

Reading Guide for September 8

from Cvancara, *Field Manual for the Amateur Geologist*

Chapter 4. Shoreline-Related Landforms

p. 38. This introduction identifies the key players at the shore. What they do and how they do it will be explained as the chapter proceeds.

pp. 38–40. *Work of Waves and Currents*. The first part of this section, the rest of page 38, describes the physics of waves. Although waves march steadily to the shore, the water itself roughly stays in place as the wave moves through it.

Page 39 and most of page 40 describe the action of waves. There is a lot going on in Figure 4-1; do the best you can to follow along with its caption and the text.

- Describe **beach drifting**. What sort of particles move by this mechanism?
- Describe **longshore drifting**. What sort of particles move by this mechanism?
- The profile of a beach typically becomes steeper close to shore. Why?

The last paragraph of page 40 describes **tsunamis** and tides, but in little detail.

p. 41. *Landforms of Marine Erosion*. These landforms are not found at all shores; their presence depends on the nature of the wave action and the geologic material the waves have to work on.

- How are **sea cliffs** formed?
- What is the progression turning **headlands** into **stacks**?
- What is a **wave-cut bench**?
- Why are wave-cut benches shallow?

pp. 42–43. *Landforms of Marine Deposition*. Waves erode material right at the shore, but materials are also deposited in shore areas. This section briefly describes a variety of shore structures created from sediment moved by waves and currents.

- Why is the beach at La Jolla, California (just north of San Diego) sand in the summer and fall and gravel in the winter and spring?
- How can **barrier islands** be created?

pp. 43–45. *Evolution of Shorelines*. This section , along with the accompanying Figure 4-4 on page 44, describes the process by which an irregular shoreline becomes a straight beach. I'll leave you to scour for one piece of information:

- *Why* do shore erosion processes tend to straighten beaches out?

pp. 45–47. *Classification of Shorelines*. Note the statement in this section that the shorelines described earlier in the chapter comprised only two of the incomplete list of nine shoreline types in Table 4-1. Read the descriptions of the shorelines in this section and try to picture both how these additional types of shorelines form and what they look like.

Chapter 5. Wind-Related Landforms

pp. 48–49. *Work of the Wind*. This section tells about the types of sediment wind can move, and how the sediment travels when wind-driven.

pp. 49–50. *Landforms of Erosion*. This is a very short section, because wind ordinarily doesn't do much eroding in comparison to other erosive processes. However, many of these features can be seen throughout Wyoming.

pp. 50–57. *Landforms of Deposition*. This entire section describes types of dunes. Don't worry about memorizing the names and shapes of the types, or even which particular conditions create particular types of dune. Instead, understand what creates the steep **slip face** of all dune types.

- What does the orientation of the slip face tell about the local conditions?

There are several locations in Wyoming and surrounding states where old dunes are covered with grass, evidence that the climate is now wetter than it used to be.