

- 1 URBAN OR BUILT-UP LAND**
 - 11 Residential
 - 12 Commercial and services
 - 13 Industrial
 - 14 Transportation, communications and utilities
 - 15 Industrial and commercial complexes
 - 16 Mixed urban or built-up land
 - 17 Other urban or built-up land
- 2 AGRICULTURAL LAND**
 - 21 Cropland and pasture
 - 22 Orchards, groves, vineyards, nurseries, and ornamental horticultural areas
 - 23 Confined feeding operations
 - 24 Other agricultural land
- 3 RANGELAND**
 - 31 Herbaceous rangeland
 - 32 Shrub and brush rangeland
 - 33 Mixed rangeland
- 4 FOREST LAND**
 - 41 Deciduous forest land
 - 42 Evergreen forest land
 - 43 Mixed forest land
- 5 WATER**
 - 51 Streams and canals
 - 52 Lakes
 - 53 Reservoirs
 - 54 Bays and estuaries
- 6 WETLAND**
 - 61 Forested wetland
 - 62 Nonforested wetland
- 7 BARREN LAND**
 - 71 Dry salt flats
 - 72 Beaches
 - 73 Sandy areas other than beaches
 - 74 Bare exposed rocks
 - 75 Strip mines, quarries, and gravel pits
 - 76 Transitional areas
 - 77 Mixed barren land
- 8 TUNDRA**
 - 81 Shrub and brush tundra
 - 82 Herbaceous tundra
 - 83 Bare ground tundra
 - 84 Wet tundra
 - 85 Mixed tundra
- 9 PERENNIAL SNOW OR ICE**
 - 91 Perennial snowfields
 - 92 Glaciers

For definitions of Level I and Level II categories see U.S. Geological Survey Professional Paper 964, *A land use and land cover classification system for use with remote sensor data*, 1976, by J. R. Anderson, E. E. Hardy, J. T. Roach, and R. E. Wiltner.

The development of a geographic information system incorporating digital land use data is described in U.S. Geological Survey Professional Paper 1059, *GIRAS: A geographic information retrieval and analysis system for handling land use and land cover data*, 1977, by W. B. Mitchell, S. C. Guptill, K. E. Anderson, R. G. Feagans, and C. A. Hallam.

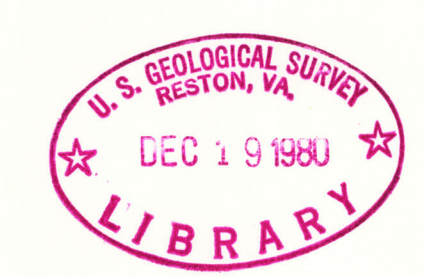
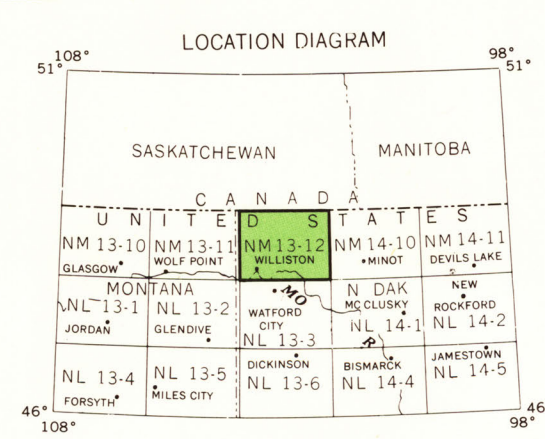
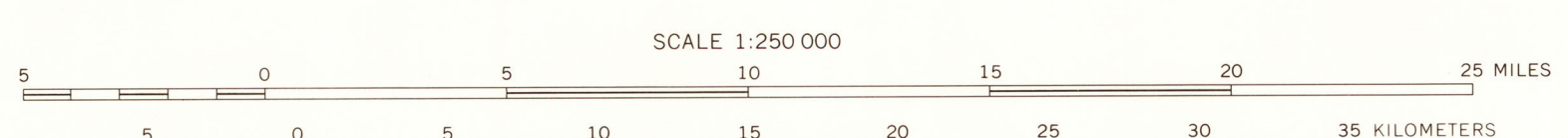
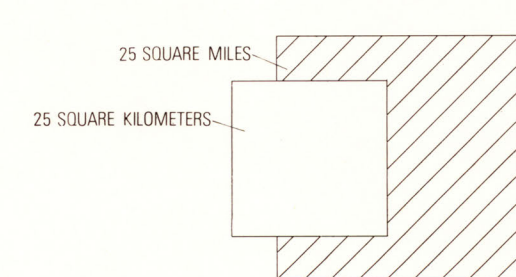
Land use and land cover information compiled from source materials dated 1975-76.

The Williston, N. D. Land Use and Land Cover map was prepared using both Landsat digital data and Agricultural Stabilization and Conservation Service (ASCS) aerial photographs. Categories 11-17, 23, 53, and 75 were interpreted and compiled from aerial photographs. All other categories were obtained from computer classification of Landsat digital data and then displayed on a color film recorder map at compilation scale. Boundaries were drawn for the classes of digital data representing land use and land cover categories that were large enough to meet the minimum area specifications. In some instances supplemental aerial photographs were used as an aid in the placement of polygon boundaries being derived from the Landsat data.

Minimum mapping units are: 4 hectares (10 acres) for Level II categories 11-17, 23-24, 51-54, 75, and urban occurrences of 76 and 16 hectares (40 acres) for all other Level II categories.

For compilation specifications see U.S. Geological Survey Open-file report 77-555, *Specifications for land use and land cover and associated maps*, 1977, by G. L. Loelkes, Jr.

Base from U.S. Geological Survey, 1953-74



**LAND USE AND LAND COVER, 1975-76
WILLISTON, NORTH DAKOTA**

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