

# Tulane Earth & Environmental Sciences

EENS 113  
PHYSICAL GEOLOGY LAB

## “THE ISLAND PROJECT”

### PURPOSE:

The purpose of this project is to give you the necessary practice in creating a topographic map, constructing a topographic profile, understanding the concept of map scale, and calculating stream gradient and vertical exaggeration using a specific set of instructions. You may work together on this, but **EVERYONE** must turn in an original, unique project. Remember that **this project counts for 25% of your lab grade**. Neatness counts ... we suggest you first sketch the project out lightly in pencil, then neatly trace over your work with colored pencils or markers.

***READ THESE DIRECTIONS THOROUGHLY BEFORE YOU BEGIN!!!!!!***

### MATERIALS NEEDED:

- A) A large sheet of white poster board, standard size 22 in x 28”
- B) A ruler
- C) Markers or colored pencils (blue, black, green, & red at least)
- D) A pencil for sketching your contour lines
- E) An eraser (you’ll need it!)
- F) A calculator would be very helpful

**DUE DATE:** The Island Project is due in **two weeks**. However you should have a **draft** ready for **next week**.

### DIRECTIONS:

1. On your poster board, you will be creating a topographic map of an island and a topographic profile across it. **This island**, which you will give an original, creative name, must be drawn in a large enough scale to work with easily, but **must not touch the edge of the poster board** (Leave at least a 2” margin around the sides and top and bottom of your poster board. Along the bottom of your poster board additionally leave a 5” margin. (You will need this space for bathymetric contouring and for the construction of your topographic profile). So, yes the bottom margin is 7” total.
2. Indicate NORTH on your map (in the upper-left hand corner of your poster board) with an arrow. Choose a reasonable scale for your map, and remember to report map scales (We want to see a verbal, graphic, and fractional scale) somewhere on your map, preferably in your title block (see step 13). Make sure to include all three types of scales. Scales should work independently.

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3. Your island has two (2) mountains, one on the eastern half of the island and the other in the west. Your western mountain is a volcano with a 275-foot deep crater. The summit of the peak officially surveyed at 1,726 feet (indicate this benchmark elevation on your map with a small “X” at the top of this mountain) is on the eastern-most edge of the crater rim. The eastern mountain has an elevation of 375 meters (convert to feet!) and has a wide, flat top (it was not bench marked, therefore, no “X” is needed). There is radio antenna tower on the top on this mountain (use a purple plus mark “+” as symbol) and the distance from the benchmark on the volcano to the tower is **exactly** 15 miles. The eastern slope of this mountain is very gentle, the western & northern slopes are steeper, and the southern slope is very steep there should be NO vertical cliffs on your island. There is a saddle located between the two mountains at an elevation of at least 500 ft. The shoreline around your island naturally has an elevation of 0 feet and is drawn in brown.
4. Four streams run off your eastern mountain in a radial (evenly distributed) drainage pattern. Each stream has a unique source. An eastward-flowing stream reaches the eastern coast of your island and creates a delta. Calculate the gradient of this stream from its source (mark on your map with a dot (.) and label it with the letter “s” at the source) to its delta (mark on the map with a dot at the start of the delta and label it with a letter “d”) and report this gradient (in feet/mile) in your title block (see step 13). Draw your streams in blue.
5. Using a reasonable contour interval (of your choice) and the data supplied in Steps 1-5, contour your island. Be sure to follow the “Rules of Contouring” found in your Lab Manual. DO NOT use index contours. Sketch these contour lines lightly in pencil first, and then go over them neatly with a black or brown marker. Also, make sure you report the contour interval (C.I.) somewhere in your title block (see step 13).
6. The entire eastern coast of your island is marshy. Indicate this with the proper map symbols. Note the symbol for marsh somewhere in your legend or title block. The marsh symbols should be drawn with a green marker (Hint: What do you think the maximum elevation of the marsh should be?)
7. Near the southwest coast is a lake at an elevation of 435 feet. Color in the lake lightly in blue and label the elevation in blue marker near the center of the lake.
8. Neatly add to your island other physiographic or any other features, such as forests, lagoons, roadways, beaches, etc. Make sure to use different colored symbols to avoid any confusion with your dark contour lines. Add these symbols to your title block as well. Name these features on your map (i.e. “Enchanted forest”; be creative!).
9. Add bathymetric contours (=isobaths, or underwater contour lines indicating depth *below* sea level rather than height *above* sea level) in the area surrounding your island. As with your island contours, first sketch your isobaths in pencil, then trace over them neatly with a blue marker. The isobaths C. I. should be the same as the contour lines C.I.

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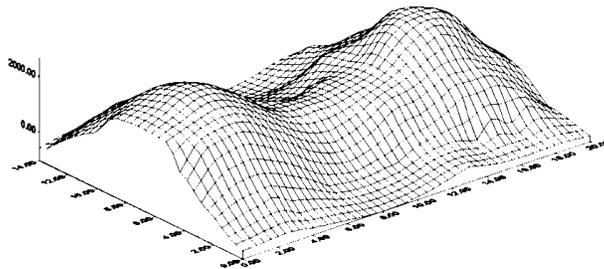
10. Draw, with a ruler, a red line across your island. This line must cross both mountains at their summits, the volcanic crater, and the 300 ft. isobath at both ends of your poster board. This profile line should pass through the bench mark (x) on the western volcano and the radio antenna on the eastern mountain (+). Label it A-B (“A” at one end and “B” at the other end). This will be used to construct a topographic profile of your island and the surrounding waters.
11. Along the bottom edge of your poster board set up a space for your vertical profile, as done in your Lab Manual. Calibrate a vertical scale in feet and label both ends of the grid with your scale. Sketch a topographic profile across A-B (the spacing of the profile grid should correspond to the contour interval the map). Label it “A” at one end and “B” at the other end. Be sure your lines are dark, straight, equally spaced, and extend all the way across the profile (Use a ruler!!). Write the vertical grid scale in your title box (see step 13).
12. Calculate the vertical exaggeration of your topographic profile and write it near the lower right-hand corner of the profile.
13. Prepare a title block for your beautiful map. In this block, you should put the title of the project, the name of your island, its general geographic location, 3 map scales (able to work independently), the calculated stream gradient, your contour interval, the vertical grid scale and any other map symbols used (such as the symbol for marsh).
14. Put your name, last four digits of your I.D number, Lab Section, and the due date in the upper right-hand corner of your Island Project, and turn it in.
15. Finally write all calculations on the back of the poster board. Show ALL work. Remember, you’re Instructor, the Topo32 program and the lab manual are all resources at your disposal... **Use Them!!!**

**PLEASE NOTE:**

All projects are due on the assigned date regardless of whether or not you attend that day's lab. **Late projects will be accepted at a penalty of minus 10% per day. If you are late you have to PERSONALLY hand it in to YOUR INSTRUCTOR (no exceptions). No projects will be accepted after the instructor has corrected and graded them.** Students are responsible for doing their own work even if they “work together”. If two projects are turned in that show great similarity such that the instructor interprets it as evidence of cheating, both will be penalized.

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## 3D Example of a Saddle



NOTE: This is an EXAMPLE ONLY!!! It is not a representation of how your island is to appear.