



## ANSWER KEY

### Exercise: 1

**Instructions:** The Hagerman Fossil Beds National Monument in Hagerman, Idaho is famous for the wide variety of fossils that can be found there. This site is particularly famous for the Hagerman Horse that once roamed Idaho. By doing this activity, you will have a much better understanding about the Hagerman Fossil Beds and what fossils tell us about geologic history.

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1. How did the Hagerman Valley form?

Hagerman Valley formed from the Bonneville flood. This flood swept through the Snake River Canyon thousands of years ago. Basalt boulders that were transported by that flood can still be observed in the Hagerman Valley.

2. What have scientists learned about the ancient climate of Idaho from the fossils found at Hagerman Fossil Beds? Describe the paleoclimate for this region based on the flora and faunal data. Has the climate of today changed from Hagerman days?

The environment was different judging by the types of fossils that have been found. It resembled a savanna with a higher amount of rainfall than our current climate provides. Many aquatic vertebrate fossils have been found including wading birds, frogs, and fish which indicate that the environment was much wetter than it is today. The climate at Hagerman today is much drier than it used to be.

3. Describe the differences between the paleofloras and faunas during the Hagerman days and the flora and fauna of today.

Many species once existed there including camels, giant marmots, ground sloths, and others that drank from the waterhole that was once there. There was also a large amount of willow, alder, birch, elm, and pine woodland. Today the area is a sagebrush landscape with little rainfall and not nearly as many large mammals.

4. Describe the depositional environment of the different strata and how this helps us to understand paleoclimate and paleoenvironments.

The depositional environment consisted of four major environments including sandy fluvial, muddy flood plain, lacustrine, and valley border facies. These indicate a wet environment with deposits of mud and other sediments that would result from larger volumes of flowing water. This would lead us to predict lush vegetation and plant species that are adapted for wetter climates. It would also predict the occurrence of aquatic plants and animals like fish, frogs, salamanders, and waterfowl. In fact these predictions are borne out in the fossils found at the Hagerman area.

5. What is the general geology of the Hagerman Fossil Beds?

The general geology consists of sediments of the Glens Ferry and Tuana Formations. These sediments inter-bedded with an occasional basalt flow, silicic volcanic ash, and basaltic pyroclastic deposits, range in age from 2.5 - 3.5 ma and represent deposition within lake, stream and flood plain environments. The Snake River cut through this area and has revealed a spectacular view into Idaho's geologic past.