The topographic features seen in this brochure illustrate the range of picturesque diversity that is present across our state. In addition to their beauty, each of these landscape views reflects some aspect of Iowa’s geologic history. Understanding the geologic setting of various types of terrain is essential for citizens concerned with farming, urban expansion, recreation, excavation of mineral resources, pumping of groundwater supplies, landfilling of waste materials, and other environmental and natural resource issues. Also, it is useful to think about these landscapes in terms of their influence on the distribution of native plant and animal habitats, on various soil types, on the potential for archaeological remains, and on patterns of historic settlement. Learning more about the features of Iowa’s landscape increases our understanding and appreciation of the views around us and the earth beneath our feet.

The Iowa River forms sweeping meander loops as it flows across its floodplain in Iowa County. Earlier migration channels are visible in the fields and woodlands. Floodplains are underlain by porous alluvial deposits that yield valuable groundwater supplies. These shallow resources are vulnerable to contamination from the land surface.

Continuous rock bluffs called palisades line the Upper Iowa River. These cliffs result from the river eroding against dolomite, a resistant rock unit formed 450 million years ago. Such scenic landscapes in northeastern Iowa reflect sedimentary bedrock close to the land surface.

Shifting sand dunes occupy part of an abandoned channel of the Upper Iowa River in Allamakee County. The sand accumulated when water flowed here earlier in the valley’s history. Wind also deposited sand during later dry periods.

The oldest bedrock formation visible in Iowa outcrops at Gitchie Manitou State Preserve in Lyon County. The distinctive reddish Sioux Quartzite is seen here at “Jasper Pool,” an 1860’s era quarry on the preserve. These durable, quartz-rich rocks are 2.6 billion years old. Glacial erratics of this formation are easily recognizable and may be found many miles to the southeast.
Ocheyedan Mound is an isolated conical hill composed of sand and gravel. It is an excellent example of a glacial kame, formed as meltwater carried sediments off the glacial surface and into a cavity in the slowly melting ice.

Some of Iowa’s most fascinating scenery is found in the Loess Hills of eastern Iowa. They are composed of thick deposits of silt carried by wind from the adjoining Missouri River valley during seasons when glacial meltwater flood sediments were exposed. A sharp contrast exists between prairie and encroaching woodlands in this topographic setting.

Gullies are deep, narrow erosional cuts through the landscape. Their development and growth is an active geologic process within the silt-dominated Loess Hills topography of western Iowa. Gullies widen and lengthen headward (upslope), eroding quickly, especially after heavy rains.

Circular depressions, some filled with water or clumps of trees, mark the locations of sinkholes in this Clayton County aerial view. Sinkholes form by collapse of thin soil and unstable rock into underground cavities or cave openings. Shallow aquifers are vulnerable to contamination in this geologic setting. Though most common in northeastern Iowa, sinkholes also are seen in Floyd and Mitchell counties and in the Burlington area of southeastern Iowa.

Hump-backed ridges rise from the landscape in southeastern Linn County. These ridges, known as paha, are always oriented NW to SE. They are all that remain of a once higher glacial plain and are often capped with wind-blown loess and sand.

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