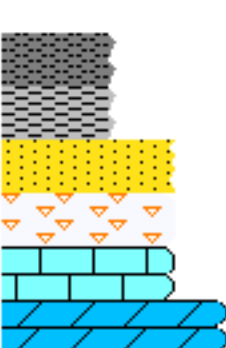
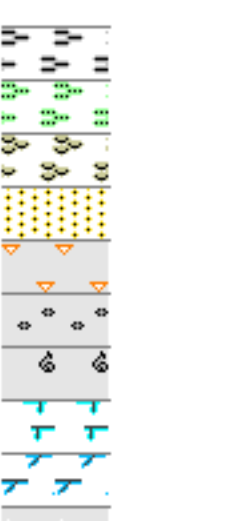


Kraus 'A' 1 (15-191-21020) T: 32S R: 3W S: 1  
Latitude: 37.2946819 Longitude: -97.6008051 Elevation (GL): 1251.0 Depth: 4455.0

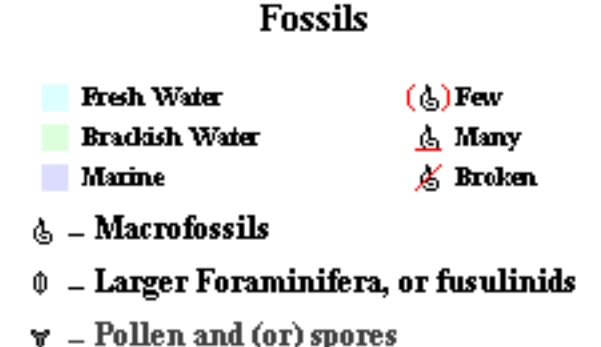
| Stratigraphic Units |               |                   |          |        |        |           |       |           |     | Rock Color | Lithology   | Fossils | Subsidiary Structures | Porosity | Remarks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------|---------------|-------------------|----------|--------|--------|-----------|-------|-----------|-----|------------|-------------|---------|-----------------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Members             |               | Formations        | Subgroup | Series | System | Subsystem | Stage | Group     | Era | Color      | Rock Column |         |                       |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 1500                |               |                   |          |        |        |           |       |           |     |            |             |         |                       |          | 1500 1525 cream-buff dense fine xln fossiliferous 1st<br>1525 1560 varicolored slightly sandy micaceous sh<br>1560 1573 gray tan and buff<br>1573 1583 varicolored sh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 1600                |               |                   |          |        |        |           |       |           |     |            |             |         |                       |          | 1602 1618 varicolored sh<br>1618 1683 thin bedded light gray-gray buff dense fine xln partly fossiliferous 1st<br>1683 1692 gray fine grain<br>1692 1704 varicolored slightly sandy<br>1704 1706 thin beds gray-buff<br>1733 1735 thin beds gray-buff<br>1752 1757 thin beds gray-buff                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 1700                |               |                   |          |        |        |           |       |           |     |            |             |         |                       |          | 1783 1812 thin bedded gray-buff dense fine xln 1st<br>1812 1843 light gray gray buff dense fine xln cherty shaly 1st<br>1843 1862 varicolored slightly sandy sh<br>1862 1875 gray-buff dense fine xln fossiliferous broken and<br>1875 1890 gray-buff dense fine xln fossiliferous 1st<br>1890 1925 varicolored slightly sandy and limy sh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1800                |               |                   |          |        |        |           |       |           |     |            |             |         |                       |          | 1925 1953 light gray-buff dense fine xln fossiliferous 1st<br>1953 1980 varicolored slightly sandy & limy sh<br>1980 1995 gray-dense fine xln fossiliferous 1st<br>1995 2025 varicolored slightly sandy sh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1900                |               |                   |          |        |        |           |       |           |     |            |             |         |                       |          | 2025 2027 thin beds buff dense<br>2035 2037 thin beds buff dense<br>2055 Howard Limestone<br>2072 2078 cream gray and buff                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2000                |               |                   |          |        |        |           |       |           |     |            |             |         |                       |          | 2095 2100 gray sh<br>2105 2113 gray sh<br>2113 2123 light gray-buff<br>2135 2182 varicolored sandy micaceous sh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 2100                |               | Howard Limestone  |          |        |        |           |       | Wakanusa  |     |            |             |         |                       |          | 2182 Topeka Limestone<br>2195 2200 gray sh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2200                |               | Topeka Limestone  |          |        |        |           |       |           |     |            |             |         |                       |          | 2220 2230 cream-gray dense<br>2230 2235 cream-gray dense<br>2247 2265 cream-gray dense fine xln fossiliferous 1st<br>2265 2275 cream-gray dense<br>2275 2285 cream-gray dense<br>2285 2307 gray sh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 2300                |               |                   |          |        |        |           |       |           |     |            |             |         |                       |          | 2307 2357 cream-gray dense fine xln 1st<br>2357 2360 dark gray-black sh<br>2365 2398 varicolored slightly sandy micaceous sh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 2400                |               |                   |          |        |        |           |       | Shawnee   |     |            |             |         |                       |          | 2398 2403 brown dense fine xln<br>2447 2465 gray fine grain sub-angular micaceous sst<br>2465 2547 varicolored more or less sandy micaceous sh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 2500                |               |                   |          |        |        |           |       | Virgilian |     |            |             |         |                       |          | 2547 2555 light gray gray buff<br>2555 2560 light gray gray buff<br>2563 2568 light gray gray buff<br>2572 2576 black sh<br>2586 Heebner Shale<br>2595 2606 varicolored sh<br>2606 2621 white cream & buff dense fine xln 1st<br>2621 2625 dark gray black sh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 2600                | Heebner Shale |                   |          |        |        |           |       |           |     |            |             |         |                       |          | 2667 2690 light gray buff dense fine xln fossiliferous 1st<br>2690 2928 varicolored more or less sandy micaceous sh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 2700                |               |                   |          |        |        |           |       |           |     |            |             |         |                       |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 2800                |               |                   |          |        |        |           |       |           |     |            |             |         |                       |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 2900                |               |                   |          |        |        |           |       |           |     |            |             |         |                       |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 3000                |               |                   |          |        |        |           |       |           |     |            |             |         |                       |          | 2928 Iatan Limestone<br>3012 3228 varicolored slightly sandy micaceous sh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 3100                |               |                   |          |        |        |           |       |           |     |            |             |         |                       |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 3200                |               |                   |          |        |        |           |       |           |     |            |             |         |                       |          | 3228 Kansas City<br>3247 3252 dark gray black sh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 3300                |               |                   |          |        |        |           |       |           |     |            |             |         |                       |          | 3361 3365 black sh<br>3370 3390 cream-buff dense fine xln slightly dolomitic 1st<br>3390 3407 gray-buff dense fine xln slightly cherty 1st faint<br>3407 3410 black sh<br>3420 3502 cream tan & gray buff dense fine xln slightly cherty 1st faintly oolitic in part                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 3400                |               |                   |          |        |        |           |       |           |     |            |             |         |                       |          | 3502 Base KC<br>3510 3513 buff dense 1st<br>3520 3523 buff dense 1st<br>3530 3535 varicolored sh<br>3555 3560 gray sh<br>3567 3583 gray sh<br>3583 3585 black sh<br>3593 3625 medium gray -dark gray limy sh<br>3625 3630 buff-brown dense 1st<br>3635 3640 dark gray black sh<br>3645 3647 dark gray black sh<br>3667 3672 gray sh<br>3675 3678 gray sh<br>3685 3690 dark gray black sh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 3500                |               |                   |          |        |        |           |       |           |     |            |             |         |                       |          | 3705 3720 gray-buff dense 1st<br>3720 3724 dark gray sh<br>3740 3743 gray and buff brown<br>3750 3755 medium gray-dark<br>3765 3768 gray and buff brown<br>3790 3793 medium gray-dark<br>3800 3804 gray and buff brown<br>3810 3815 gray and buff brown<br>3818 3820 medium gray-dark<br>3828 3830 medium gray-dark<br>3840 3842 gray and buff brown<br>3850 3853 medium gray -dark<br>3863 3865 gray and buff brown<br>3873 3877 gray and buff brown<br>3883 3885 gray and buff brown<br>3897 3900 gray and buff brown<br>3914 Mississippian                                                                                                                                                                                                                                                                                                                                                 |
| 3600                |               |                   |          |        |        |           |       |           |     |            |             |         |                       |          | 3950 4230 white gray & buff sacrosic medium xln more or less dolomitic 1st with white blocky opaque chert                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 3700                |               |                   |          |        |        |           |       |           |     |            |             |         |                       |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 3800                |               |                   |          |        |        |           |       |           |     |            |             |         |                       |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 3900                |               |                   |          |        |        |           |       |           |     |            |             |         |                       |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 4000                |               |                   |          |        |        |           |       |           |     |            |             |         |                       |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 4100                |               |                   |          |        |        |           |       |           |     |            |             |         |                       |          | 4230 Kinderhookian<br>4254 4283 greenish gray silty micaceous sh<br>4283 Chattanooga Shale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 4200                |               |                   |          |        |        |           |       |           |     |            |             |         |                       |          | 4306 Simpson<br>4320 4349 white & gray fine coarse grain sub-angular sub round & frosted friable sst<br>4349 4355 olive green sub waxy<br>4363 4364 gray coarse grain<br>4370 4376 gray fine grain<br>4376 4378 gray fine grain<br>4378 4379 gray fine grain<br>4379 4380 gray fine grain<br>4380 4381 gray fine grain<br>4381 4382 gray fine grain<br>4382 4383 gray fine grain<br>4383 4384 gray fine grain<br>4384 4385 gray fine grain<br>4385 4386 gray fine grain<br>4386 4387 gray fine grain<br>4387 4388 gray fine grain<br>4388 4389 gray fine grain<br>4389 4390 gray fine grain<br>4390 4391 gray fine grain<br>4391 4392 gray fine grain<br>4392 4393 gray fine grain<br>4393 4394 gray fine grain<br>4394 4395 gray fine grain<br>4395 4396 gray fine grain<br>4396 4397 gray fine grain<br>4397 4398 gray fine grain<br>4398 4399 gray fine grain<br>4399 4400 gray fine grain |
| 4300                |               | Chattanooga Shale |          |        |        |           |       |           |     |            |             |         |                       |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 4400                |               |                   |          |        |        |           |       |           |     |            |             |         |                       |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |



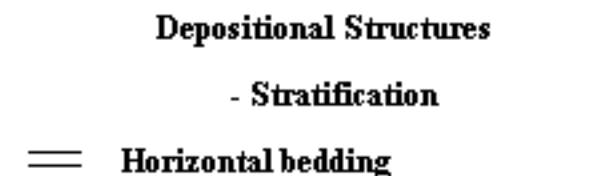
- Clay, Claystone
- Shale
- Sand, Sandstone
- Chert
- Limestone
- Dolomite



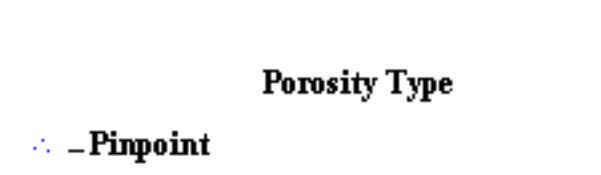
- Shaly, shale
- Silty, Silt
- Micaceous
- Sandy, sand
- Cherty, chert
- oolitic
- fossiliferous
- Calcareous
- Dolomitic
- Phosphate, Phosphatic



- Fresh Water
- Brackish Water
- Marine
- Macrofossils
- Larger Foraminifera, or fusulinids
- Pollen and (or) spores
- Few
- Many
- Broken



- Stratification
- Horizontal bedding



- Pinpoint