

PHYSICAL GEOLOGY

Glacial Landforms - Part I

Name _____

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Explanatory Note: The questions below refer to specific pages in the Lab Manual. There is no point attempting the work unless you've completed reading and understanding Chapter 18 in the text. It will also be helpful to review the material on pages 125 - 127 of the Lab Manual.

Exercise 1 - Lab Manual page 130

On your map, answer question a. You can label the features with the corresponding letter rather than writing out the name of the term. THEN:

1. Locate the outwash plain at the front of the glacier. What term best describes the stream(s) that drain the outwash plain?

2. What conditions contribute to the appearance of the stream on the outwash plain?

3. What causes those conditions to exist? _____
4. Construct a profile from the 200 ft contour on the outwash plain northeastward to the 2nd T in the words *SCOTT GLACIER* and paste it in the space below (make sure your vertical exaggeration is not so great that the profile won't fit the space).

5. With a dotted line, project the slope of the outwash plain up under the glacier on the graph above.
6. Determine the thickness of the ice at the C in *SCOTT GLACIER* and record it here: _____

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Exercise 2 - Lab Manual page 132

1. On tracing paper, trace the divide of the Lake Fork River system. The description below may be helpful.

Moving E across the middle of the map, the divide passes between the 2 index contours labeled 11750 just NW of Timberline Lake, over the peak labeled 12492 (NE of the lake), NNE to Galena Mtn., and from there E to Kevin peak (11763). From there the divide heads SSW towards Bear Lake for about $\frac{3}{4}$ of a mile (never reaching the lake). At that point the divide swings to the SSE where a jeep trail runs along it for a short distance. It's up to you to determine the where the final mile of the divide joins the Lake Fork valley.

The divide on the south of the Lake Fork Runs across Sugar Loaf Mtn., Bald Eagle Mtn. and briefly runs off the bottom margin of the map. It rejoins the map in the lower left corner, running up and over the peak labeled VABM 12086, over to the peak on the 12500 index contour (unlabeled) about $\frac{1}{2}$ mile SE of Virginia Lake. The divide leaves the map just W of Virginia Lake.

2. Which of the named tributaries of the Lake Fork have been most modified by stream erosion since the ice melted, AND WHAT OBSERVATIONS ARE YOU BASING YOUR ANSWER ON?

3. Shade in the area of that basin that appears to have been covered by ice. A good approach would be to first outline the major cirques, and then trace the margins of the U-shaped valleys.

4. Use several arrows to show the direction of the motion of the ice in the Lake Fork basin.

5. With dark lines, draw in the places where you expect that deep crevasses had formed in the ice.

6. What do you suppose dams the eastern end of Turquoise Lake? _____

If you were to sample that material, what characteristics would you most likely observe? _____

7. What term describes the ridge of rock that appears right below the words Galena Mtn. _____

8. What term describes the unnamed peak labeled 12492, just S of Lonesome Lake? _____

PHYSICAL GEOLOGY
Glacial Landforms - Part III

Explanatory Note: The questions below refer to specific pages in the Lab Manual. There is no point attempting the work unless you've completed reading and understanding Chapter 18 in the text. It will also be helpful to review the material on pages 134 - 135 of the Lab Manual.

Exercise 3 - Lab Manual page 140 - 141

The map on these pages is a *surficial geology* map, not the more familiar bedrock map. It shows the location of various surface deposits - in this area the deposits are directly glacial or associated with glacial meltwater.

Note: In some books the color of "Ice-contact stratified drift" in the key does not match the color on the map. "Ice-contact stratified drift" is RED on the map!

1. Study the patterns of outwash, lakes, and moraines. On the basis of your observations, determine the relative ages of the following: ground moraine (or "drift", eskers, outwash sediment, and lacustrine (lake) sediments.

OLDEST _____ YOUNGEST

2. How many glacial standstills are represented by the end moraines in Ohio and Indiana SW of Lake Erie? _____

3. How many glacial standstills are represented by the moraines south of Lake Michigan? _____

4. Notice the "streamline features" labeled in blue south of Lake Winnebago (a little above the middle of the map on page 134). Notice the relationship between them and eskers (in red) in that area. Describe the flow of ice in that "lobe" of ice.

5. Note the breaks in the end moraines, and particularly the yellow deposits that run through the breaks. What do you suppose caused those breaks in the moraines?

6. What does the pattern of outwash deposits indicate about the direction of drainage during glacial times?
