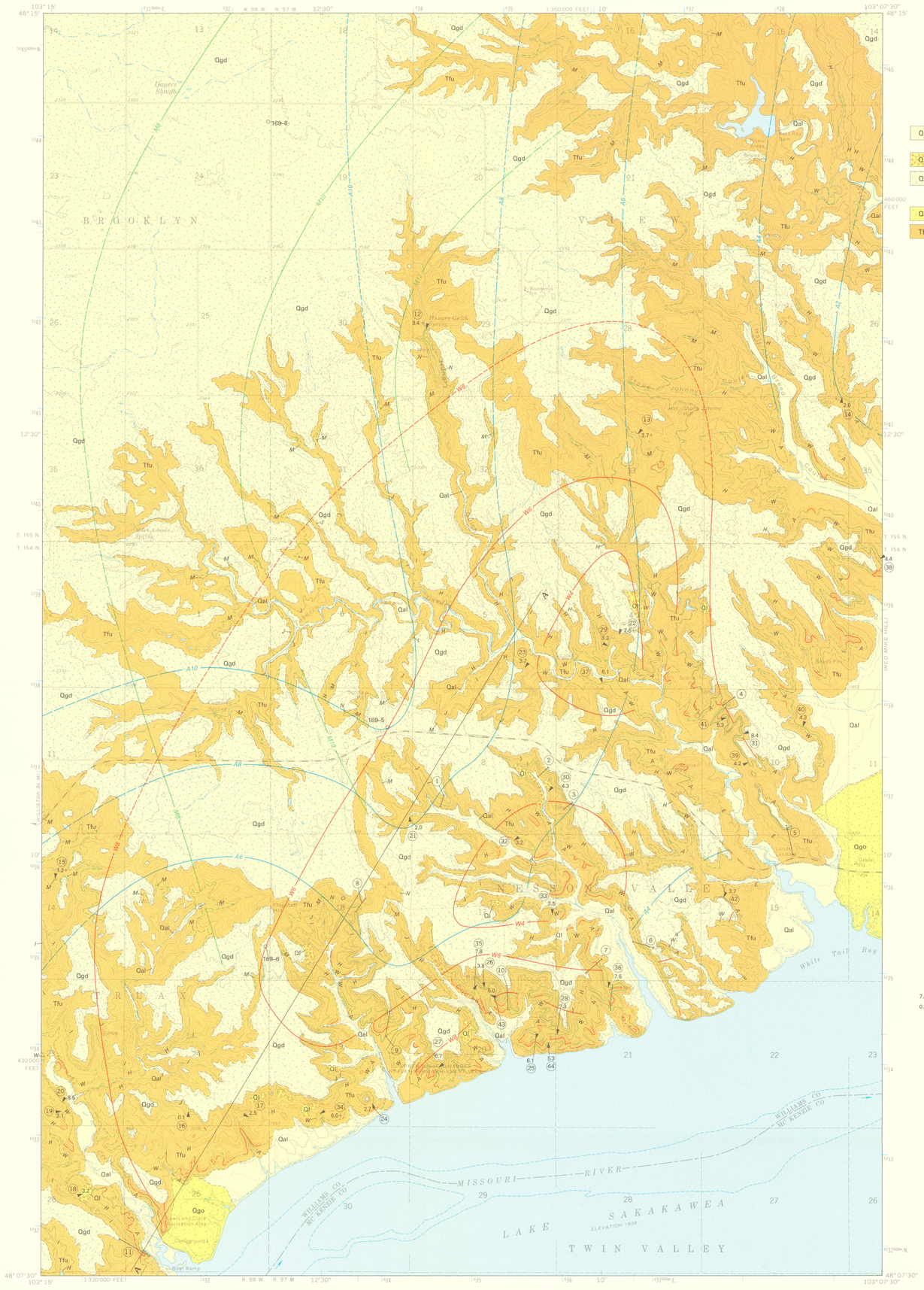


Base from U.S. Geological Survey, 1969
10,000-foot grid based on North Dakota coordinate system, north zone
1000-meter Universal Transverse Mercator grid ticks, zone 13, shown in blue

APPROXIMATE MEAN DECLINATION, 1981

CORRELATION OF MAP UNITS

Qal	Holocene	QUATERNARY
Ql		
Qgd, Qgo	Pleistocene	
Tfu	Paleocene	TERTIARY

DESCRIPTION OF MAP UNITS

Qal ALLUVIUM (HOLOCENE)—Valley fill consisting primarily of reworked local sediments; may include some terraces in glacial outwash

Ql LANDSLIDE (HOLOCENE)—Small masses of earth and rock moved downslope as a unit

Qgd GLACIAL DRIFT (PLEISTOCENE)—Unstratified, unsorted glacial sediments which cap upland surfaces and drape gentle slopes. The narrower ridges are capped by pebble and cobble remnants of drift

Qgo GLACIAL OUTWASH (PLEISTOCENE)—Stratified glacial deposits in stream valleys, generally pebbles and cobbles

Tfu FORT UNION FORMATION (PALEOCENE)—Interbedded gray to yellowish-brown claystone, siltstone, sandstone, and lignite. The lignite beds mapped: Q, N, Mormon (M), J, I, H, Williston (W), Avoca (A), and E beds. Approximately 500 feet of Fort Union exposed in quadrangle

4.4 A 38 LIGNITE BED—Long dashed where approximately located, short dashed where inferred. Letter indicates bed mapped: Q, N, Mormon (M), J, I, H, Williston (W), Avoca (A), or E bed. The Mormon, Williston, and Avoca beds are shown by heavier green lines; the other beds by lighter green lines. Thickness measured at arrow. Circled number indicates coal section shown on sheet 2

BAKED AND FUSED ROCK—Created by burning of lignite in place. Pattern indicates inferred extent of burn

BAKED AND FUSED ROCK OF LIMITED LATERAL EXTENT

CONTACT—Long dashed where approximately located, short dashed where inferred

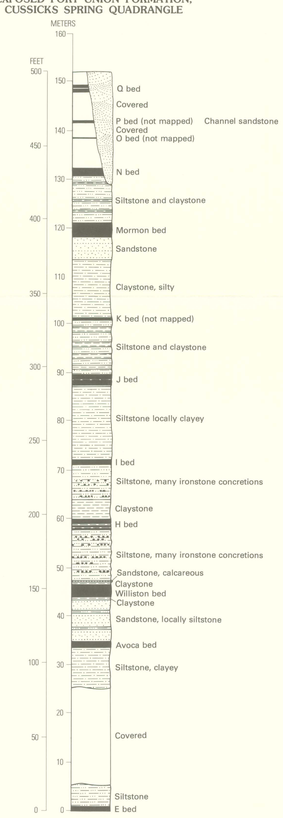
A2, W6, M8 ISOPACH—Showing thickness, in feet, of designated lignite bed: A, Avoca; W, Williston; M, Mormon. Long dashed where approximately located, short dashed where inferred. Contour interval 2 feet

169–5 U.S. GEOLOGICAL SURVEY—NORTH DAKOTA GEOLOGICAL SURVEY DRILL HOLE—Lithologic log shown on sheet 2

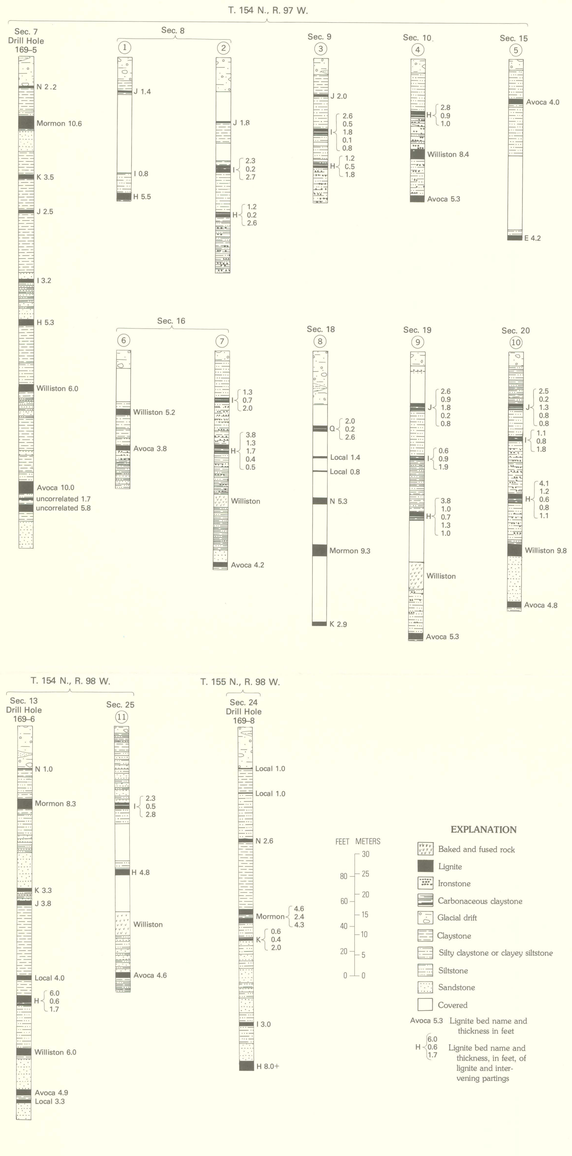
5 LINE OF MEASURED SECTION—Circled number indicates measured section shown on sheet 2

ABANDONED DRIFT COAL MINE—Showing reported thickness of lignite, in feet

GENERALIZED COLUMNAR SECTION, EXPOSED FORT UNION FORMATION, CUSSICKS SPRING QUADRANGLE

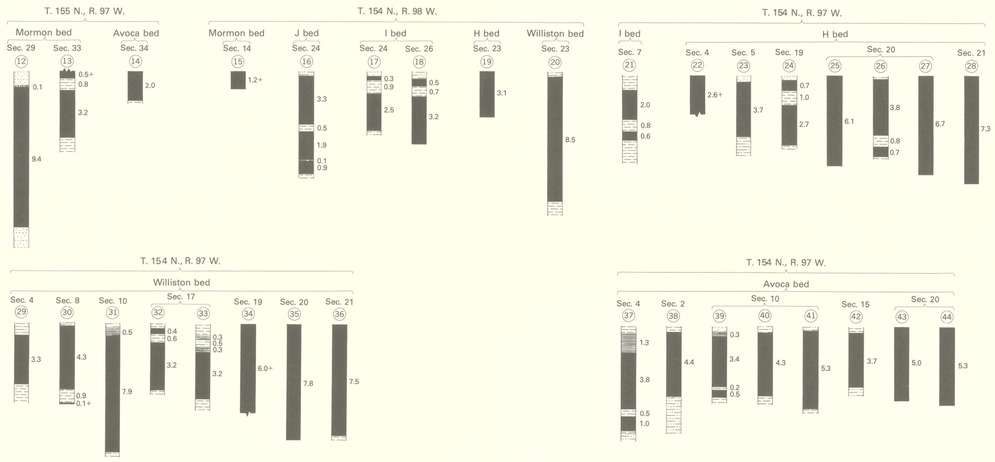


MEASURED LITHOLOGIC SECTIONS

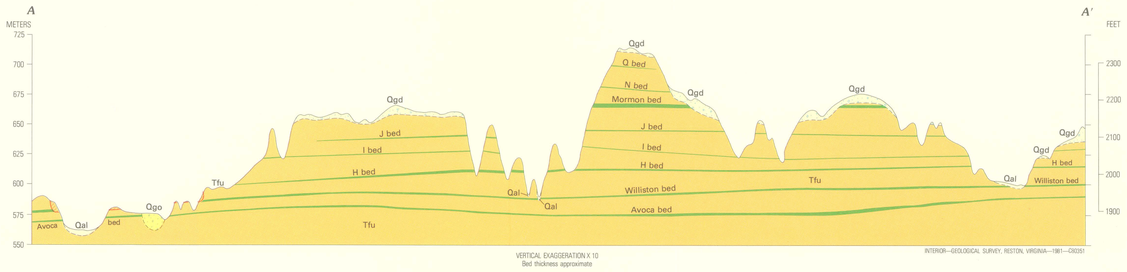


EXPLANATION MEASURED LIGNITE SECTIONS

7.3 Lignite, showing thickness, in feet
0.3 Impure lignite, showing thickness, in feet
Base or top of lignite undetermined
Ash
Claystone
Silty claystone or clayey siltstone
Siltstone
Sandstone



MEASURED COAL SECTIONS



INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1981—C80351

GEOLOGIC MAP AND LIGNITE RESOURCES OF THE CUSSICKS SPRING QUADRANGLE, WILLIAMS COUNTY, NORTH DAKOTA

By
John M. Spencer
1981