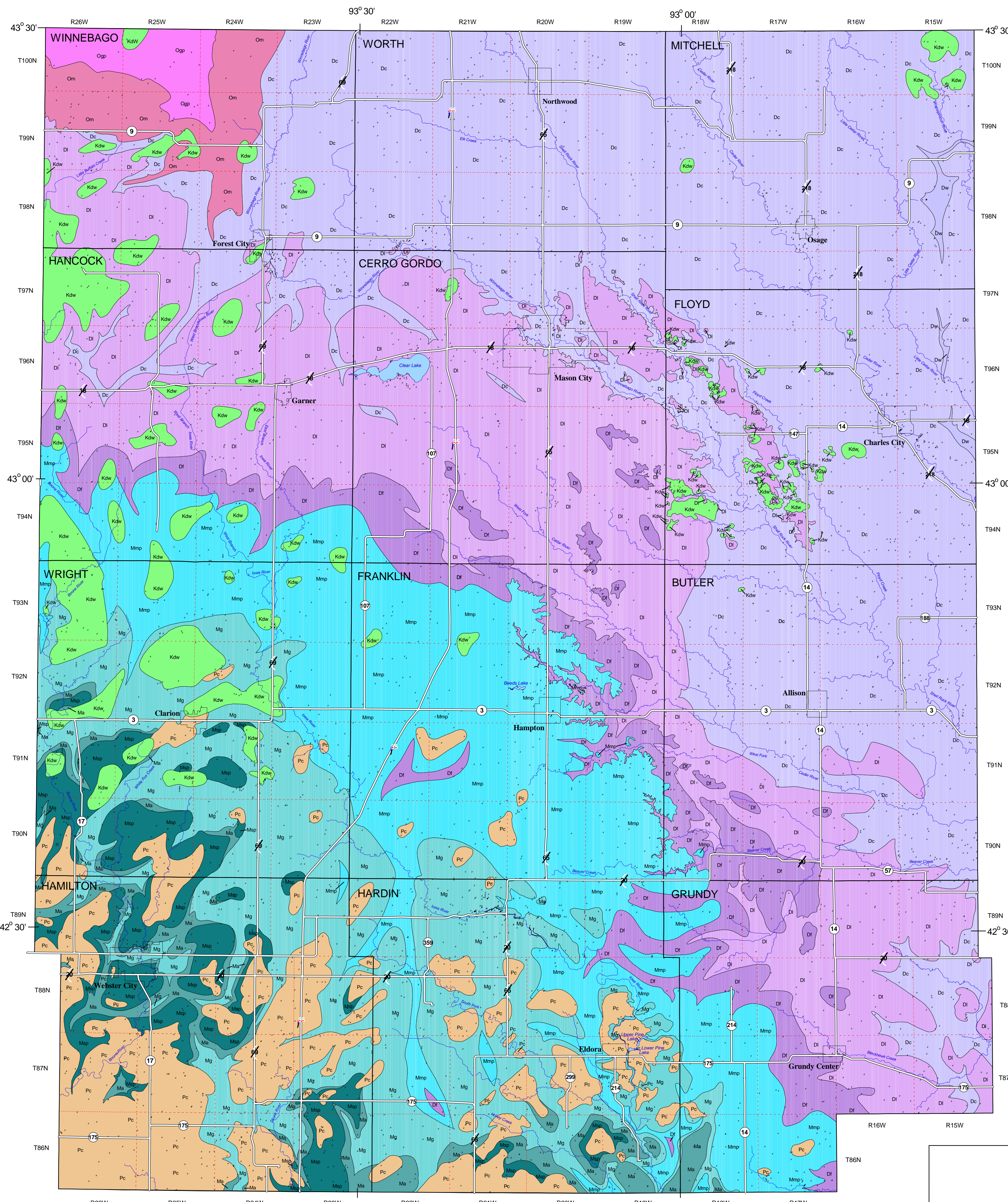


Bedrock Geology of North-Central Iowa



DIGITAL GEOLOGIC MAP OF IOWA PHASE 3: NORTH-CENTRAL IOWA

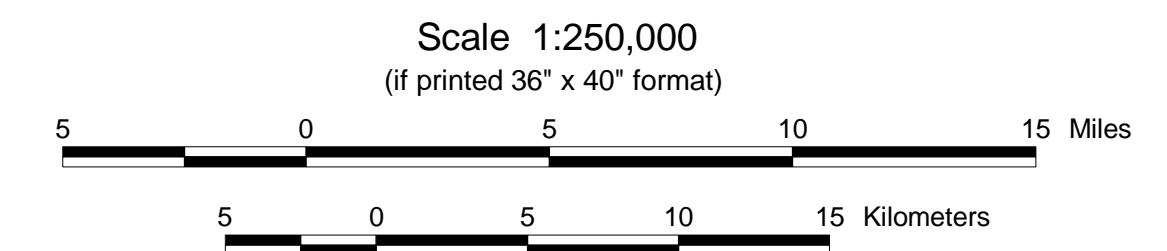
Prepared by
 Brian J. Witzke
 Raymond R. Anderson
 Bill J. Banker
 Greg A. Ludvigson
 Sean Greeney
 Energy and Geological Resources Division
 Geological Survey Bureau
 May 2001

Produced under the STATEMAP program, in cooperation with the
 U.S. Geological Survey, Department of Interior, Supported by
 Cooperative Agreement 00-HQAG-0075



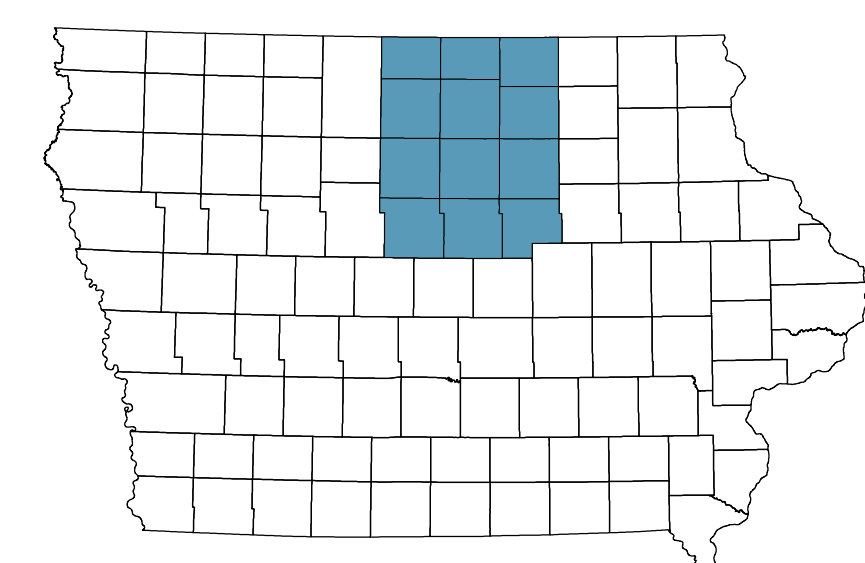
Iowa Department of Natural Resources
 Jeffrey R. Vonk
 Director

ACKNOWLEDGEMENTS
 Recognized for direct contributions to the map's production:
 Donald L. Koch and Matt Goolsby, Iowa DNR Geological Survey Bureau



Description of Map Symbols

- GEOLOGIC UNIT CONTACT
- BEDROCK WELL DATA POINT
- COUNTY BOUNDARY OR TOWN
- MAJOR HIGHWAY
- Interstate Route
- US Route
- State Route
- TOWNSHIP BOUNDARY
- ~ RIVER OR STREAM



Index Showing Area of Geologic Map

LEGEND Descriptions of Rock Units

CRETACEOUS

Kdw Dakota and Windrow fms., mid-Cretaceous (upper Albian and/or Cenomanian); interval generally included in Dakota Fm. across western map area, outliers in eastern map area generally assigned to Windrow Fm. Maximum thickness 150 ft (46 m) in Wright and Hancock counties. Primary lithologies: sandstone, part pebbly to conglomeratic, part cemented by iron oxides; mudstone; pale to medium gray, red. Secondary lithologies: chert residuum/gravel; siderite pellets.

PENNSYLVANIAN

Pc Cherokee Group undifferentiated; Middle Pennsylvanian (Atokan-Desmoinesian). Maximum thickness: 170 ft (52 m) in Hardin Co.; infilling of irregular erosional surface produces locally variable thickness. Primary lithologies: shale, medium to dark gray, part sandy; sandstone, v. f. Secondary lithologies: shale, black, carbonaceous; siltstone; coal; underlay, pale gray. Minor: pebbly sandstone; shale, red to pale gray; siderite concretions; limestone; pyrite.

MISSISSIPPIAN

Mpl "St. Louis" and Pella fms., Middle Mississippian (Meramecian). Maximum thickness 60 ft (18 m) in Hamilton Co. Primary lithologies: dolomite, part sandy; sandstone, part dolomitic; green-gray shale. Secondary lithologies: limestone, part sandy to sublithographic; breccia. Minor: oolitic limestone, chert.

Ma Augusta Group, includes "Keokuk" and "Warsaw" fms.; Middle Mississippian (Osagean). Maximum thickness 85 ft (26 m); locally truncated beneath sub-"St. Louis" unconformity. Primary lithologies: dolomite, part argillaceous; dolomitic limestone; Secondary lithologies: green-gray shale; limestone, skeletal to sublithographic; glauconitic dolomite or limestone; breccia. Minor: chert, chalcocyanite and quartz; oolitic limestone; phosphanite; dolomite.

Mg Gilmore City Fm., includes Marble Valley, Humboldt, and Iowa Falls mbrs.; Lower Mississippian (uppermost Kinderhookian, lower Osagean). Maximum thickness 170 ft (52 m) in Hamilton-Wright counties; thin southeastward, 50 ft (15 m) in southeast Hardin Co. Primary lithologies: limestone, skeletal and petiolid packstone-grainstone; limestone, oolitic to coarse-grain; dolomite (Iowa Falls facies). Secondary lithologies: oncolitic, intracrystalline, and sublithographic limestone; dolomitic limestone.

Mmp Maynes Creek and Prospect Hill fms., locally includes Chapin and Eagle City members within Maynes Creek interval; Lower Mississippian (Kinderhookian). Maximum total thickness 165 ft (50 m) in Hamilton-Wright counties; thin southeastward, 65 ft (20 m) in southeast Hardin Co.; maximum Maynes Creek Fm. 155 ft (47 m); Chapin Fm. 0-10 ft (3 m); maximum Prospect Hill Fm. 30 ft (9 m) in Franklin Co., elsewhere generally <10 ft (3 m). Primary lithology: dolomite, part cherty to very cherty. Secondary lithologies: skeletal, oolitic, and sublithographic limestone; dolomitic limestone; siltstone (Prospect Hill). Minor: shale (Prospect Hill).

DEVONIAN

Df Famennian interval, includes upper shale ("Maple Mill"), Aplington Dolomite, Sheffield Shale; Upper Devonian (Famennian). Maximum thickness 150 ft (45 m) in Hardin Co., thin westward to 40 ft (12 m); Aplington Dol., locally to 50 ft (15 m). Primary lithologies: shale, green/olive-gray to gray, silty; dolomite, part argillaceous to silty, part cherty; argillaceous. Minor: siltstone; oolitic limestone (upper part), pyrite.

Di Lime Creek Fm., includes Juniper Hill, Cerro Gordo, and Osage members in eastern map area, undifferentiated to west; Upper Devonian (upper Famennian). Maximum thickness 160 ft (49 m). Primary lithologies: shale, green-gray to gray, silty, calcareous; dolomite, part argillaceous (dolomite-dominated to west). Secondary lithologies: limestone, fossiliferous, part argillaceous. Minor: oolitic limestone, pyrite.

Dc Cedar Valley Group; Shell Rock, Lithograph City, Coralville, Little Cedar fms.; Middle to Upper Devonian (upper Givetian-lower Frasnian). Maximum thickness 150 ft (46 m); truncated and overlapped westward in Winnebago Co.; maximum Little Cedar (Bassett, Chickasaw, Eagle Center, Hinkle mbrs.) 110 ft (34 m); maximum Coralville (Gizzard Creek, Iowa City mbrs.) 80 ft (24 m); maximum Lithograph City (Osage Springs, Idlewild mbrs.) 100 ft (30 m); maximum Shell Rock (Mason City, Rock Grove, Nora mbrs.) 75 ft (23 m). Primary lithologies: dolomite, fossil-moldic to vuggy; limestone, variably dolomitic, fossiliferous to sublithographic, part argillaceous. Secondary lithology: gray to green-gray shale, dolomitic. Minor: glauconitic dolomite; sandy dolomite or limestone; chert.

Dw Wapsipaugon Group; Pinicon Ridge, Spillville fms., Middle Devonian (upper Eifelian-lower Givetian); forms bedrock surface only in small areas of Floyd/Mitchell counties. Maximum thickness (total interval) 130 ft (40 m); maximum Spillville 90 ft (27 m); maximum Pinicon Ridge (Kenwood, Spring Grove-Davenport mbrs.) 42 ft (13 m). Primary lithologies: dolomite, fossil-moldic to vuggy; dolomite, laminated or sandy; limestone, dense to sublithographic, partly to wholly brecciated. Secondary lithologies: shale, dolomite to sandy. Minor: chert and chalcocyanite; sandstone.

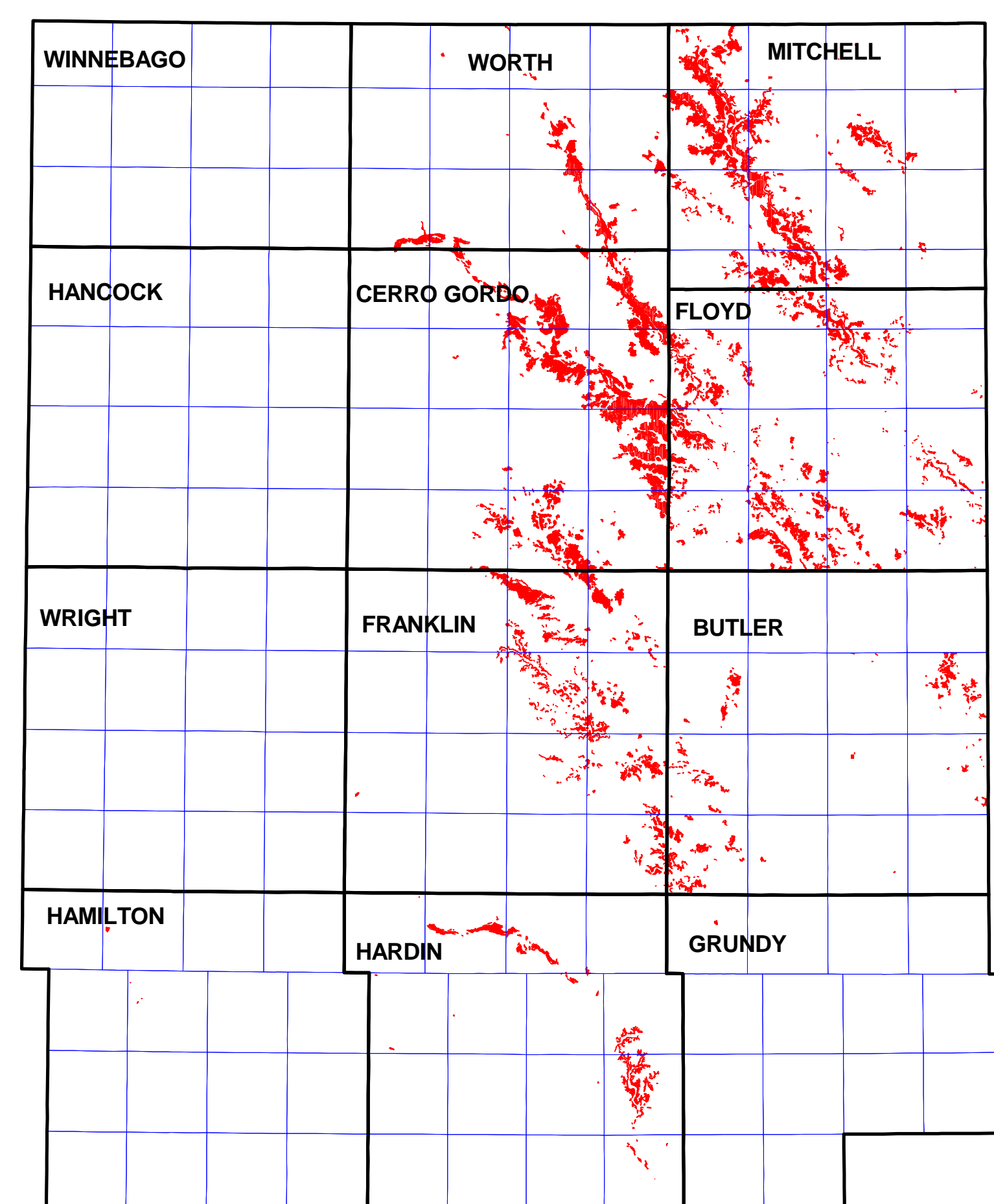
ORDOVICIAN

Om Maquoketa Fm., Elgin Mbr.; Upper Ordovician (Richmondian), forms bedrock surface only in Winnebago Co. Maximum thickness 95 ft (29 m). Primary lithology: dolomite, part cherty to very cherty. Secondary lithology: limestone, fossiliferous, part cherty. Minor: shale.

Ogp Galena Group, includes Dubuque, Wise Lake, Dunleith, Decorah fms.; Upper Ordovician (Chattfieldian-Maysvillian); forms bedrock surface only in Winnebago Co. Maximum thickness 285 ft (87 m). Primary lithologies: limestone, part dolomitic; dolomite. Secondary lithologies: cherty limestone; cherty dolomite; green-gray shale, calcareous.

Rock Exposures in the Study Area

Areas of bedrock exposure or bedrock surface within the soil horizon.



Prepared by the Iowa Department of Natural Resources,
 Geological Survey Bureau, May 2001.
 Open File Map 01-3