrients in the water can also lead to low\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ levels in the water. When less oxygen is available to fish, they are likely to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, or \_\_\_\_\_\_\_.

6. Pollutants can also get into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by seeping into the soil.

7. How can people protect water systems?

EOG Practice 1.\_\_\_\_\_\_ 2.\_\_\_\_\_\_ 3.\_\_\_\_\_\_ 4.\_\_\_\_\_\_

Lesson 25- Monitoring Water Quality

1. Federal and state governments have set water quality standards to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

2. The Clean Water Act was passed in 1972 to protect surface\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ such as lakes and rivers. The main goal of the law is the protection and propagation of \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and recreation in and on the water. The EPA enforces quality standards for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that is released by industry and local governments. The EPA and other agencies also have set up educational programs to help \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ non-point source pollution.

3. Other laws protect oceans by regulating dumping substances that can \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or marine \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

4. The Oil Pollution Act requires that all oil tankers operating in US waters have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ by 2015.

5. Scientists use a variety of indicators to monitor, or check on water \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Physical indicators include \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Cold water can hold more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. A healthy water source has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and high \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ levels. Fish kills can happen when \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

6. Another physical indictor is **pH**, which is the measure of how \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a liquid is. A pH of 7 is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Water with pH that is too high (too basic) or too low (too acidic) is unhealthy.

7. **Turbidity** is measure of how \_\_\_\_\_\_\_\_\_\_\_\_\_ the water is. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ water is unhealthy. High turbidity can keep \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from getting enough sunlight to make food, or can clog\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

8. Chemical indictors, like nitrates or phosphates can be unhealthy at high levels, and can lead to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Salinity is also a chemical indicator.

9. **Biological indicators**, or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,are organisms (living things) used to monitor the health of an ecosystem (Airlie gardens trip/dip nets). Some organisms can only live under specific conditions (trout). A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of organisms indicates healthy water. A large number of black fly larvae indicate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, because competition is reduced.

10. If scientists find a problem, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the first step in improving water quality.

EOG Practice 1.\_\_\_\_\_\_ 2.\_\_\_\_\_\_ 3.\_\_\_\_\_\_ 4.\_\_\_\_\_\_

Chapter 6 Review 1.\_\_\_\_\_\_ 2.\_\_\_\_\_\_ 3.\_\_\_\_\_\_ 4.\_\_\_\_\_\_ 5.\_\_\_\_\_\_ 6.\_\_\_\_\_\_ 7.\_\_\_\_\_\_ 8.\_\_\_\_\_\_ 9.\_\_\_\_\_\_ 10.\_\_\_\_\_\_