

# Surficial Geology of the Des Moines Lobe of Iowa Boone and Story Counties

SURFICIAL GEOLOGIC MAP  
OF THE DES MOINES LOBE OF IOWA  
Boone and Story Counties  
Geological Survey Bureau  
Open File Map 2001-1  
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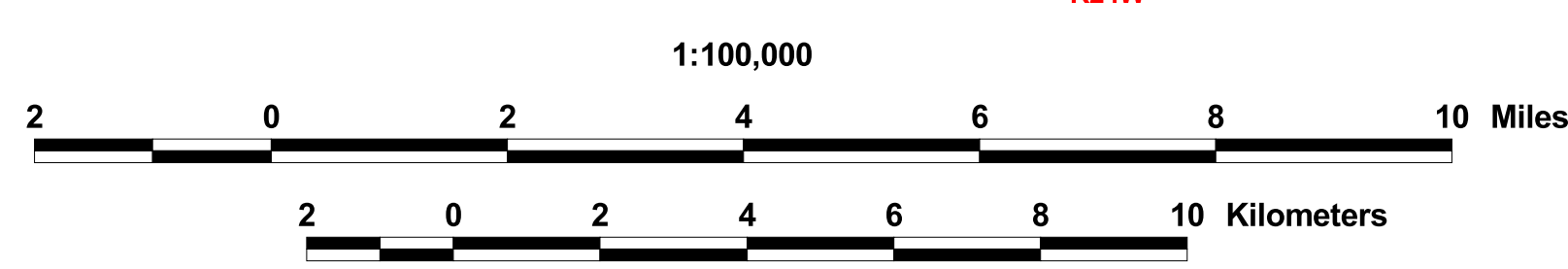
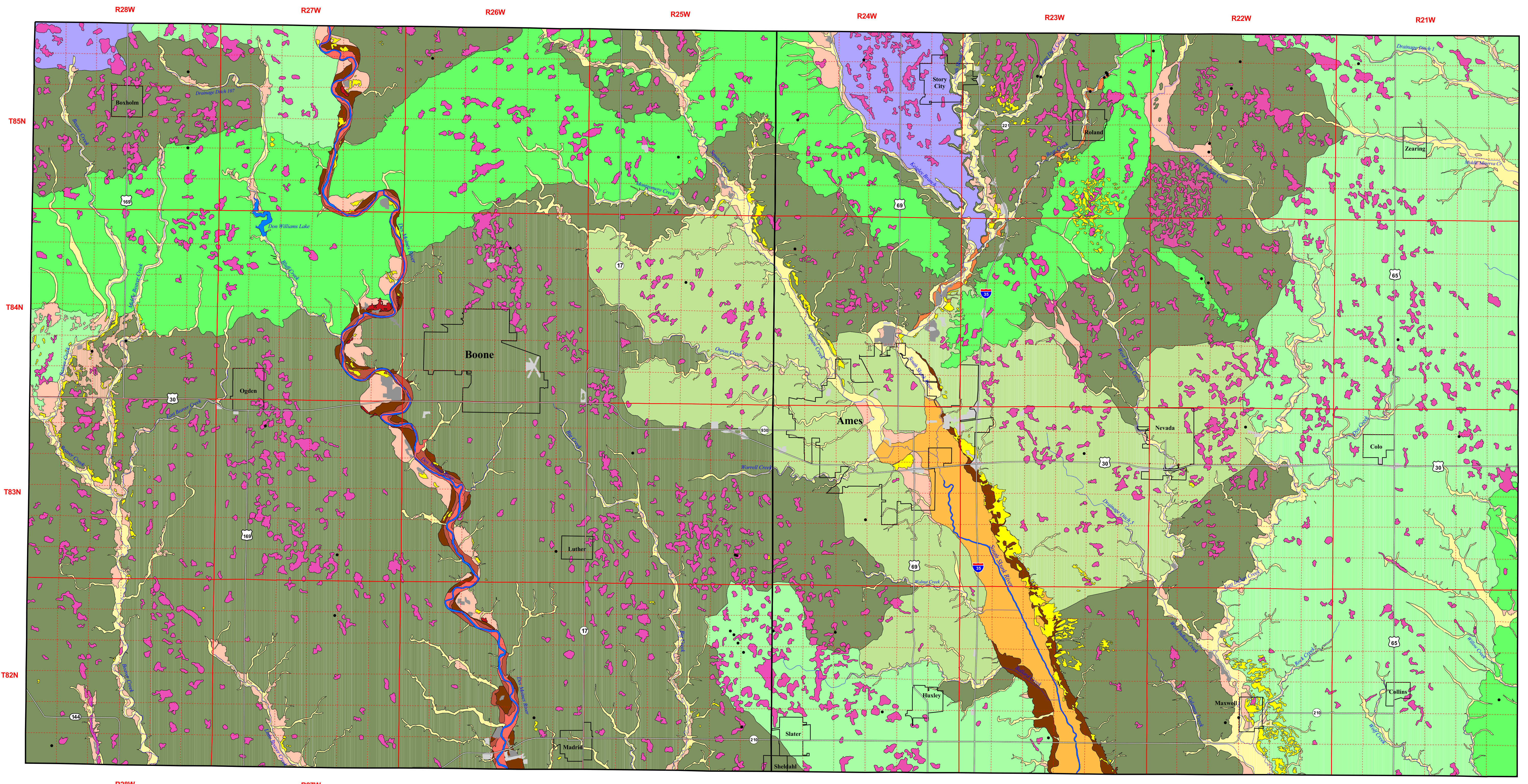


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**LEGEND**  
Description of Mapping Units

**Hudson Epoch**

- Qd - Depressions** (Defenses Formation-Wades Mts.) Generally 2.5 to 11 m of black to very dark gray, calcareous silt, sand and clay. Clay loam calcareous and organic calcareous silt and sand and calcareous sand and gravel. Associated with low relief terraces that occupy depressions and low spots on the landscape. Seasonal high water table.
- Qd - Stream Valley - Alluvium** (Defenses Formation) Unconsolidated variable thickness of less than 1 m to 1 m of a very dark gray to brown, calcareous silt and clay loam, clay loam, loam to sandy loam alluvium and calcareous in some places, or silty loam to silty sand. May overlie the Defenses Formation or the Ames Mts., Noah Creek Formation, or Muscatine or Pottawatomie bedrock. Associated with low relief modern floodplains, closed depressions, modern drainage systems and terrace positions on the landscape. Seasonal high water table and potential for frequent flooding.
- Qd - Stream Valley - Thick Alluvium** (Defenses Formation) Unconsolidated variable thickness of 2 to 6 m of a very dark gray to brown, calcareous, massive to stratified silt, clay loam, silty loam, loam to sandy loam alluvium associated with the Noah Creek Formation. Occasional low relief modern floodplains. Seasonal high water table and potential for frequent flooding.
- Qd - Stream Valley - Thin Alluvium** (Defenses Formation) Unconsolidated variable thickness of less than 1 m to 1 m of a very dark gray to brown, calcareous, stratified silt, clay loam, silty loam, loam to sandy loam alluvium and calcareous in some places, or silty loam to silty sand. May overlie the Defenses Formation or the Ames Mts., Noah Creek Formation, or Muscatine or Pottawatomie bedrock. Associated with low relief modern floodplains, closed depressions, modern drainage systems or terrace positions on the landscape. Seasonal high water table and potential for frequent flooding.
- Qd - Sand Dunes and Sand Sheets** (Pottawatomie Formation) Generally less than 3 m of yellowish brown, massive, calcareous loam and fine sand. May overlie yellowish brown coarse-grained sand and gravel (Noah Creek Fm.) or it may overlie yellowish to grayish brown, weakly calcareous, stratified loam to silt loam to sandy loam (Ames Mts.). Usually restricted to a narrow belt along major river valleys between or adjacent uplands on the Des Moines Lobe.
- Qd - Des Moines River Valley - Low Terrace** (Defenses Formation-Camp Creek Mts. and Robert Creek Mts.) Variable thickness of less than 1 m to 1 m of a very dark gray to brown, calcareous, stratified silt, clay loam to silty loam associated with the modern floodplain of the Des Moines River valley. Overlies Noah Creek Formation. Occasional terrace positions on the Des Moines River floodplain, in modern channel beds. Seasonal high water table and potential for frequent flooding.
- Qd - Des Moines River Valley - Intermediate Terrace** (Defenses Formation-Camp Creek Mts., Robert Mts. and Granite Mts.) Variable thickness of less than 1 m to 1 m of a very dark gray to brown, calcareous, stratified silt, clay loam to silty loam associated with the modern floodplain of the Des Moines River valley. Occasional terrace positions on the Des Moines River floodplain, in modern channel beds. Seasonal high water table and potential for frequent flooding.
- Qd - Des Moines and Skunk River Valleys - High Terrace** (Defenses Formation-Granite Mts. and Cornudas Mts.) Variable thickness of less than 1 m to 7 m of a very dark gray to brown, calcareous, silty clay loam, loam alluvium or silt loam. Overlies Noah Creek Formation. Occasional terrace positions on the Des Moines River valley. Seasonal high water table and potential for frequent flooding.

**Late Wisconsin Epoch**

- Qw - Fill Plain** (Des Moines Formation-Morgan Mts.) Low relief, less than 1 m of yellowish brown, calcareous, stratified loam to silt loam to silty loam. Occasional terrace positions on the landscape. Overlies gray, calcareous, massive, dense loam (Ames Mts.) or it may overlie yellowish to grayish brown, weakly calcareous, stratified loam to silt loam to sandy loam (Ames Mts.). Occasional terrace positions on the landscape. Seasonal high water table.
- Qw - Fill Plain with Linearized Ridge Form** (Des Moines Formation-Morgan Mts.) Low relief, less than 1 m of yellowish to grayish brown, calcareous, stratified loam to silt loam to sandy loam. Occasional terrace positions on the landscape. Overlies gray, calcareous, massive, dense loam (Ames Mts.) or it may overlie yellowish to grayish brown, weakly calcareous, stratified loam to silt loam to sandy loam (Ames Mts.). Occasional terrace positions on the landscape. Seasonal high water table.
- Qw - Alluvial Homocyclic Ridge Form** (Des Moines Formation-Morgan Mts.) Low relief, less than 1 m of yellowish to grayish brown, calcareous, stratified loam to silt loam to sandy loam. Occasional terrace positions on the landscape. Overlies gray, calcareous, massive, dense loam (Ames Mts.) or it may overlie yellowish to grayish brown, weakly calcareous, stratified loam to silt loam to sandy loam (Ames Mts.). Occasional terrace positions on the landscape. Seasonal high water table.
- Qw - Fill Ridge** (Des Moines Formation-Morgan Mts.) Generally 4 to 15 m of yellowish to grayish brown, weakly calcareous and stratified loam to silt loam to sandy loam. Occasional terrace positions on the landscape. Overlies gray, calcareous, massive, dense loam (Ames Mts.). Occasional terrace positions on the landscape. Seasonal high water table.
- Qw - Outwash Channels** (Noah Creek Formation) Generally less than 1 m of yellowish brown coarse-grained sand and gravel. Occasional terrace positions on the landscape. Overlies the Defenses Formation, or the Ames Mts., Noah Creek Formation, or Muscatine or Pottawatomie bedrock. In valley positions, the Des Moines or the Skunk river valley are predominantly bedded as a gray, calcareous, massive, dense loam (Ames Mts.). A few are bedded on Pottawatomie bedrock, which is generally silty, calcareous, massive and moderate associated with the Cornudas Mts.
- Qw - Outwash Channels Shallow to Bedrock** (Noah Creek Formation) Generally less than 3 m of yellowish brown coarse-grained sand and gravel. In the northern part of Story County, the well-sorted, Mississippi carbonaceous bedrock. Local Mississippi bedrock is composed of massive limestone, sandstone and shale. In valley positions, the Des Moines or the Skunk river valley are predominantly bedded as a gray, calcareous, massive, dense loam (Ames Mts.). A few are bedded on Pottawatomie bedrock, which is generally silty, calcareous, massive and moderate associated with the Cornudas Mts.
- Qw - Lake Sediment Plain - Broad-valley Landform Formations** (Des Moines Formation-Late Mts Mts.) Generally less than 1 m of dark grayish brown, massive, calcareous silt loam to silt loam overlying a thin bed of sand and gravel (C.F. 1). Silt loam overlying yellowish to grayish brown calcareous, stratified loam to silt loam to sandy loam. Occasional terrace positions on the landscape. Seasonal high water table.
- Qw - Aligned Homocyclic Ridge Form** (Des Moines Formation-Pilo Knob Mts.) Morgan Mts. Generally less than 1 m to 10 m of yellowish brown, calcareous, stratified, stratified loam and gravel with interbedded stratified loam. Occasional terrace positions on the landscape. Overlies gray, calcareous, massive, dense loam (Ames Mts.) or it may overlie yellowish to grayish brown, weakly calcareous, stratified loam to silt loam to sandy loam (Ames Mts.). Occasional terrace positions on the landscape. Seasonal high water table.
- Qw - Fill and Quarries** Limestone quarries and sand and gravel pits. Extent mapped as shown in county soil surveys.
- Qr - Fill** Areas of major land filling. Fill associated with railroad grades, highway grades and land leveling. Variable in texture.

- Water Features**
- DNR Well Locations**

