

Human and Natural History Partners

For the 10th year, the Iowa Geological Survey (IGS), the U.S. Geological Survey (USGS), and the University of Iowa Office of the State Archaeologist (OSA) returns as "Human and Natural History Partners". Archaeology on the Road highlights the unique cultural history and prehistory of Iowa on the RAGBRAI route, pointing out interesting and significant archaeological sites and sharing Iowa's past along the way. Keep an eye out for "Team Archaeology" riders throughout the week and online. Learn about the Land provides daily brochures describing interesting landscape, geologic, and other natural historical features and factoids along the RAGBRAI trail. Look for USGS volunteers as they distribute the Learn about the Land brochures in RAGBRAI campgrounds.

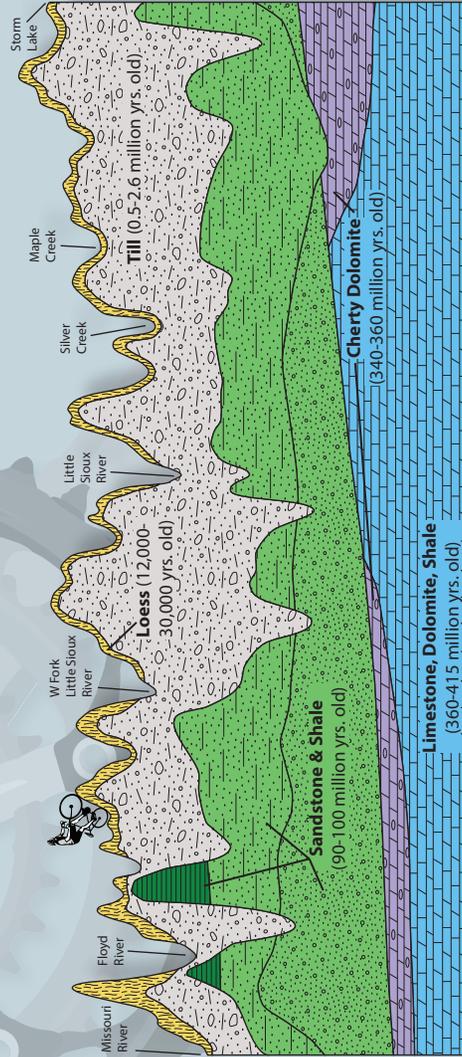
Special thanks to the Iowa Limestone Producers Association (ILPA) for assisting in the production of the Learn about the Land daily brochures. With their help, we are able to provide interesting information about one of Iowa's greatest natural resources... limestone!

www.iowageologicalsurvey.org
ia.water.usgs.gov
www.iowaarchaeology.org
www.limestone.org

* Cover photo: Iowa's state flower, the wild prairie rose, with Sioux Quartzite in the background.

Daily Geology:

Crossing four distinct landform regions in one day is a herculean feat! Starting in the Missouri River Alluvial Plain, over the Loess Hills, dipping in and out of the Southern Iowa Drift Plain, and bumping up and down across the Northwest Iowa Plains. Most of the route area is mantled by loess of varying thickness over generally thick glacial till. Cretaceous-age bedrock, primarily of the Dakota Formation, dominates the bedrock surface, with Mississippian- and Devonian-age carbonate units below that.



RAGBRAI

Day 1

2015

Sunday, July 19

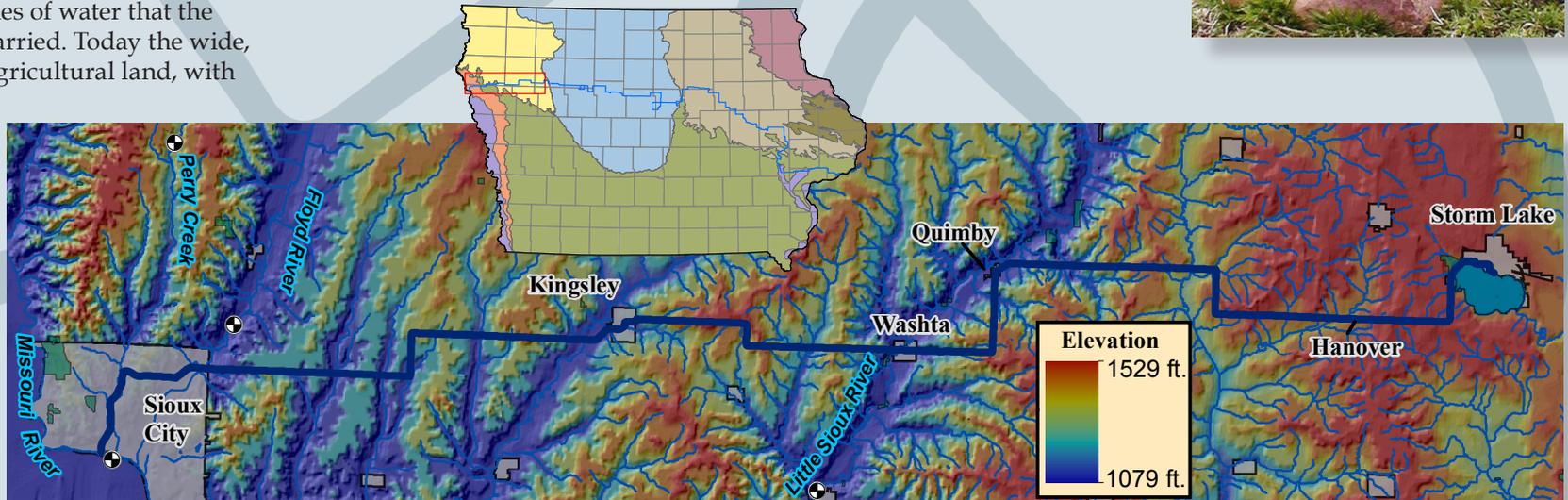
Learn About the Land



Missouri River

The Missouri River drains nearly one sixth of the United States and flows for 2,300 miles before joining the Mississippi River at St. Louis, making it the longest river in North America. Like most rivers in Iowa, the Missouri is relatively young by geologic standards, about two million years old. It was created by melt waters from the great continental glaciers as ice sheets repeatedly advanced into Iowa over the last 2.6 million years. The width of the valley, up to 17 miles in Monona County, attests to the huge volumes of water that the ancient Missouri River carried. Today the wide, flat floodplain is prime agricultural land, with virtually unlimited supplies of irrigation water just a few feet below the land surface.

-  Cities and towns
-  Parks and preserves
-  USGS streamflow station



- The limestone industry employs over 1,800 people in Iowa.
- For every \$1 billion spent on highway construction 42,100 jobs are generated.
- 90% of limestone is used within 50 miles of its place of extraction.
- 94% of asphalt and 80% of concrete is made up of aggregates.
- Iowans use over 32,000,000 tons of crushed limestone each year.
- 15,000 tons of limestone are required for the construction of an average size school or hospital.
- About 150 tons of limestone are used in construction of the average home.
- An estimated 152,000 tons of limestone is necessary to construct one mile of interstate highway.



Sioux Quartzite

As you bike along the first few days, be sure to keep an eye out for pink boulders of Sioux Quartzite along the roadside. Sioux Quartzite is a thick sequence of pink, quartz-cemented sandstone preserved in an east-west belt across southwest Minnesota, northwest Iowa, and southeast South Dakota. The sand that became the Sioux Quartzite was deposited by rivers in near-shore ocean environments about 1.7 billion years ago. The quartz cement that binds the quartz sand grains together makes this one of the hardest and most erosion-resistant rocks in nature. This hard, durable characteristic makes the Sioux Quartzite a desirable aggregate for asphalt, cement, and as ballast along railroad tracks. Sioux Quartzite boulders and smaller rocks were transported south by glacial ice and deposited throughout western Iowa within the last 2 million years.



Loess Hills

Riders will cross five of Iowa's landform regions this week, beginning with the Loess Hills. As participants ride east out of Sioux City, they will traverse the Loess Hills landform region during the first 12 miles of the ride before a very short stretch on the Southern Iowa Drift Plain and then transitioning to the Northwest Iowa Plains. Loess, composed predominantly of wind-blown silt, originated from the historic Missouri River and accumulated on the landscape during the last "Ice Age". During warmer periods, the Missouri River would carry and deposit fine sediment from the northern glaciers along its banks. During glacial winters, strong westerly winds would blow loess out of the valley onto the adjacent landscape. The loess deposits in the Sioux City area are generally between 50 and 100 feet thick.

