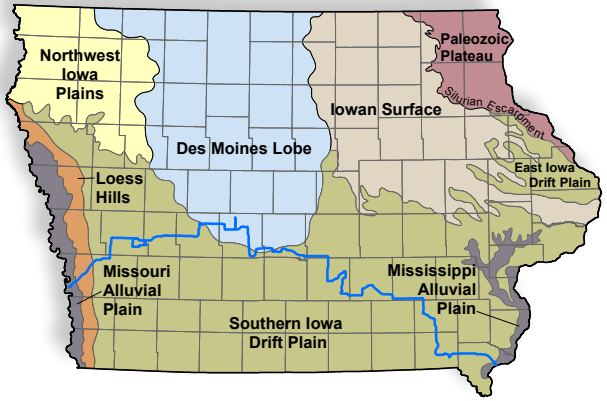


Landforms of Iowa

In Iowa, landform regions are composed of similar earth materials derived from glacial, wind, river, and marine environments of the geologic past. These landforms serve as a guide to appreciating the state's subtly diverse landscape and remarkable history. This year, you have the pleasure of biking over five of the eight major landform regions in the state! These major landforms in Iowa are summarized as follows:

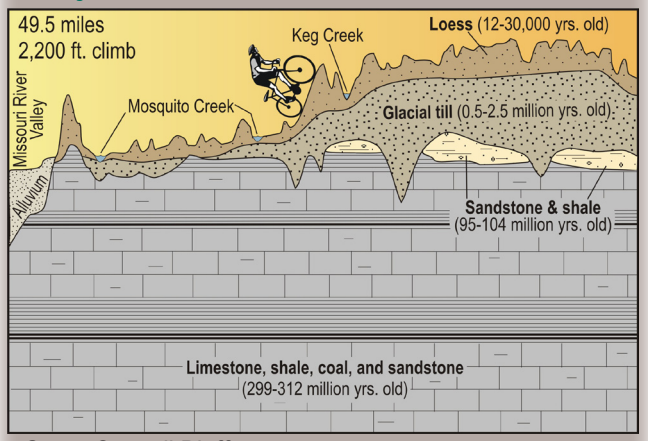
• **Alluvial Plains** – generally flat land that has been reworked by flowing rivers and flood waters for millions of years. Thick deposits of boulders, cobbles, gravel, sand, silt, and clay all interlayered together filling often deep bedrock channels. The first 2.5 miles (Missouri AP) and the last 2.5 miles (Mississippi AP) of the ride are over this landform type.

• **Loess Hills** – dunes of silt, blown in from the ancestral Missouri and Big Sioux rivers. The loess in this region can exceed 100 thick! Only about 7 miles of the ride will take place in this landform region.

• **Southern Iowa Drift Plain** – a hilly landscape characterized by thick loess deposited over deeply weathered Pre-Illinoisan glacial till (which you can read more about on Day 7). Most of this years ride will be over the SIDP, although on Days 2 & 3 you will experince the...

• **Des Moines Lobe** – the most recent advance of glacial ice into Iowa (about 15,000 - 12,000 years ago) left an amazingly flat landscape highlighted by hilly moraines. You can read more about the 'Lobe' on Days 2, 3, and 4.

Day 1 Milestones



Start: Council Bluffs

Missouri Alluvial Plain: 2.5 miles

Loess Hills: 7 miles

Southern Iowa Drift Plain: 40 miles

Finish: Harlan – 49.5 miles

Human and Natural History Partners

For the eighth year the **IDNR Geological and Water Survey**, the **U.S. Geological Survey**, and the **University of Iowa Office of the State Archaeologist "Team Archaeology"** return 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. Look for our booth at Expo and again on the final day in Fort Madison, and also keep an eye out for our Team Archaeology riders throughout the week and online at: **www.iowaarchaeology.org**. ***Learn about the Land*** provides daily brochures describing interesting landscape, geologic, and other natural and 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 Accociation** for assisting in the production of 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!

COVER PHOTO: *Hundreds of Bank Swallow burrows in a roadcut through loess in western Iowa along the Loess Hills Scenic Byway.*

RAGBRAI

Day 1

Sunday, July 21

2013

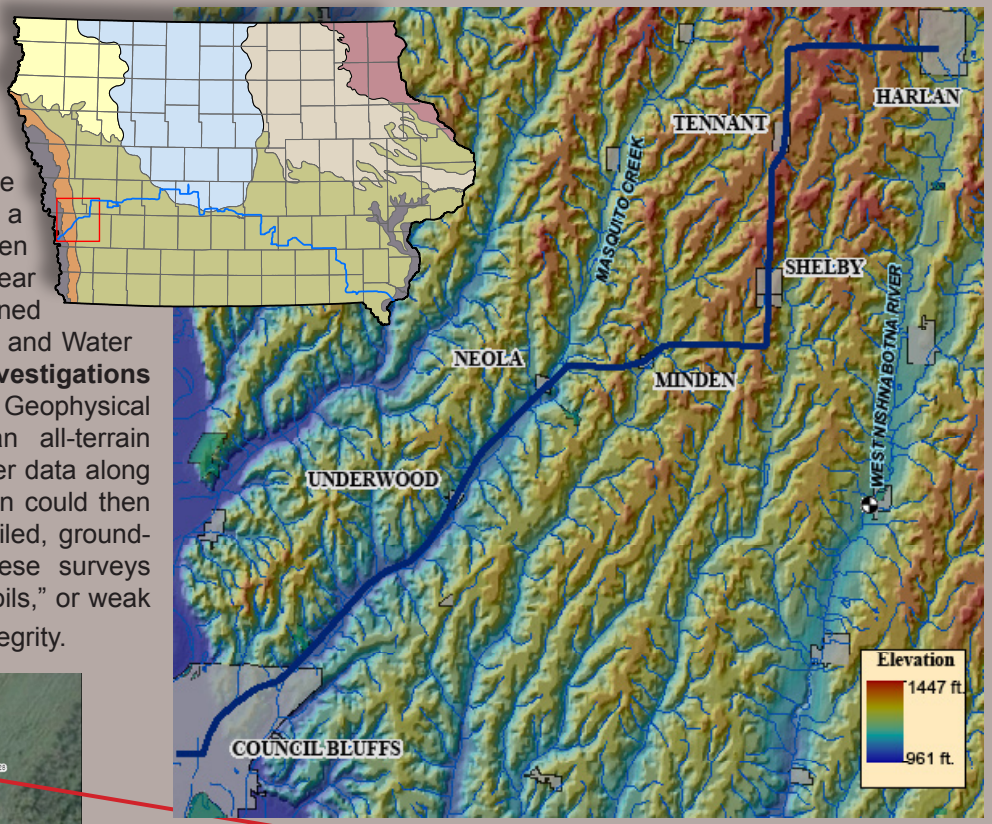
Learn about the Land

Iowa DNR - Geological and Water Survey
109 Trowbridge Hall
Iowa City, IA 52242
www.igsb.uiowa.edu

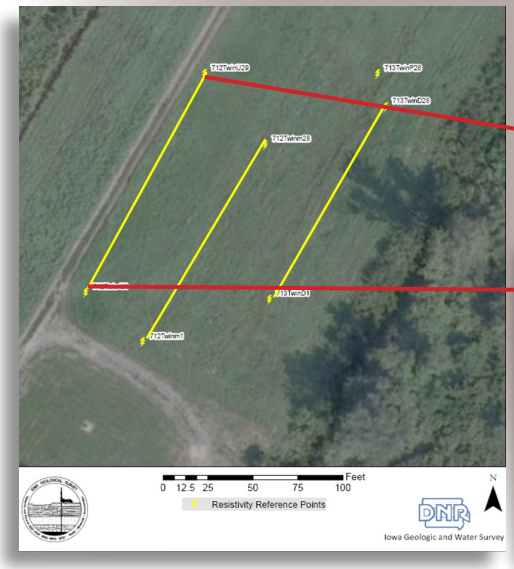
US Geological Survey - IA Water Science Center
400 S. Clinton St.
Iowa City, IA 52240
http://ia.water.usgs.gov

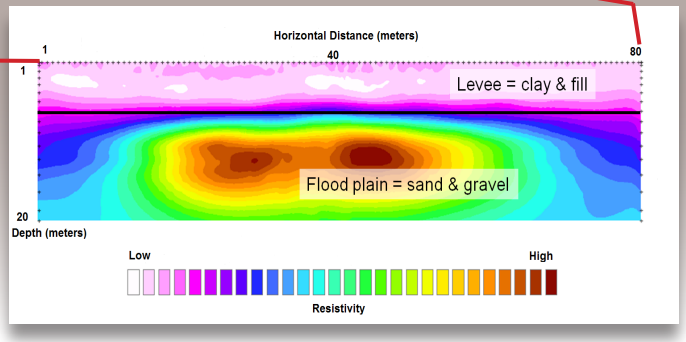
Iowa Limestone Producers Association
5907 Meredith Dr., Suite A
Des Moines, IA 50322
www.limestone.org

Like most years, RAGBRAI 2013 begins in the **Missouri River Valley**. Draining 1/6 of the United States, the Missouri River flows for 2,300 miles before joining the Mississippi River at St. Louis. This makes it the longest river in the United States. The Missouri River is relatively young by geologic standards, about 2 million years old. It was created by melt water from the great continental glaciers, ice sheets that repeatedly advanced into Iowa over the last 2.5 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.



During Missouri River flooding in the summer of 2011, levees provided a critical buffer of protection between the rising water and those living near it. To ensure the levees functioned as designed, the Iowa Geological and Water Survey conducted **geophysical investigations** to assess levee vulnerability. Geophysical equipment was mounted on an all-terrain vehicle in order to efficiently gather data along miles of levees. Areas of concern could then be re-surveyd using a more detailed, ground-based geophysical survey. These surveys were intended to identify "sand boils," or weak spots that could threaten levee integrity.





Limestone Facts

- The limestone industry employs over 1,800 people in Iowa.
- For every $1 billion spent on highway construction about 42,100 jobs are generated.
- 90% of limestone is used within 50 miles of where it is mined.
- 94% of asphalt and 80% of concrete is made up of agregates.
- Iowans use over 32,000,000 tons of crushed limestone each year. 15,000 tons of limestone is required for the construction of an average size school or hospital.
- About 150 tons of limestone are used in the construction of an average home.
- An estimated 85,000 tons of limestone are necessary to construct one mile of interstate highway.

Iowa Limestone Producers Association

USGS streamflow station

Parks and Preserves

Been watching the weather recently? If so, then you've no doubt noticed both **droughts and floods** occurring almost annually in our state. For this reason the Iowa Department of Natural Resources publishes a "Water Summary Update" throughout the spring, summer, and fall to help our citizens understand the hydrologicial conditions around the state. The summary includes measurements of precipitation, streamflow, and shallow groundwater compared to their 'normal' historic values. The WSU also has a drought monitor to get a full picture of Iowa's water resources.

www.iowadnr.gov/Environment/WaterQuality/WaterSummaryUpdate

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