OKLAHOMA GEOLOGICAL SURVEY
Charles J. Mankin, *Director*

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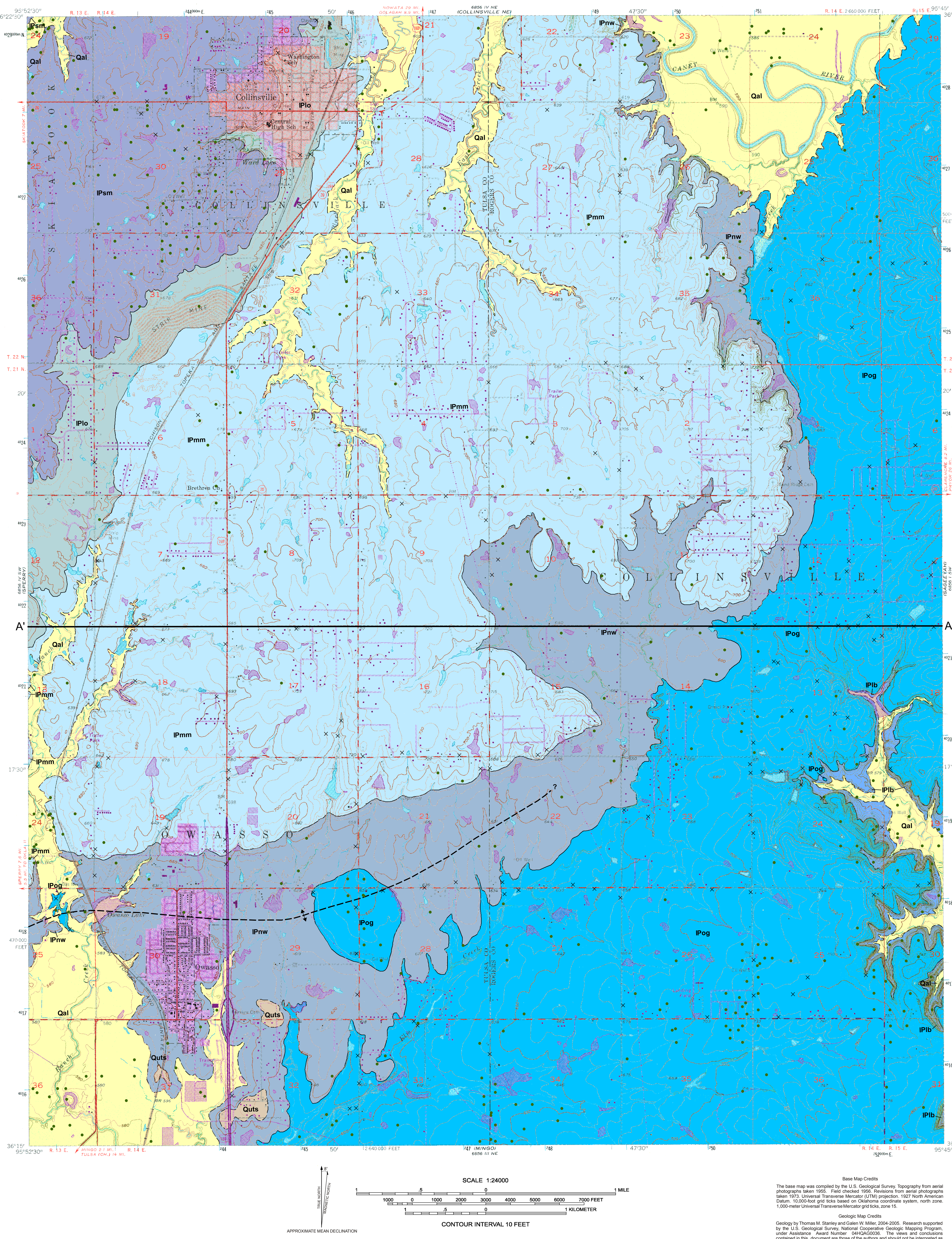
Oklahoma Geologic Quadrangle **OGQ-62**
Geologic Map of the Collinsville 7.5′ Quadrangle



Base Map Credits

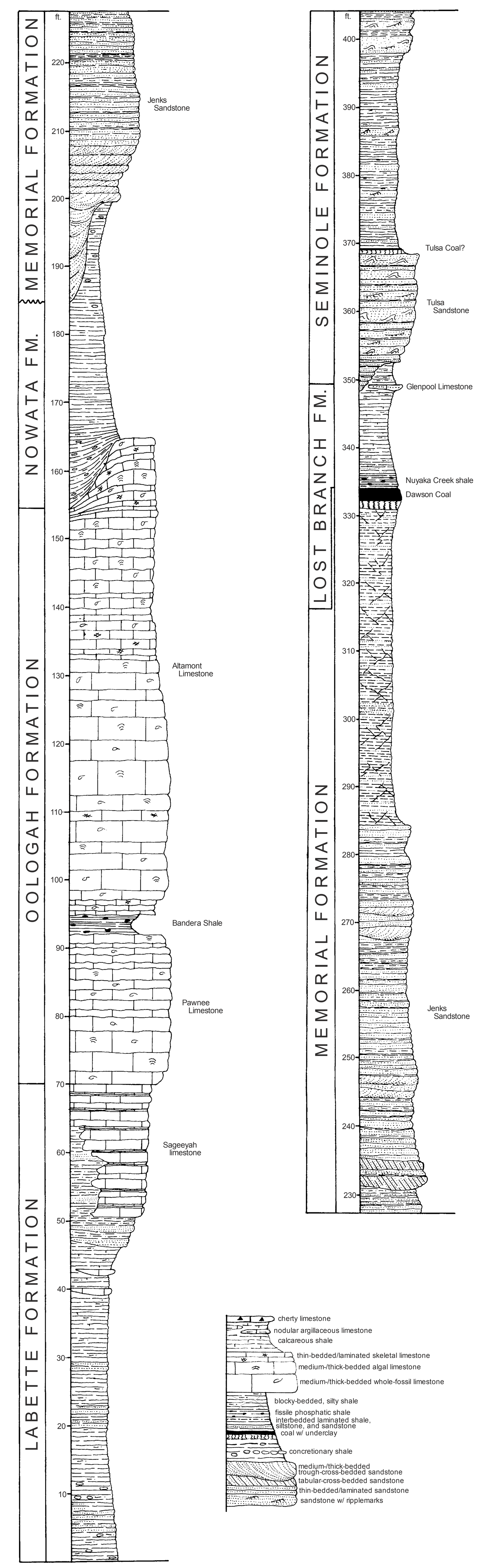
The base map was compiled by the U.S. Geological Survey. Topography from aerial photographs taken 1955. Field checked 1956. Revisions from aerial photographs taken 1973. Universal Transverse Mercator (UTM) projection. 1927 North American Datum. 10,000-foot grid ticks based on Oklahoma coordinate system, north zone. 1,000-meter Universal Transverse Mercator grid ticks, zone 15.

Geologic Map Credits

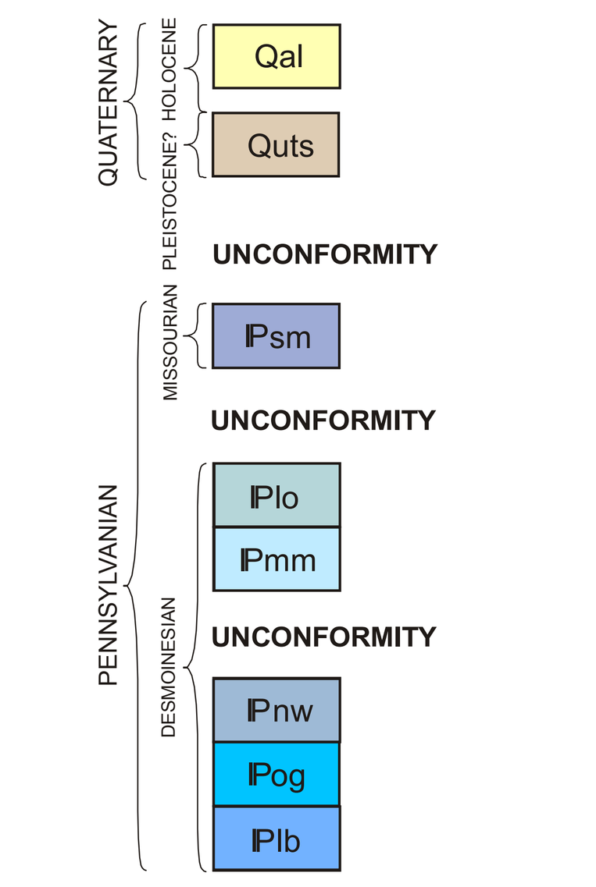
Geology by Thomas M. Stanley and Galen W. Miller, 2004-2005. Research supported by the U.S. Geological Survey, National Cooperative Geologic Mapping Program, under Assistance Award Number 04HQAG0036. The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government. Cartography and layout prepared by G. Russell Standridge, 2005.

STANDARD REFERENCE SECTION

Main stratotype section for the Collinsville 7.5-minute quadrangle showing principal formations, members , and beds, their relative stratigraphic positions, general lithologic textures, and average thicknesses. Formal member and bed names are indicated by capitalization (i.e., Jenks Sandstone), while informal names are given in lowercase (i.e., Sageeyah limestone). Unit names followed by a '?' indicate that the member or bed was not observed in the field area, but has been reported in adjacent areas or in the subsurface.



CORRELATION OF MAP UNITS



DESCRIPTION OF UNITS*

Qal ALLUVIUM (Holocene) - Clay, silt and sand, with minor gravel, in channels and on flood plains of modern streams. Includes terrace deposits of similar composition located directly above and adjacent to modern channels. Thickness: 0 ft to as much as 60 ft.

Quts UPPER TERRACE SANDS (Holocene and/or Pleistocene(?)) - Small, isolated pockets of locally and distally derived sediment; consisting mostly of medium-grained quartz sand, with rounded and subrounded pebble-sized chert clasts being rare. Base of unit is about 20 ft to 25 ft above the modern flood plains, ranging in elevation from 600 ft. to 610 ft. above sea level. Thickness: 0 ft to 15 ft.

IPsm SEMINOLE FORMATION (Pennsylvanian, Missourian) - Grayish orange (10YR7/4), light brown (5YR5/6) to moderate brown (5YR4/4), moderately indurated, fine-grained, siliceous sandstones, and dark yellowish orange (10YR6/6), laminated, slightly silty, concretionary clayshales. Sandstones common in basal 20 ft (Tulsa Sandstone), and in upper third of formation; bedding thin, ranging from 1" to 4" thick, typically convoluted, exhibiting load casts along lower bed surfaces, and ripplemarks on upper bed surfaces. Clayshale with interlaminated siltstones and fine-grained sandstones (also with ripplemarks, and convoluted bedding); coarser-grained clastics more common in lower half of formation compared with upper half. Concretionary material occurring as discontinuous lenses and beds within clayshale. Only lower 55 ft of formation exposed in quad.

IPlo LOST BRANCH FORMATION (Pennsylvanian, Desmoinesian) - Mostly a light brown (5YR6/4) to pale yellowish brown (10YR6/2), locally medium light gray (N6), laminated, slightly calcareous, micaceous, silty clayshale; becoming sandy and less calcareous toward base. Basal 3 ft of formation, just above the Dawson Coal, consists of a medium dark gray (N4) to dark gray (N3), well-laminated to fissile, phosphatic clayshale called the Nuyaka Creek shale bed. Top of formation either occurs at the top of the Glenpool Limestone (if present), or at the base of the first prominent sandstone bed of the overlying Seminole Formation. Glenpool Limestone generally a 5" to 12" thick, fossiliferous, sandy carbonate mudstone. Thickness of the Lost Branch ranges from 5 ft to 45 ft thick, averages closer to 17 ft thick.

IPmm MEMORIAL FORMATION (Pennsylvanian, Desmoinesian) - In the Collinsville area, consists of three members: 1, the uppermost Dawson Coal; 2, an unnamed middle shale interval; and 3, the basal Jenks Sandstone. Thickness of the formation varies from as little as 100 ft to as much as 170 ft thick, averages closer to 143 ft thick.

Dawson Coal: Poorly exposed in map area; where observed in old mine workings represented by a black (N1) to grayish black (N2), 1 ft to 2 ft thick coal bed overlying a comparably thick very light gray (N8) to light bluish gray (5B7/1) underclay.

unnamed shale interval: Consists of a light olive brown (5Y5/6), grayish orange pink (5YR7/2), to grayish yellow (5Y8/4), interbedded silty and sandy mudstone, and friable, fine-grained sandstone. Sandstones may have light brown (5YR6/4) oxide spots. Mudstone blocky bedded, with numerous concave fractures and slickensides that are indicative of paleosol development. Sandstones generally laminated, occurring as discontinuous beds and lenses within mudstones; sandstone cement most likely clay or a weak iron-oxide. Thickness of interval varies from 20 ft to as much as 70 ft, averages close to 45 ft thick.

Jenks Sandstone: Yellowish gray (5Y7/2), pale yellowish brown (10YR6/2), dark yellowish orange (10YR6/2), locally light brown (5YR5/6) to pale brown (5YR5/2), weakly indurated to moderately indurated, thin- to medium-bedded, fine-grained, locally medium-grained at base, micaceous sandstone. Lower third of sandstone indurated, thin- to medium- trough-cross-bedded, with bedding varying from 3"-16" thick; rest of interval becoming weakly-indurated, thinner-bedded (with beds ranging from 0.5" to 4" thick, averaging closer to 2" thick), and having numerous shale partings and interbeds (flaser bedding). Clay-ball clasts, and flute casts common; some tabular cross-bedding in middle of unit. Maximum thickness of the Jenks Sandstone occurs in the middle of the quad, and is about 100 ft; unit thins dramatically to the north, south, and in the subsurface to between 30 ft to 60 ft thick.

IPnw NOWATA FORMATION (Pennsylvanian, Desmoinesian) - Grayish orange pink (5YR7/2) to medium light gray (N6), blocky bedded to weakly laminated, slightly silty, concretionary clayshale. Concretions more common in upper and lower third of formation, consisting of dark yellowish orange (10YR6/6), flat, ovoid-shaped dolomitic to sideritic(?) clasts, or as thin, discontinuous beds. Formation poorly exposed throughout map area. Thickness highly variable due to irregular, yet conformable lower contact with the Oologah, and to an upper erosional unconformable contact with the Jenks Sandstone of the Memorial Formation; maximum exposed thickness about 45 ft, thinning to as little as 20 ft thick in middle of quad.

IPog OOLOGAH FORMATION (Pennsylvanian, Desmoinesian) - The section exposed in the Collinsville Quad is represented by, in descending order: 1, the Altamont Limestone; 2, the Bandera Shale; and 3, the Pawnee Limestone. Neither the basal Anna Shale nor the Childers School Members, that were described in adjacent areas (Sageeyah sheet), were observed in this quad. Surface and subsurface thicknesses of the Oologah Formation are highly variable, mostly due to the presence or absence of algal build-ups in the Altamont Limestone. At the surface the Oologah varies between 85 ft to 100 ft, averaging about 90 ft in thickness. To the north and west in the subsurface the formation may attain thicknesses in excess of 120 ft.

Altamont Limestone: Color fairly uniform, ranging from grayish orange pink (5YR7/2) to yellowish gray (5Y7/2) for thinner bedded material, to locally medium gray (N5) for thicker bedded material; texturally variable from thin-wavy, to medium-planar, and locally massive, skeletal to whole-fossil, crinoidal mudstones and wackestones, locally packstones, intercalated with algal mudstones and wackestones. Generally limestone beds containing abundant phylloid algae are more common in the lower half of the member, and are thicker bedded compared with non-algal limestones. Bedding in lower half planar to slightly wavy, varying from 6-12" thick, although some beds may attain thicknesses of 20" or more. Upper half of member consisting more of thin, very wavy bedded, whole fossil wackestones to rarely packstones; bedding from 1-5" thick, averaging closer to 2" thick. Fracturing with sparite filling common throughout member. Besides abundant algae, fossils consist of crinoid debris, various species of brachiopod, and fenestrate bryozoans. Thickness of member highly variable, probably due to local occurrences of algae build-ups; ranging from 65 ft to as much as 100 ft thick.

Bandera Shale: Thin, but persistent horizon consisting of medium dark gray (N4) to dark gray (N3), well-laminated to fissile, clayshale; small phosphatic nodules common in lower two-thirds of member. Thickness of member about 2 ft.

Pawnee Limestone: Characterized by medium gray (N5), grayish orange (10YR7/4), or grayish orange pink (5YR7/2), slightly wavy, thin- to sometimes medium-bedded, algal and whole-fossil wackestones and skeletal mudstones. Bedding generally varies between 2-4" thick, but may attain thicknesses exceeding 12" where algae dominates; on average, bedding is thinner in upper half of member compared with the lower half. Fossils consist mostly of crinoid debris, spiriferid and large productid brachiopods. Thickness of the member fairly uniform, varying between 19 ft to 22 ft thick.

IPlb LABETTE FORMATION (Pennsylvanian, Desmoinesian) - Grayish brown (5YR3/2) to moderate brown (5YR3/4), occasionally dark gray (N4), laminated, very silty to sandy, micaceous, concretionary clayshale; concretions dusky red (5R4/2) to moderate red (5R5/4), composed of hematite and/or siderite(?), and usually occur sporadically throughout formation as 1-3" diameter discoid-shaped clasts. Clayshale predominantly non-calcareous, although some narrow horizons are weakly calcareous (particularly those adjacent to concretionary zones, or adjacent to thin limestone beds). Locally, various non-descript very sandy shale or shaly sandstone horizons occur; mostly these sandy horizons are planar laminated to thin-bedded.

The Sageeyah limestone occurs at the top of the formation. The limestone varies between 8-20 ft thick, and is characterised by alternating intervals of wavy laminated argillaceous carbonate mudstone, interbedded with thin-bedded (4-12" thick bedding), pyritic carbonate mudstone; no fossils occur; color a medium dark gray (N4) to dark gray (N3), but weathers a distinct pale yellowish orange (10YR8/6) to light brown (5YR5/6).

Only the uppermost 70 ft of the Labette Formation is exposed in the map area.

*Detailed descriptions only include mappable units observed in the field. Formal member and bed names are indicated by capitalization (i.e., Jenks Sandstone), while informal names are given in lowercase (i.e., Sageeyah limestone). Color of units based on fresh surfaces, unless stated otherwise.

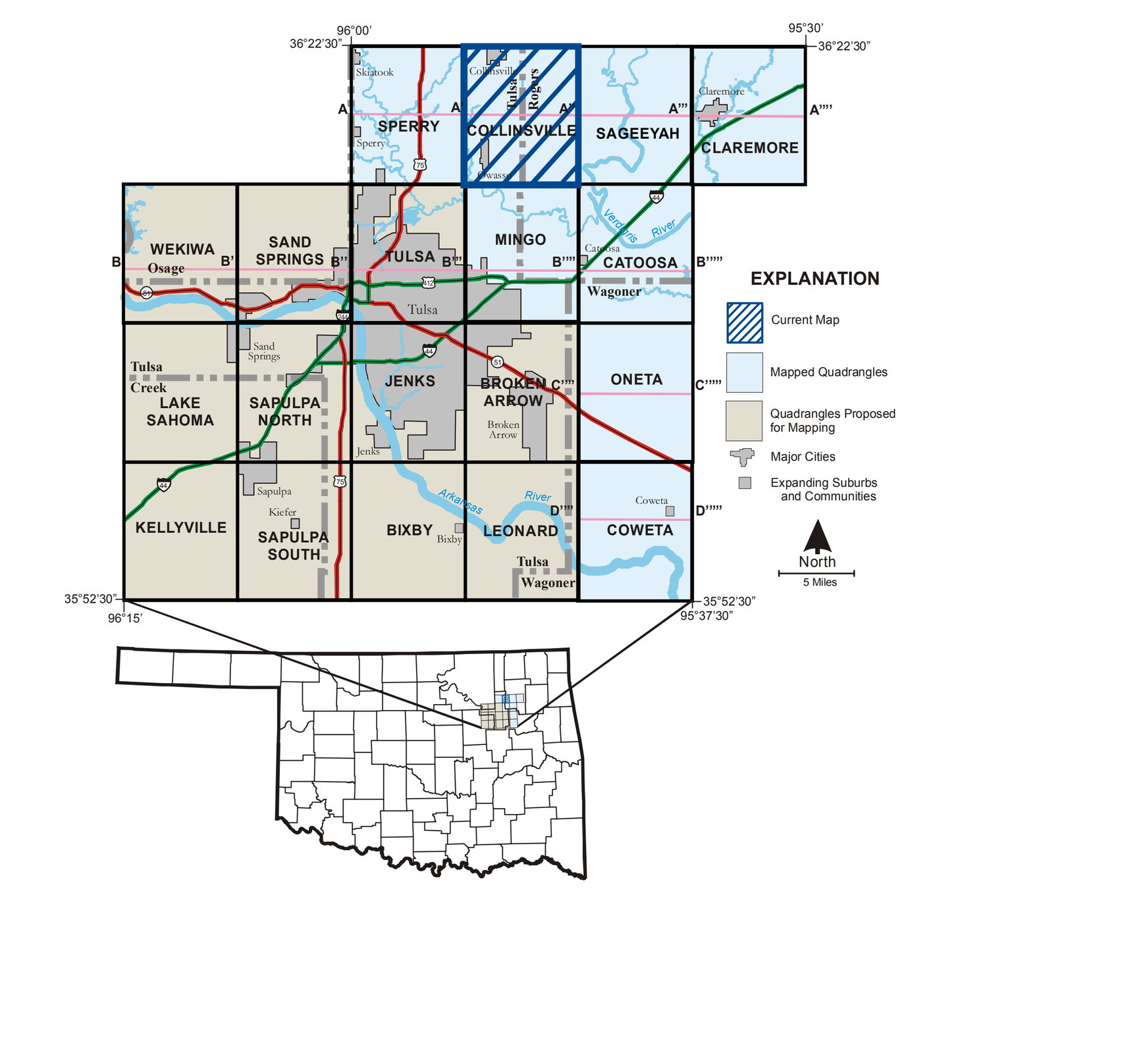
SYMBOLS

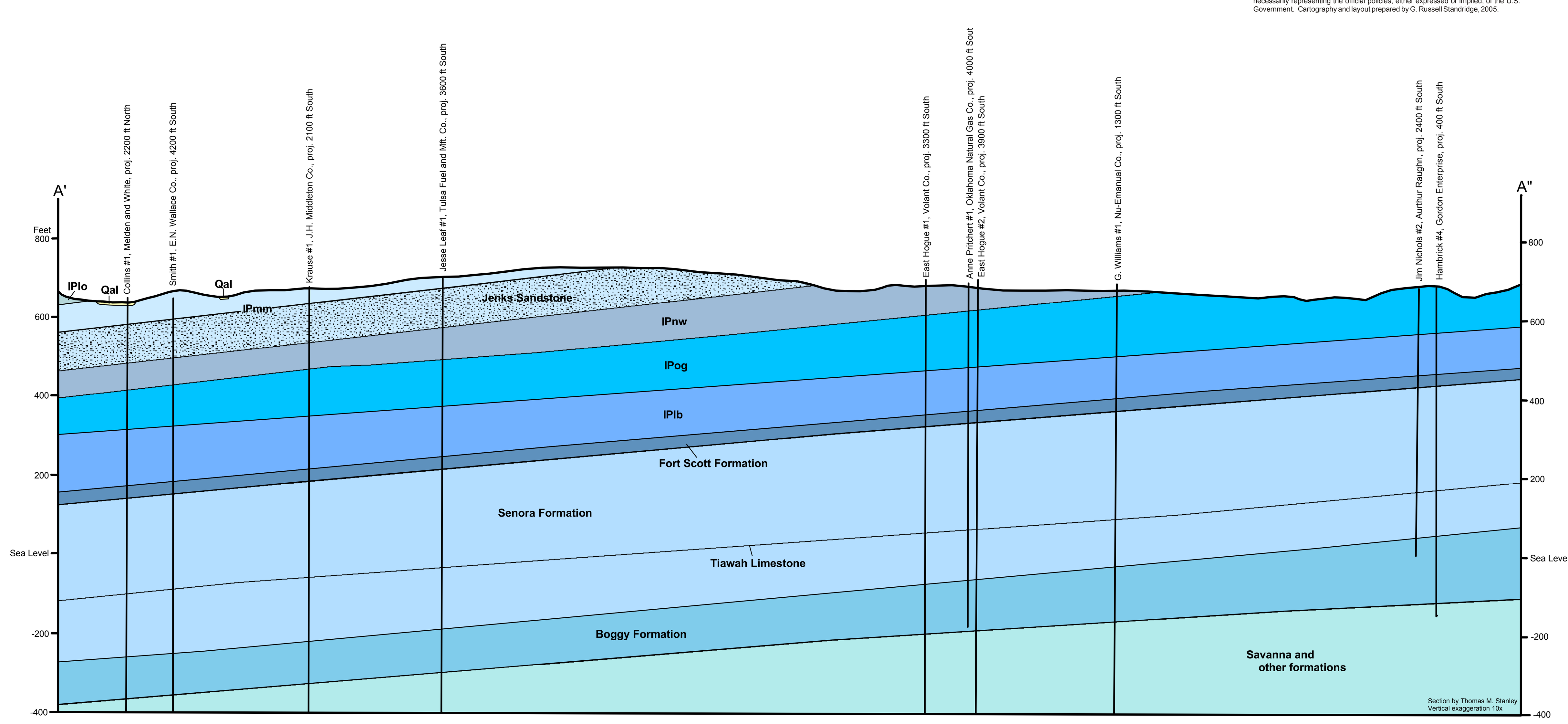
——— — — Unit contact; dashed where approximate

— — ‡ — — Axial trace of antiformal structure

× Outcrop, geologic observation

• Petroleum well. Includes oil, gas, oil and gas, dry service (water supply or injection), junked and abandoned, unknown. Modified from Natural Resources Information System database





GEOLOGIC MAP OF THE COLLINSVILLE 7.5′ QUADRANGLE, ROGERS AND TULSA COUNTIES, OKLAHOMA

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2005