Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_

**A Geology All its Own in the Everglades**

**Background:** This exercise will acquaint you with the physiographic and geologic characteristics of the south Florida region. You will also speculate on how the geology of the region influences topography and land use.

**Materials:**

geologic map of south Florida (from Student Packet) - geologic column of rock units in south Florida (from Student Packet)

-links to various rock samples

* fossiliferous limestone (marine) [marine fossiliferous limestone](https://geology.com/rocks/limestone.shtml)
* freshwater limestone
* peat [peat](https://news.fiu.edu/2020/the-building-block-of-the-everglades-is-in-danger)
* sandstone [sandstone](https://geology.com/rocks/sandstone.shtml)
* marl [marl](https://rocks.comparenature.com/en/what-is-marl/model-20-999)

**Procedure:**

Look at the geologic map of south Florida. Remember that geologic maps show the surface distribution of rock formations in the area. Answer Analysis Questions.

**Analysis Questions:**

1. Using the geologic column, identify the oldest formations in the area.
2. Continuing with the geologic column, identify the youngest formation.
3. From that column, excluding erosion, identify which geologic formations that border the Everglades.
4. Which important geologic formation underlies the Everglades bordering formations described in question 3?
5. Use the following link to answer this question associated with the geologic column from South Florida that you have been looking at.

Look up definition of “consolidated rock”

[unconsolidated rock definition](https://geology.com/dictionary/glossary-u.shtml)

What kinds of rocks and unconsolidated deposits are represented on the geologic maps?

1. What the difference is between marine and freshwater limestones?
2. How did these rocks, which form underwater, end up on dry land? (Hint: From Geology Reading, check out paragraphs about How to Fix it)
3. How did marine limestones, which are deposited in seawater, end up associated with the freshwater Everglades? (Hint: Look at Everglades Geology Reading, the paragraph called “What is limestone?”)
4. When is the last time the region was under sea water? (Look at Everglades Geological Reading, the last section that explains how to fix it. Third paragraph explains.)
5. Look at that moment in time on the Rock Column when the Everglades rose above sea level. What has happened to the region since it rose above sea water?

The following tables show some agricultural freshwater use in the Everglades that is of particular interest to your agribusiness team member(s). Look at the tables that follow and answer the questions.

**TABLE A. Irrigation Acreage and Water Use by Crop Type in Florida**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **BROWARD COUNTY** |  | **1995** |  | **2000** |
| **CROP TYPE** | ACRES FARMED AND IRRIGATED | WATER USE FOR IRRIGATION PER DAY (IN MILLIONS OF GALLONS) | ACRES FARMED AND IRRIGATED | WATER USE FOR IRRIGATION PER DAY (IN MILLIONS OF GALLONS) |
| **TURF GRASS (GOLF COURSES AND OTHER USES)**  **SWEET CORN** | 10,000  6,100 | 16.82  5.57 | 18,000  3,072 | 26.80  3.45 |

**TABLE B. Irrigation Acreage and Water Use by Crop Type in Florida**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PALM BEACH COUNTY** |  | **1995** | **2000** | |
| **CROP TYPE** | ACRES FARMED AND IRRIGATED | WATER USE FOR IRRIGATION PER DAY (IN MILLIONS OF GALLONS) | ACRES FARMED AND IRRIGATED | WATER USE FOR IRRIGATION PER DAY (IN MILLIONS OF GALLONS) |
| **SWEET CORN** | 29,500 | 32.04 | 28,475 | 31.04 |
| **MISCELLANEOUS VEGETABLES** | 30,100 | 11.17 | 44,300 | 48.28 |
| **SUGAR CANE** | 320,000 | 381.97 | 323,433 | 505.33 |
| **TURF GRASS (GOLF COURSES** | 15,000 | 31.36 | 30,000 | 59.80 |
| **AND OTHER USES)** |  |  |  |  |

**TABLE C. Irrigation Acreage and Water Use by Crop Type in Florida**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **DADE COUNTY** |  | **1995** | **2000** | |
| **CROP TYPE** | ACRES FARMED AND IRRIGATED | WATER USE FOR IRRIGATION PER DAY (IN MILLIONS OF GALLONS) | ACRES FARMED AND IRRIGATED | WATER USE FOR IRRIGATION PER DAY (IN MILLIONS OF GALLONS) |
| **MISCELLANEOUS FRUIT** | 21,300 | 49.23 | 14,530 | 22.95 |
| **MISCELLANEOUS VEGETABLES** | 33,630 | 3.90 | 28,815 | 33.64 |
| **TURF GRASS (GOLF COURSES** | 7,750 | 18.00 | 47,000 | 17.39 |
| **AND OTHER USES)** |  |  |  |  |

1. These tables allow you to compare crops by the amount of water used to raise them. For example, which crop requires more irrigation — miscellaneous vegetables or sweet corn?
2. Which crops require a lot of water?
3. Which crops need very little water?
4. Which crops did farmers plant more of in 1995 than in 2000?
5. Which crops in your answer to question 14 use a lot of water?
6. What are peat cores?
7. What is the significance of the shift that occurred in the 1960s from saw grass vegetation to cattail vegetation? (Hint: Geology Reading, what is a peat bog?)
8. What are 2 issues that your agribusiness team member(s) need to consider to fix the problem?
9. What are 2 issues that the urban developers need to consider?
10. What are 2 important considerations to the environmentalists?

**FIXING THE PROBLEM**

**Restate what the problem is here:**

**Propose at least one thing for each interested party.**

* **Environmentalist solution-**
* **Urban developer solution-**
* **Agribusiness solution-**