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The Digital Geologic Atlas of Texas

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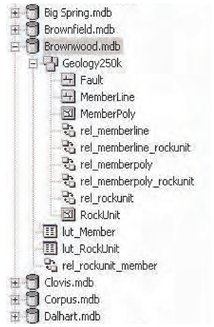
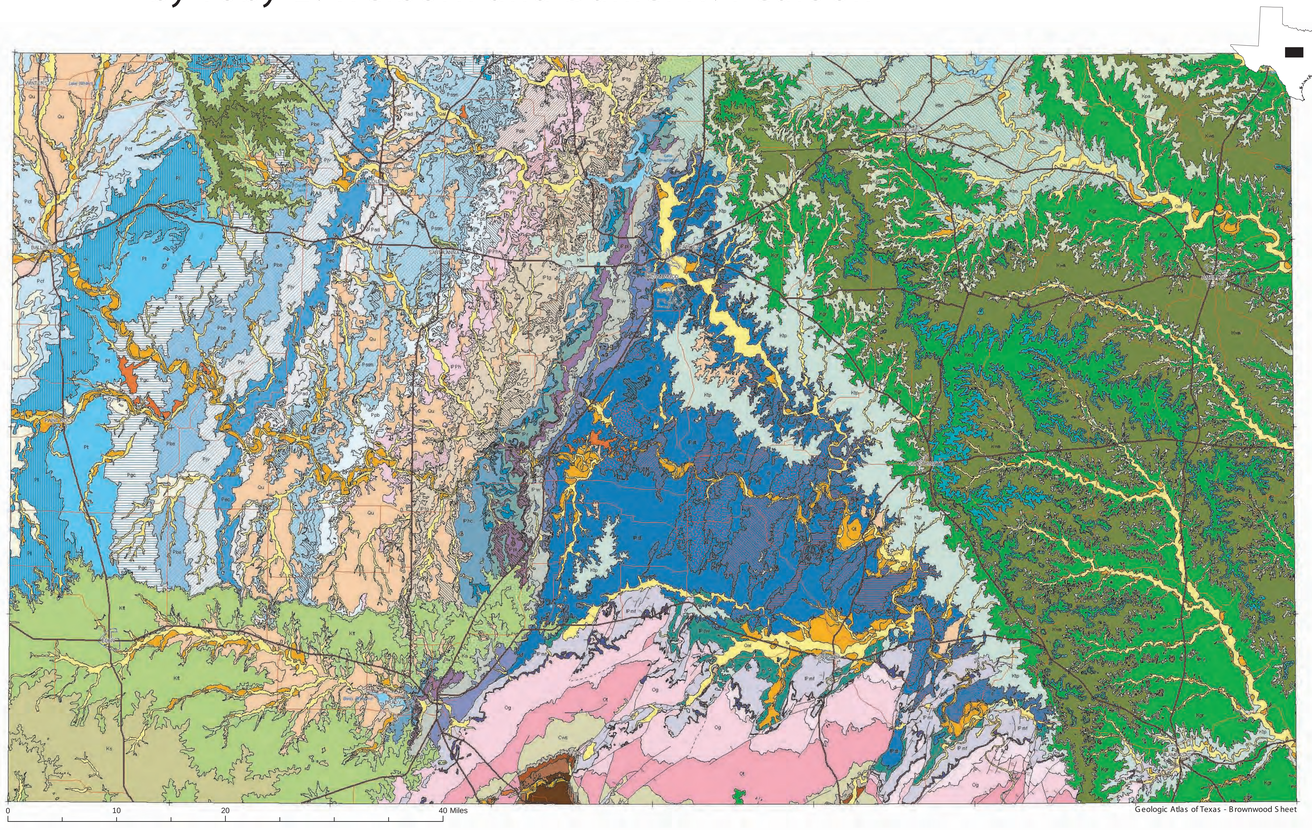
Abstract

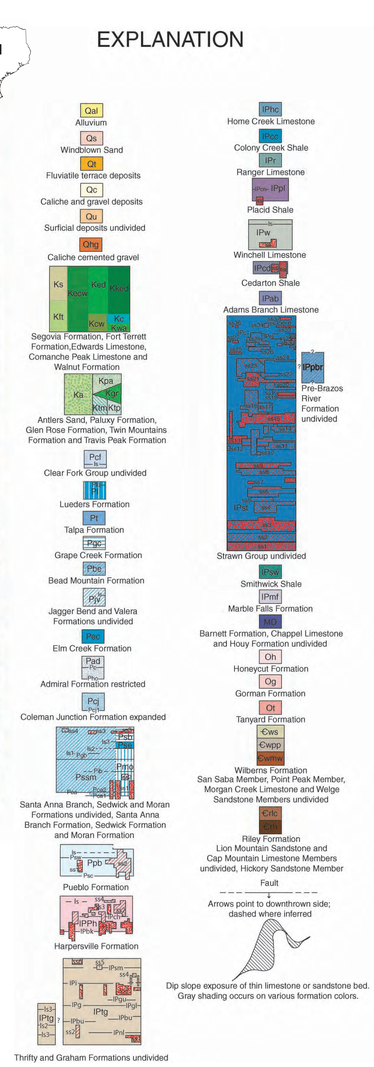
In September 1961, the University of Texas Bureau of Economic Geology began compiling the first 38 Geologic Atlas of Texas map sheets. Each map sheet encompassed an area of 1 degree latitude by 2 degrees longitude and was created at a scale of 1:250,000. With the advancement and widespread use of geographic information systems technology, the necessity for digital versions of the Geologic Atlas of Texas map sheets has become apparent. The USGS, in cooperation with the Texas Water Development Board, has developed a standardized method and geodatabase structure for the Digital Geologic Atlas of Texas. While keeping the geology of each sheet intact, the digital media allows data sets to be transferred easily between users, manipulated or restructured to fit work needs, converted to fit within existing digital models or data sets, and thematically mapped so that users can analyze spatial data layers relative to one another.

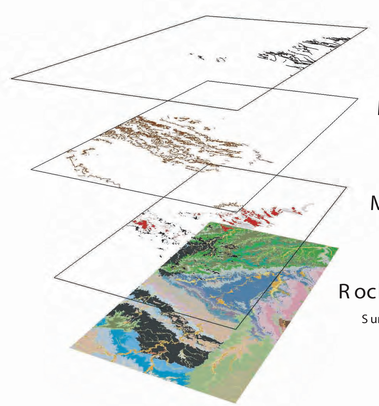
Geodatabase Structure

The Digital Geologic Atlas of Texas stores each map sheet in a personal geodatabase. The feature dataset, Geology250K, is a collection of all surface geology spatial features and is divided into individual line or polygon feature classes representing the faults, members and rock units for the entire map sheet. Relationship classes between the RockUnit and the Member feature classes model the connection between the individual formations and their associated members. Member and RockUnit look-up tables store descriptions, abbreviations, time periods, and other additional information. The geodatabase structure provides the necessary standardization for the Digital Geologic Atlas of Texas but is flexible enough to handle the different features on each map sheet.









Fault

Normal faults, transverse faults, thrust faults, anticlines, and synclines are line features with direction.

MemberLine

Formation divisions such as members, facies, contacts, and beds are line features.

MemberPoly

Formation divisions such as members, facies, and dip slope exposures are polygon features.

RockUnit

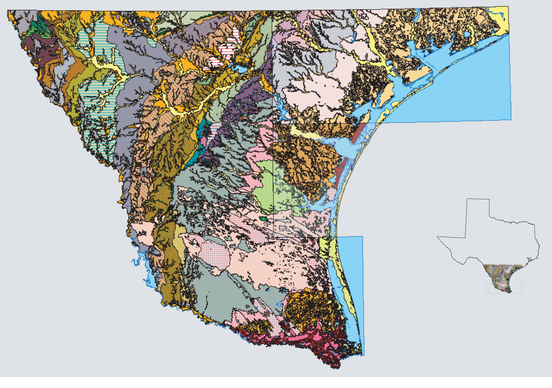
Surface geology formations and groups are polygon features.

Future Objectives

The next stage of the Digital Geologic Atlas of Texas is the creation of a statewide, seamless geology dataset. A seamless dataset provides:

1. A consistent naming convention for geologic formations across the entire State.
2. A statewide color scheme to be applied to all formations with like names.
3. The seamless dataset will be used as a base layer for analysis and modeling (for example, GAM, reservoir sedimentation, infrastructure development, and habitat inventories).

In addition, the finished product will be served through the Texas Natural Resource Information System (TNRIS).



StratMap

TEXAS WATER DEVELOPMENT BOARD