UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
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THE COMMONWEALTH OF KENTUCKY, UNIVERSITY OF KENTUCKY
KENTUCKY GEOLOGICAL SURVEY
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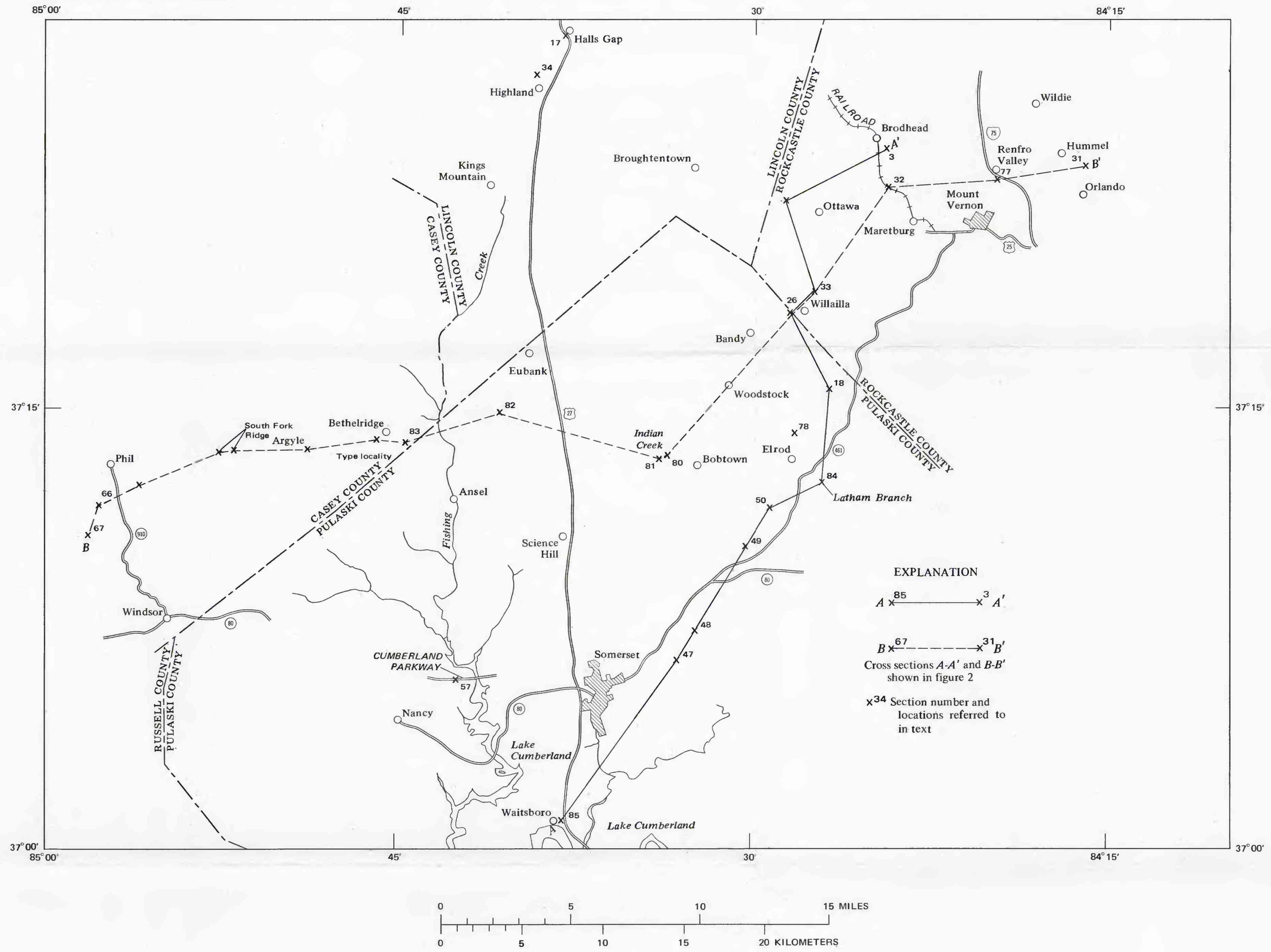
BULLETIN 1435-D
PLATE 1



85 — Waitsboro section- at pumping station, Lake Cumberland

St. Louis Limestone; *Warsaw and Salem Formations; Science Hill Sandstone Member; *Borden Formation, *Muldraugh Member

Thickness (feet)	Description
	Mudstone, yellowish-gray, thick- to very thick-bedded (at curve in road neer top of hill)
18	Shale, medium-gray, bluish-gray to dark-gray; knotty texture, no bedding observed
4	Limestone (calcarenite), medium-gray, pinches out eastward
8	Shale, light-yellowish-gray, sandy with very fine angular quartz grains in basal 6 inches to 1 foot
3	Siltstone, sandy or silty sandstone, quartzose, light- to medium-gray, very fine to fine-grained quartz, has some very coarse quartz grains that are angular in silty matrix; worm(?) markings in upper ½ foot
8	Limestone (calcarenite), medium-gray, medium-grained; fossiliferous. Grades into calcareous siltstone at top
3-7	Siltstone, calcareous and brownish-gray near base; light-gray in upper part, also contains geodes
7-11	Shale, silty, medium-gray to bluish-gray; fossiliferous with small brachiopods and crinoid stems
2	Limestone (calcarenite), as below, interbedded with siltstone; fossiliferous; thin-bedded; contains very small, scattered quartz pebbles
3	Limestone (calcarenite), medium- to dark-gray, very coarse-grained, crossbedded; contains large fossil fragments; more argillaceous upper part. Bed thins eastward; chert beds in more crossbedded part in area to west in same outcrop
12½	Shale, silty, light- to medium-gray, bluish-gray where fresh; fossiliferous, with abundant bryozoan fragments, small brachiopods and small crinoid stems; thin pod 2-inch thick cherty limestone in upper part with pyrite and fine quartz sand grains
1	Sandstone, quartzose, yellowish-brown to medium-gray, very fine- to coarse-grained, very silty, shaly weathering, coarse sand concentrated in places. May also be sandy siltstone
4½	Limestone (calcarenite), medium-dark-gray, medium-coarse-grained; fossiliferous; low-angle crossbeds in massive-appearing bed, crossbeds dip westerly; quartz grains in basal part
2-3	Sandstone, quartzose, silty, light-yellowish-brown, very coarse grained lower foot grades upward into very fine-grained; weathers shaly irregular to flat thin beds
	Siltstone, gray; same down to boat ramp

84 — Latham Branch

Equivalent to St. Louis Limestone in Bobtown quadrangle; St. Louis Limestone; 50-60 more feet; Equivalent to Warsaw and Salem Formations as mapped in adjacent Bobtown quadrangle; *Upper member of Borden Formation as mapped this quadrangle; Science Hill Sandstone Member

Thickness (feet)	Description
~6	Level of garage, Purcell Farm Covered
	Limestone, light-gray, micrograined
	Chert and limestone breccia
8	Sandstone, quartzose, limy with some calcite cement olive-gray to light-gray, fine- to very coarse-grained; contains quartz pebbles vericolored, es much as 4-millimeter diameter, very abundant 2-3 feet below top; crossbedded, crossbeds dip commonly south to southwestward, fossiliferous, brachiopods in pebbly zone. Upper contact very sharp
28½	Sandstone, grayish-olive, reddish-brown to dark-gray on weathered surfaces; very fine to fine-grained; horizontally bedded in beds 1-2 feet thick, locally weethered to thin beds. No visible coarse grains. Indurated lower part, more friable in upper 16 feet near shale zone. Abundant small fossil worm(?) trails on some bedding surfaces; some small 2 inch by 3 inch depressions on surfaces. Gray shale, in a thin bed in thin-bedded more friable sandstone zone that is exposed in ditch beside road
5	Siltstone, gray, with large quartz-filled geodes
1½	Limestone, medium-gray, medium- to coarse-grained
	Siltstone, gray
	Stream level

33 — Willailla section

Science Hill Sandstone Member

Thickness (feet)	Description
	Covered
4+	Sandstone, quartzose, medium-reddish-brown, medium-grained
	Pebbles, quartz in sandstone ¼ X ½ inch
2	Sandstone, quartzose, as above with pebbles
	Top medium- to thick-bedded sandstone
2	Sandstone, quartzose, leached, medium- to coarse-grained with pebbles
2	Sandstone, pale-olive-green to reddish-brown, irregular to flat beds, friable
2	Sandstone, reddish-brown, very fine grained, grades up to very coarse-grained; beds ½-1 foot thick
4	Sandstone, reddish brown, coated by iron oxide, medium- to coarse-grained; low-angle crossbedding
3	Sandstone, reddish-brown, fine- to medium-grained; friable, no calcite cement
1	Sandstone as above but with calcite cement
2	Sandstone as above, hard, light-brown
2	Sandstone, light-brown, very fine grained, subangular, fairly well sorted
	Siltstone, gray, contains large geodes of quartz in ditch at road level near top of hill

Total Science Hill Sandstone Member: 24+

3 — Water tower hill

*Borden Formation; Science Hill Sandstone Member; *Renfro Member; Wildie Member(?)

Thickness (feet)	Description
	Covered. Equivalent to St. Louis Limestone to the southwest
5	Sandstone, quartzose, reddish-brown, very fine grained
3	Geodes Shale, gray
5	Sandstone, quartzose, reddish-brown, very fine grained
30	Shale, gray
10	Glauconite in shale Glauconite in basal foot
	Sendstone, quartzose, reddish-brown, very fine grained; small black pebbles

83 — Type section, Bethel Knob

*Warsaw and Salem Formations; Science Hill Sandstone Member; *Borden Formation; *Muldraugh Member

Thickness (feet)	Description
	Covered
21+	Top of sandstone unexposed Sandstone, quartzose, reddish-brown, medium- to very coarse grained; with quartz pebbles in lower 2 feet of unit; thin to thick bedded, crossbedded with beds dipping southward Brechiopods
3	Mudstone, gray, and sendstone
19	Sandstone, quartzose, reddish-brown, very fine- to medium-grained In creek below road Geodes, quartz, in basel sandstone
	Siltstone, gray

80 and 81 — Indian Creek composite section with ± 80 feet

*Warsaw and Salem Formations; Equivalent of Somerset Shale Member of Butts (1922); Science Hill Sandstone Member; *Borden Formation; *Muldraugh Member

Thickness (feet)	Description
	Limestone, light-gray, micrograined
3±	Limestone (calcarenite), medium-gray, medium- to coarse-grained
23	Shale, gray (exposed only in ditch)
25±	Sandstone, quartzose, reddish-brown, fine-grained in lower half, medium- to coarse-grained upper part with quartz pebbles in upper few feet
4-5	Siltstone, gray
	Siltstone, gray

32 — Railroad section

*Borden Formation; *Renfro Member; Science Hill Sandstone Member

Thickness (feet)	Description
	Equivalent to St. Louis Limestone to southwest. Just above track level
13⅓	Sandstone, quartzose, with quartz pebbles, more sandstone to east along track Brachiopods, bryozoans Limestone (calcarenite), medium-gray, very abundant quartz grains or limy quartzose sandstone
	Sandstone, sole marks
	Shale
17	Limestone (calcarenite), medium-gray, medium-grained. Harrodsburg equivalent(?) Siltstone, dolomitic(?), light-brown
	Shale, silty, light-olive-gray to green

78 — Elrod-north (all exposures in ditch beside farm road)

Equivalent to Warsaw and Salem Formations; *Upper member of Borden Formation as mapped in Shopville quadrangle; Science Hill Sandstone Member

Thickness (feet)	Description
	Covered
	Shale, gray, top unexposed
8	Sandstone, quartzose, reddish-brown, very fine grained
15	Siltstone and shale, gray
5-6	Geodes, quartz, 1½ foot diameter
	Siltstone, gray

57 — Hill west of Fishing Creek bridge, Cumberland Parkway

Science Hill Sandstone Member

Thickness (feet)	Description
	Top of hill Shale and soil
1+	Sandstone, quartzose, reddish-brown, coarse-grained
12±	Shale, gray Geodes, quartz
3	Sandstone, reddish-brown, light-gray fresh, very fine grained; grades into siltstone and shale below
	Shale, light-gray, and siltstone

31 — Brush Creek

*Borden Formation; *Renfro Member; Science Hill Sandstone Member; *Wildie Member

Thickness (feet)	Description
	Covered (equivalent to St. Louis Limestone)
2½	Sandstone, yellowish-gray, reddish-brown, fine- to medium-grained, some very coarse grains, quartzose, with quartz pebbles ¼ inch in diameter
17	Large quartz geodes Siltstone, dolomitic(?), light-brown
	Sandstone, light-olive-gray, very fine grained, well-indurated

17 — Halls Gap section

*Salem Formation; Science Hill Sandstone Member; *Borden Formation; *Muldraugh Member

Thickness (feet)	Description
	Covered
5-6+	Sandstone, quartzose, reddish-brown, fine-grained, thin-bedded
3-4	Shale, cley, bluish-green, with large geodes
1-3	Siltstone, gray
7±	Shale, silty, gray Thin ⅜-inch thick sandstone layer
2½	Limestone (calcarenite), medium- to light-grey, medium-grained, fossils, brachiopods, productids 3-inch diameter, crinoids; stylolite at base; veinlets of calcite
	Siltstone, gray

34 — Highland

*Salem Formation; Science Hill Sandstone Member

Thickness (feet)	Description
	Covered
6+	Top of exposed section Limestone, medium-gray, medium- to coarse-grained; fossiliferous
6	Limestone (calcarenite), medium-gray, fine- to medium-grained; crossbedded, beds 2-3 feet thick; contains fine-grained quartz sand
12	Covered
1½	Limestone (calcarenite), same as above, very sandy
1	Limestone as above but with fine- to medium-grained quartz; brachiopods
4	Covered
3½	Limestone (calcarenite), medium-gray to light-brown, very sandy with fine quartz sand grains at base grading to very coarse at top; fossils in upper part
1	Shale, gray
5	Sendstone, quartzose with calcite matrix, olive-green to brownish-green, fine-grained, angular to sub-angular; beds 6 to 8 inches thick. May contain fossils
5	Limestone (calcarenite), light-gray, fine- to medium-grained, clean, medium-bedded
9	Siltstone, light-gray, mostly covered
	Limestone (calcarenite); Harrodsburg equivalent(?)

EXPLANATION

- Conglomerate
- Breccia
- Sandstone
- Sandstone, crossbedded
- Sandstone, calcareous
- Siltstone, mudstone, and silt shale
- Siltstone, calcareous
- Siltstone, dolomitic
- Shale, clayey
- Shale, silty
- Limestone
- Limestone, crossbedded
- Limestone, sandy, crossbedded
- Limestone, sandy
- Bedded chert
- Limestone, silty, and interbedded siltstone
- ~ Glauconite
- ○ Geode

*Names of formations are on geologic quadrangle maps where sections were measured

VERTICAL SCALE: FEET 0, 5, 10, 15, 20, 25; METERS 0, 2, 4, 6

☆ Interior—Geological Survey, Reston, Va.—1978—G78093

MEASURED SECTIONS AND LOCATION MAP OF THE SCIENCE HILL SANDSTONE MEMBER AND ADJACENT LITHOFACIES, SOUTH-CENTRAL KENTUCKY