

GGS Well no. 3127 Permit no. 95

Chevron Oil Company, Oveda Fussel et al no. 1 Wildcat

Coffee County, Georgia Landlot 289, Land District 5

Permanent datum, ground level-elevation 280.1 feet

Drilling measured from 15.0 feet above permanent datum

logged by Katherine Lee Avary, September to December, 1975.
Emory University, Senior student.

* at a depth means that a microfossil sample was taken and the slide left
in the sample envelope.

-1.2.34.9/19

Notes:

Medium gray claystone N5 probably isn't weathered, but is fresh. It is brittle, however.

The silty sand from depths 2300-2900 feet is probably better called siltstone or claystone. The grains that are visible are probably very tiny flakes of mica. At this size it's hard to distinguish grains individually, and sometimes difficult to determine what the grains or particles are.

Because of the missing samples from 0 to 420 feet and from 550 to 1560 feet, it is difficult to determine the exact lithologies below these gaps.

Summary of lithologies:

- 0-420 no samples.
- 420-550. slightly dolomitic limestone, fossiliferous
- 550-1560. no samples.
- 1560-1570. limy 40% sand, slightly phosphatic, slightly arkosic, slightly micaceous, slightly fossiliferous
- 1570-1580. sandy 10% limestone
- 1580-1610. siltstone-fossil fragments
- 1610-1630. sand. slightly phosphatic, slightly arkosic, slightly fossiliferous, fine to medium grained.
- 1630-1750. silty 5%, limy 25% sand. fine grained
- 1750-1770. no samples.
- 1770-1800. silty 7%, limy 25% sand
- 1800-1870. limy 25%, sandy 35% silt.
- 1870-1890. no samples.
- 1890-1910. limy 25%, sandy 35% silt.
- 1910-1960. silty 10%, limy 25% sand
- 1910-2050. sand medium to coarse grained
- 2050-2180. limy 10% sand.
- 2180-2190. limy 20% siltstone
- 2190-2250. no samples.
- 2250-2300. limy 20% siltstone
- 2300-2390. limy 20%, silty 30% sand
- 2390-2410. sand
- 2410-2860. silty 5% sand
- 2860-2890. no samples-depth correction
- 2890-2940. silty 5% sand
- 2940-3250. sand (lignitic to 3200) micaceous (total), pyrite(2940-3000) phosphate (2940-3200)
- 3250-3520. sand, arkosic and micaceous
- 3520-3600. sand, galuconite cave?
- 3600-3670. claystone
- 3670-3690. sand, slightly arkosic
- 3690-3800. claystone
- 3700-4090. sand. arkosic, hematitic, limonitic (except 3930-4070), micaceous
- 4090-4100. no samples
- 4100-4275. sand, arkosic, hematitic, limonitic, micaceous, less mica 4520-75
- 4275-4279. core sample. poorly sorted conglomerate, probably what's above and what is below is also conglomerate.

Summary of samples (continued)

1280-1300. sand. arkosic, probably ground up conglomerate.

1300-1342. igneous rock- basement.

- 0-420 samples missing Sept. 25, 1975.
- 420-430. Fresh, hard, grayish orange 10YR 7/4. Phosphatic, dull, slightly porous, very fine grained limestone, 100%, slightly dolomitic, reacts in HCl but rather slowly, does not break down completely, eventually. A few grains of colorless quartz, round, probably cave.
- 430-440. Fresh, hard, grayish orange 10YR 7/4. Phosphatic, dull, slightly porous, very fine grained limestone, 100% as above. A few grains of colorless round quartz.
- 440-450. Fresh, hard, grayish orange 10YR 7/4. Phosphatic, dull, slightly porous, very fine grained limestone (100% slightly dolomitic, as above). Few colorless quartz grains-round quartz grains-medium to coarse grained sized-also above. A few pieces of concrete.
- 450-460. Driller's depth correction
- 460-470. As above. A few rounded, colorless quartz grains, also a few chips of limestone cemented ~~quartz grains~~ colorless quartz. 1 piece of concrete.
- 470-480. Limestone as above, with many very fine grained colorless quartz. 1 piece of concrete, 1 piece of limestone cemented quartz grains
- 480-490. Fresh, hard, grayish orange 10YR 7/4. Dull, slightly porous, very fine grained limestone, also 30% light gray N7 limestone chips (100% limestone). Very few colorless quartz grains, subangular.
- 490-500. Fresh, hard, very pale orange 10YR 8/2. Dull, slightly porous, very fine grained limestone (few ~~fine~~ very fine grains of colorless quartz) 1 piece of ~~concrete~~ concrete, few pieces of limestone cemented colorless quartz and glauconite (100% limestone, slightly dolomitic, as above).
- 500-510. Fresh, hard, light gray N7. Dull, slightly porous, grayish limestone, very fine grained white N9 limestone, and chips-1st appearance, light gray N7 limestone chips (few). 1 piece of concrete. limestone 100% 3 different kinds, microgranular-illegible limestone mostly.
- 510-520. Fresh, hard, very light gray N8. Slightly fossiliferous (few fragments, dull, non porous, cryptogranular limestone-100% (1 piece of concrete).
- 520-530* Fresh, hard, very light gray N8. Slightly fossiliferous (some fragments), dull, non porous, cryptogranular limestone 100%, White limestone with fossil fragments.
- 530-540. Mixture of above lithologies. Very light gray-white limestone and fossil fragments, and grayish orange limestone, probably cave, also pieces of limestone cemented colorless quartz grains and medium gray limestone chips--probably actual lithology as above (very light gray).

- 540-550. Like last sample. mixture of two lithologies. Very light to white limestone and fossil fragments, and grayish orange limestone, probably cave. Also pieces of limestone cemented colorless quartz and a few pieces of colorless quartz (medium to coarse grained) slightly feldspathic (1-2 pieces) and a few chips of medium light gray N6 limestone.
- 550-1560. Samples missing. September 27, 1975.
- 1560-1570. Fresh, hard, yellowish gray 5Y 8/1. Colorless quartz (medium to coarse grained, 1/8-1.0 mm), limestone chips-white N9, medium light gray N6, slightly phosphatic, slightly feldspathic, slightly micaceous, slightly fossiliferous (fragments). Quartz grains are medium sorted (medium to coarse grained). Limy (40%-fossils and limestone) sand. Sand is probably dominant lithology--limestone and fossil fragments are cave. Also a few pieces of concrete. lots of trash from sample bags.
- 1570-1580. Fresh, hard, light olive gray 5Y 6/1. Colorless quartz, white N9 limestone chips. Slightly feldspathic, slightly micaceous, slightly fossiliferous (fragments). Quartz grains are medium sorted, medium-coarse grained (1/4-1.0 mm), very few grains. Sand (10%) limestone 90% including limestone fragments and limestone chips--hard to tell what is cave and what belongs. lots of trash from sample bags.
- 1580-1590. Leached, brittle, medium gray N5. Siltstone chips together with fossil fragments, limestone chips, and colorless quartz. Limestone cemented colorless quartz. Slightly phosphatic siltstone (100%). First appearance of siltstone so everything else is probably cave.
- 1584-1589.
CORE Fresh, hard, very light gray N8. Slightly micaceous, vitreous, porous, coarse silt (1/32-1/64 mm) siltstone. Core might be a sidewall core samples taken at different depths in this interval. Hard to say what true lithology is at this depth because of limited amount of cores and uncertainty in cuttings as to what is cave and what isn't. The large gap (from 560-1560, no samples) makes it almost impossible to say what is here in place lithology and what has caved in.
- 1589-1594.
CORE Fresh, hard, very light gray N8. Slightly micaceous, slightly fossiliferous (pelecypod fragments), vitreous, porous, coarse silt (1/32-1/64 mm) siltstone. Uncertainty about core samples like in 1584-1589 samples. Can't tell about cave in cuttings because of gap in samples from 560-1560 feet.
- 1590-1600. Leached, brittle, medium gray N5. Siltstone chips, with fossil fragments, limestone chips, and colorless quartz grains. Subangular to rounded, medium sorted, medium-coarse grained (1/4-1.0 mm) limestone cemented colorless quartz, a few chunks, 1 piece of pyrite. Siltstone 100% other things probably cave. Still some trash in the samples.

- 1600-1610. Leached, brittle, medium gray N5. Siltstone chips, colorless quartz grains and iron stained quartz grains, subangular to subround, medium to coarse grained (1/4-1.0 mm), limestone chips, fossil fragments, limestone cemented colorless quartz. Slightly phosphatic, slightly feldspathic, siltstone 100%. everything else is cave. Trash in sample.
- 1610-1620. Good clean living sand.
Fresh, hard, very light gray N8. Slightly phosphatic, slightly fossiliferous (fragments, vitreous, well sorted, fine grained (1/8-1/4 mm, mostly) sand 100%, with a few fossil fragments.
- 1620-1630. Fresh, hard, light gray N7. Slightly phosphatic, slightly feldspathic, slightly fossiliferous (few fragments), vitreous, medium sorted, fine to medium grained (1/8-1/2 mm) colorless quartz grains. Sand 100%. Also siltstone chips and limestone cemented colorless quartz chunks--cave probably.
- 1630-1640. Fresh, hard, light gray N7. Slightly pyritic, slightly feldspathic, slightly micaceous (1 piece) vitreous, well sorted, fine grained (1/8-1/4 mm) limestone cemented (colorless quartz grains). Limy (30%) sand. also siltstone chips and quartz grains loose--probably cave.
- 1640-1650. Fresh, hard, light gray N7. Slightly feldspathic, slightly pyritic, slightly fossiliferous (very few fragments), vitreous, well sorted, fine grained (1/8-1/4 mm) limestone cemented (colorless quartz grains). Limy (30%) sand. Also siltstone chips and large quartz grains--loose, probably cave.
- 1650-1660. Fresh, hard, light gray N7. Slightly micaceous, slightly sphaleritic?, slightly fossiliferous (oyster shell fragments), vitreous, well sorted, fine grained (1/8-1/4 mm) limestone cemented (colorless quartz grains in matrix of lime, about 30% of each piece). Limy (30%) sand. Also chips and a few loose coarse grained (1/2-1.0 mm) round quartz grains, probably cave.
Quartz grains in limestone matrix-colorless, polished, smooth subrounded to rounded, equant and elongate, anhedral, fine grained (1/8-1/4 mm) quartz grains.
- 1660-1670. Fresh, hard, light gray N7. Slightly micaceous, sphaleritic?, a few pieces possible. garnet, slightly fossiliferous (oyster shell fragments) vitreous, well sorted, fine grained (1/8-1/4 mm) limestone cemented (colorless quartz grains in limy matrix--about 30% of each piece). Limy (30%) sand. Also a few limestone chips, probably cave.
- 1670-1680. Fresh, hard, medium light gray N6. Slightly micaceous, sphaleritic?, slightly fossiliferous (oyster shell fragments), vitreous, well sorted, fine grained (1/8-1/4 mm) limestone cemented (colorless quartz grains in limy matrix-35% of each piece). Silty (5%), limy (25%) sand. Sandstone getting dirtier.
gray silt -10%

Still seeing flecks of paint in samples. Also samples have lots of fibres from bags and a lot of metallic junk.

- 1680-1690. Fresh, hard, light gray N7. Slightly micaceous, slightly pyritic, slightly sphaleritic?, slightly fossiliferous (few oyster shell fragments), vitreous, well sorted, fine grained (1/8-1/4 mm) limestone cemented (colorless quartz grains and some silt--less silt than last sample- in limy matrix-25% of each piece). Silty (5%), limy (25%) sand. Also some limestone chips--probably cave.
- 1690-1700. Fresh, hard, light gray N7. Slightly micaceous, few pieces of probable garnet, slightly fossiliferous (few miscellaneous fragments), vitreous, well sorted, fine grained (1/8-1/4 mm) limestone cemented (colorless quartz grains and some silt--about the same amount of silt as above in a limy matrix, 25% of each piece). Silty (5%) limy 25% sand. Also some limestone chips--probably cave.
- 1700-1710* Fresh, hard, light gray N7. Micaceous (rather), slightly fossiliferous (foraminifera--first appearance of any in this well so far, some miscellaneous fossil fragments), vitreous, well sorted, fine grained (1/8-1/4 mm) limestone cemented (colorless quartz grains and some gray silt--little more than above in limy matrix, 25% of each piece). Silty (5%), limy (25%) sand. Also some limestone chips--probably cave.
- 1710-1720. As above. Silty (5%) limy (35%) sand, also some loose coarse grained (1/2-1.0 mm) round, elongated, colorless quartz grains, and some limestone chips--probably cave.
- 1720-1730. As above.
Silty (5%), limy (25%) sand. Also some loose quartz grains as above and some limestone chips.
- 1730-1740. As above.
Silty (5%), limy (25%) sand. Some loose quartz colorless quartz grains and some limestone chips.
- ~~1740-1750. NS- N /Ret. no samples. September 30, 1975~~
- 1740-1750. Fresh, hard, light gray N7. Slightly pyritic, slightly micaceous, slightly fossiliferous (few miscellaneous fossil fragments), vitreous well sorted, fine grained (1/8-1/4 mm) limestone cemented (colorless quartz grains and some gray silt--more than above, in limy matrix, 25% of each piece). Silty (5%), limy (25%) sand. A few loose quartz grains and limestone chips.
- 1750-1760. NS- N /Ret. no samples. September 30, 1975
- 1760-1770. NS- N /Ret. no samples. September 30, 1975.
- 1770-1780. Fresh, hard, medium light gray N6. Slightly micaceous, slightly pyritic, slightly phosphatic, slightly fossiliferous (few miscellaneous fragments). First appearance again of medium gray N5 siltstone chips--could be cave from 1580-1610, or could be the beginning of a new interval. Vitreous, well sorted, fine to medium grained (1/8-1/4 mm) limestone cement (colorless quartz grains and gray silt, more than last sample, in limy matrix, 25% of each piece). Silty (7%) limy (25%) sand.

- 1780-1790. As above. Silty (7%), limy (25%) sand.
- 1790-1800. Fresh, hard, medium light gray N6. Slightly micaceous, slightly pyritic (more pyrite in this sample than any so far in 3127), slightly lignitic, 1 piece of possible garnet, slightly fossiliferous (few miscellaneous fragments). Vitreous, well sorted, fine grained (1/8-1/4 mm), limestone cement (colorless quartz grains and silt (gray) like last sample in limy matrix, 25% of each piece). Silty (7%), limy (25%) sand.
- 1800-1810. Leached, brittle, medium light gray N6. Slightly micaceous (less than any recent samples, slightly pyritic (1 piece), slightly fossiliferous (very few miscellaneous shell fragments). Dull, well sorted, very fine grained (1/16-1/8 mm), limestone cement (mostly gray silt grains and some colorless quartz grains in a limy matrix, about 25% of each piece). Limy (25%), sandy (35%) silt.
- 1810-1820. As above.
Limy (25%) sandy (35%) silt.
- Still trash and paint chips in samples.
- 1820-1830. Leached, brittle, medium gray N5. Slightly micaceous (very few pieces), slightly phosphatic (1 piece), slightly fossiliferous (1 foram like at 1700-1710 and a very few miscellaneous fossil fragments). Dull, well sorted, very fine grained (1/16-1/8 mm), limestone cemented (mostly gray silt grains and some colorless quartz grains in a limy matrix, about 25% of each piece). Limy (25%) sandy (35%) silt.
- 1830-1840. As above.
Limy (25%) sandy (35%) silt.
- 1840-1850. No sample. October 1, 1975.
- 1850-1860* As above.
Limy (20%), sandy (35%) silt.
- 1860-1870. Very small sample.
Leached, brittle, medium gray N5. Dull, well sorted, very fine grained (1/16-1/8 mm) limestone cement (mostly silt grains and some colorless quartz grains in a lime matrix, about 25% lime in each piece). Limy (25%), sandy (35%) silt.
- 1870-1880. No samples. October 1, 1975.
- 1880-1890. No samples. October 1, 1975.

- 1890-1900* Leached, brittle, medium gray N5. Slightly fossiliferous (1 new foram-mounted, few other miscellaneous fossil fragments). Dull, well sorted, very fine grained (1/16-1/8 mm) limestone cement (mostly silt grains and some colorless quartz in a limy matrix, about 25% lime in each piece). Limy (25%), sandy(35%) silt.
- 1900-1910. As above. (a few foraminifera)
Limy (25%) sandy (35%) silt.
- 1910-1920*
Fresh, hard, medium gray N5. Slightly micaceous (very few pieces), slightly pyritic, slightly phosphatic, slightly fossiliferous (1 new foram, a few old forams and some other miscellaneous fossil fragments). Dull, well sorted, very fine grained (1/16-1/8 mm), limestone cemented (less silt grains and some colorless quartz grains in a limy matrix, about 20% lime in each piece). Limy (20%), silty (35%) sand.
- 1920-1930* Fresh, hard, medium gray N5. Slightly pyritic, fossiliferous (many forams-four new ones--first appearance in this well). Dull, well sorted, very fine grained (1/16-1/8 mm), limestone cemented. (mostly colorless quartz grains and some gray silt in limy matrix, 20% of each piece). Silty (15%) limy (20%) sand.
- 1920-1930* 2 samples from the same interval?
this has N/Ret. on envelope.
As above.
Silty (10%), limy (25%) sand.
- 1930-1940* As above.
Limy (25%), silty (10%) sand.
1 piece of moderate red 5R 4/6 shale?
- 1940-1950. Fresh, hard, light olive gray 5Y6/1. Slightly pyritic, slightly fossiliferous (some fossil fragments), some limestone chips. Vitreous, well sorted, coarse grained (1/2-1.0 mm) limy (30%) sand.
Colorless, white, polished smooth, subangular, equant and elongate, anhedral, medium to coarse grained (1/4-1.0 mm) quartz grains.
- 1950-1960. Fresh, hard, light olive gray 5Y6/1. Fossiliferous (some shell fragments, few old forams). Vitreous, well sorted, coarse grained (1/2-1.0 mm). A few pieces of limestone cemented colorless quartz with no silt. Limy (30%, mostly fossil fragments) sand.
- 1960-1970. Fresh, hard, medium light gray N6. Slightly pyritic, slightly fossiliferous (few miscellaneous fossil fragments). Vitreous, well sorted, coarse grained (1/2-1.0 mm) sand- slightly fossiliferous, and a few pieces of limestone cemented colorless quartz--probably cave.

- 1970-1980. Fresh, hard, medium light gray N6. Slightly pyritic, slightly fossiliferous (few miscellaneous fossil fragments). Vitreous, well sorted, medium grained (1/4-1.0 mm) sand. Slightly fossiliferous and a few pieces of limestone cemented colorless quartz.
- 1980-1990. Fresh, hard, light gray N7. Slightly fossiliferous (few miscellaneous fossil fragments). Vitreous, well sorted, coarse grained (1/2-1.0 mm) sand. Slightly fossiliferous, also many pieces of limestone cemented colorless quartz--probably cave.
- 1990-2000. Fresh, hard, light gray N7. Slightly phosphatic, slightly fossiliferous (1 ostracode--just learned what ostracodes were last week, had been calling them forams and some other miscellaneous fossil fragments). Vitreous, well sorted, coarse to very coarse grained (1/2-2.0 mm) sand.. Slightly fossiliferous, more pieces of limestone cemented colorless quartz--probably cave.
- 2000-2010. As above.
Coarse to very coarse grained sand.
Colorless, polished smooth, subangular to subround, equant, anhedral, medium to very coarse grained (1/4-2.0 mm) quartz.
- 2010-2020. Fresh, hard, light gray N7. Slightly pyritic, slightly phosphatic. Vitreous, medium sorted, medium to coarse grained, (1/4-1.0 mm) sand--good clean living sand--a few pieces of limestone cemented colorless quartz--probably cave.
- 2020-2030. As above.
Medium to coarse grained sand.
- 2030-2040. Fresh, hard, light gray N7. Slightly pyritic, slightly phosphatic. Vitreous, medium sorted, medium to coarse grained (1/4-1.0 mm) sand. with several pieces of limestone cemented colorless quartz--probably cave.
- 2040-2050. As above.
Medium sorted, medium to coarse grained sand.
- 2050-2060. Fresh, hard, light gray N7. Slightly pyritic, slightly phosphatic, slightly glauconitic (few pieces in limestone-cement matrix with colorless quartz). Vitreous, well sorted, fine grained (1/8-1/4 mm) (in matrix), limestone cement (colorless quartz and glauconite). Limy (25%) sand.
In view of first glauconite in limestone matrix, limestone ~~probably~~ ~~isn't~~ cemented colorless quartz probably isn't caving, but its true lithologic unit and loose sand is caving.
- 2070-2080. Fresh, hard, light gray N7. Slightly pyritic, slightly phosphatic (1 loose and in matrix). Vitreous, well sorted, fine grained (1/8-1/4 mm in matrix). Limestone cement. (colorless quartz and glauconite). Limy (25%) sand. Loose sand grains--cave.

- 2080-2090. As above.
Limy (25%) sand, slightly fossiliferous (few miscellaneous fragments).
- 2090-2100. As above.
Limy (25%) sand.
- 2100-2110. As above.
Limy (25%) sand. more glauconitic than above.
- 2110-2120. As above.
Limy (25%) sand. Less glauconitic than above.
- 2120-2130* Fresh, hard, light gray N7. Slightly pyritic, slightly phosphatic, slightly glauconitic (in matrix and loose), slightly fossiliferous (forams-probably old and from above, and 1 tooth-phosphatized). Vitreous, well sorted, fine grained (1/8-1/4 mm) (in matrix), limestone cemented (colorless quartz and glauconite in the matrix). Limy (25%) sand. with loose sand grains probably cave.
- 2130-2140. Fresh, hard, light gray N7. Slightly pyritic, slightly phosphatic, slightly glauconitic (mostly loose grains--not many pieces of limestone cemented material in this sample). Vitreous, medium sorted, fine to medium grained (1/8-1/2 mm) limestone cement (just a few pieces with colorless quartz, not near as many as before). Limy (10%) sand. Mostly loose grains.
- 2140-2150. Fresh, hard, light gray N7. Slightly pyritic, slightly glauconitic, (less than has been), slightly fossiliferous (1 old foram and a few miscellaneous fossil fragments). Vitreous, medium sorted, fine to coarse grained (1/8-1.0 mm) (both loose grains and in matrix), limestone cement (colorless quartz and glauconite in matrix). Limy (10%) sand. Both loose grains and limestone cemented.
- 2150-2160. Very small sample.
As above.
Limy (20%) sand. A few chips of limestone, probably cave.
- 2160-2170. Small sample.
As above.
Limy (20%-some limestone cement few chips limestone--new unit? or cave?) sand.
- 2170-2180. As above.
Limy (15%) sand.
- 2180-2190* Leached, brittle, medium light gray N6. Slightly lignitic (1 piece), slightly fossiliferous (1 foram-probably cave?). Dull., well sorted very fine grained (1/16-1/8 mm), limestone cement (colorless quartz and gray silt grains). Limy (20%) siltstone. Some coarse sized sand grains probably cave.

- 2190-2250. Samples missing. October 7, 1975
- 2250-2260. Leached, brittle, medium gray N5. Slightly fossiliferous (1 piece of a sponge probably cave). Dull, well sorted, very fine grained (1/16-1/8 mm), limestone cemented (colorless quartz and gray siltstone grains). Limy (20%) siltstone.
- 2260-2270. Leached, brittle, medium gray N5. Slightly micaceous (1 piece), slightly fossiliferous (few miscellaneous fragments-probably cave), Dull, well sorted, very fine grained (1/16-1/8 mm), limestone cement (colorless quartz and silt grains). Limy (20%) siltstone. A few coarse sized loose quartz grains-probably cave.
- 2270-2280. Leached, brittle, medium gray N5. Slightly micaceous (few very tiny pieces). Dull, well sorted, very fine grained (1/16-1/8 mm) limestone cement (colorless quartz and gray siltstone). Limy (20%) siltstone. Few quartz grains-probably cave- also limestone chips.
- 2280-2290. Very small sample.
As above.
Limy (20%) siltstone.
- 2290-2300. Very small sample
As above.
Limy (20%) siltstone.
- 2300-2310. Very small sample.
~~xxxxxxx~~ Leached, brittle, medium gray N5. Dull, well sorted, ~~limy (20%)~~ very fine grained (1/16-1/8 mm) limestone cement colorless quartz and gray silt particles). Limy (20%) silty (30%) sand. Few fossil fragments and loose quartz grains-cave.
- 2310-2320. Very small sample.
As above.
Limy (20%), silty (30%) sand.
- 2320-2330. Small sample.
As above.
Limy (20%) silty (30%) sand.
- 2330-2340. Small sample.
As above.
Limy (20%), silty (30%) sand.
- 2340-2350. Small sample.
As above.
Limy (20%) silty (30%) sand.
- 2350-2360. Very small sample
As above.
Limy (20%) silty (30%) sand.

- 2360-2370. Very small sample.
As above.
Limy (20%), silty (30%) sand.
- 2370-2380. Very small sample
As above.
Limy (20%), silty (30%) sand
- 2380-2390. Very small sample
As above.
Limy (20%), silty (30%) sand.
- 2390-2400. Fresh, hard, medium gray N5. Slightly phosphatic. Vitreous, medium sorted, fine to medium grained (1/8-1/2 mm) sand (100%) with 10% phosphate. Limy silty sand cave from above.
- 2400-2410. ~~Fresh, hard, medium gray N5~~
As above.
sand, with 10% phosphate.
- 2410-2420. Fresh, hard, light olive gray 5Y 6/1. Phosphatic (rather), medium sorted, fine to coarse grained (1/8-1.0 mm) sand, with 30% phosphate. Some limy silty sandy chips from above.
- 2420-2430. Small sample.
As above.
Sand, with 30% phosphate, slightly micaceous.
- 2430-2440. Fresh, hard, light olive gray 5Y6/1. Phosphatic. Vitreous, well sorted, very fine grained (1/16-1/8 mm) sand (100%) very fine grained. medium light gray particles--also some limy silty sandstone chips--cave from above.
- 2440-2450. Fresh, hard, light olive gray 5Y 6/1. Phosphatic (rather). Vitreous, medium sorted, fine to medium grained (1/8-1/4 mm) sand, with 20% phosphate. Some limy silty sand chips, cave from above--very fine particles of gray sand.
- 2450-2460. As above.
Sand with 10% phosphate.
- 2460-2470. As above
Sand with 10% phosphate
- 2470-2480. As above.
Well sorted, fine grained sand with 10% phosphate. A few pieces of glauconite, probably cave.
- 2480-2490. As above.
Well sorted, fine grained quartz sand, and some pyrite.

- 2490-2500. Fresh, hard, olive gray 5Y 4/1. Phosphatic (also micaceous and pyritic--not sure if cave or in place), slightly fossiliferous (1 foraminifera and some miscellaneous fossil fragments). Vitreous, medium sorted, fine to coarse grained (1/8-1.0 mm) (not sure if coarse grains are in place or cave?) sand, with 10% phosphate. plus limestone chips-cave or in place? also some pieces of limy silty sand-cave.
- 2500-2510. Fresh, hard, light olive gray 5Y 6/1 Phosphatic (also glauconitic --cave?). Vitreous, well sorted, fine grained (1/16-1/8 mm) limestone cement, sand. with 5% phosphate--very fine grained gray sand. (Some limestone cemented siltstone is cave?)
- 2510-2520. As above.
Well sorted, fine grained sand.
- 2520-2530. As above.
well sorted, fine grained sand
- 2530-2540* As above.
Well sorted, fine grained sand. one branched fossil.
- 2540-2550. Fresh, hard, light olive gray 5Y6/1. few fossil fragments, probably cave, slightly pyritic, slightly glauconitic, slightly limy (probably cave -a few big chips). Vitreous, well sorted, fine grained (1/8-1/4 mm), limestone cemented sand. Fine gray sand.
- 2550-2560. Fresh, hard, light olive gray 5Y6/1. Slightly fossiliferous (few forams seen above), slightly pyritic, slightly glauconitic. Vitreous, well sorted, fine grained (1/16-1/8 mm) a few chips of limestone--probably cave and many coarse sized quartz grains-cave? Vitreous, well sorted, fine grained (1/8-1/4 mm) limestone cemented sand. Fine gray sand.
- 2560-2570. Fresh, hard, light olive gray 5Y6/1. Slightly fossiliferous (few forams-no new ones), slightly micaceous, slightly pyritic, slightly glauconitic. Vitreous, well sorted, fine grained (1/8-1/4 mm) (a few chips of limestone--probably cave and many coarse grains of quartz, probably cave). Vitreous, lime cemented sand. Fine gray sand.
- 2570-2580. As above.
Well sorted, fine grained sand, limestone cement.
- 2580-2590. As above.
Well sorted, fine grained sand, limestone cement
- 2590-2600. As above.
Well sorted, fine grained limestone cemented sand.
- 2600-2610* Fresh, hard, light olive gray 5Y6/1. Slightly fossiliferous (few old forams, and one new one) slightly pyritic, slightly glauconitic. Vitreous, well sorted, fine grained (1/8-1/4 mm), (also coarse grained quartz and some limestone chips), limestone cement, sand.

- 2610-2620. Fresh, hard, light olive gray 5Y6/1. Slightly fossiliferous (few forams-no new ones), slightly pyritic. Vitreous, well sorted, fine grained (1/8-1/4 mm) (also a few coarse quartz grains) limestone cement, sand.
- 2620-2630. As above.
Sand, with glauconite
- 2630-2640* As above.
Limestone cemented sand, slightly phosphatic, 1 piece of a possible Bryozoa.
- 2640-2650. Fresh, hard, light gray N7. Slightly fossiliferous (few forams-no new ones), slightly pyritic, slightly glauconitic. Vitreous, medium sorted, medium to coarse grained (1/4-1.0 mm) sand.
Colorless quartz, polished smooth or frosted, subangular to subrounded, equant and elongated, anhedral, medium to coarse grained quartz grains.
- 2650-2660. Fresh, hard, light olive gray 5Y6/1. Slightly fossiliferous (very few forams-no new ones), slightly pyritic, slightly micaceous, slightly glauconitic, slightly phosphatic. Vitreous, poorly sorted, fine to coarse grained (1/8-1.0 mm) sand.
- 2660-2670. As above.
Poorly sorted, fine to coarse grained sand.
- 2670-2680. As above.
Poorly sorted, fine to coarse grained sand, no glauconite.
- 2680-2690. As above.
Poorly sorted, fine to coarse grained, pyritic, glauconitic sand.
- 2690-2700. As above.
Poorly sorted, fine to coarse grained, pyritic, glauconitic, phosphatic sand.
- 2700-2710. As above.
Poorly sorted, fine to coarse sand, no phosphate.
- 2710-2720. Fresh, hard, light olive gray 5Y6/1. Slightly fossiliferous (few forams-no new ones), slightly pyritic, slightly lignitic (1 piece), slightly phosphatic (1 piece), slightly glauconitic. Vitreous, poorly sorted, fine to coarse grained (1/8-1.0 mm) sand (100%).
Loose grains and some limestone cement chips-probably cave.
- 2720-2730. Fresh, hard, light olive gray 5Y6/1. Slightly fossiliferous (forams-no new ones), slightly pyritic, slightly glauconitic, slightly micaceous. Vitreous, medium sorted, medium to coarse grained (1/2-1.0 mm) sand (100%)-loose colorless quartz grains and some limestone cemented fine chips-probably cave.
- 2730-2740. Fresh, hard, light olive gray 5Y6/1. Slightly fossiliferous (forams-no new ones), slightly pyritic, slightly glauconitic, slightly micaceous. Vitreous, medium sorted, medium to coarse grained (1/2-1.0 mm) sand (100%). loose colorless quartz grains and some limestone cemented fine grained chips-cave.

- 2740-2750. Fresh, hard, light olive gray 5Y6/1. Slightly fossiliferous (forams, no new ones), slightly pyritic, slightly glauconitic, slightly micaceous. Vitreous, medium sorted, medium to coarse grained (1/2-1.0 mm) sand (100%). loose colorless quartz grains and some limestone cemented fine grained chips--cave.
- 2750-2760. Fresh, hard, light olive gray 5Y6/1. Slightly pyritic, slightly micaceous, slightly glauconitic, slightly fossiliferous (few forams, no new ones). Vitreous, medium sorted, medium to coarse grained (1/2-1.0 mm) sand (100%). Loose colorless quartz grains also some limestone cemented fine grained chips--cave.
- 2760-2770. Fresh, hard, light olive gray 5Y6/1. Slightly fossiliferous (few forams-no new ones), slightly pyritic, slightly glauconitic, 2 pieces of lignite. Vitreous, medium sorted, medium to coarse grained (1/2-1.0 mm) sand (100%). Loose colorless quartz grains and also some limestone cemented fine grained chips--cave.
- 2770-2780. As above.
Medium sorted, medium to coarse grained pyritic, lignitic, glauconitic, phosphatic sand.
- 2780-2790. Fresh, hard, light olive gray 5Y6/1. Slightly fossiliferous (few forams-no new ones, and a few shell fragments), slightly pyritic, slightly lignitic. Vitreous, medium sorted, medium to coarse grained (1/2-1.0 mm) sand (100%). Loose colorless quartz grains with some limestone cemented fine grained chips--cave.
- 2790-2800. As above.
Medium sorted, medium to coarse grained sand.
- 2800-2810. As above.
Medium sorted, medium to coarse grained sand.
- 2810-2820. Fresh, hard, light olive gray 5Y6/1. Slightly fossiliferous (few forams, no new ones--probably cave), slightly pyritic, slightly lignitic. Vitreous, medium sorted, medium to coarse grained (1/2-1.0 mm) sand (100%). Loose colorless quartz grains, with less limestone cemented fine grained chips--cave--less than in long time.
- 2820-2830. As above.
Medium sorted, medium to coarse grained, pyritic, lignitic, micaceous sand.
- 2830-2840. Fresh, hard, light olive gray 5Y6/1. Slightly fossiliferous (few miscellaneous fossil fragments), slightly pyritic, slightly micaceous (1 piece of biotite, first in well also muscovite). Vitreous, medium sorted, medium to coarse grained (1/2-1.0 mm) sand (100%). Loose colorless quartz grains with a few limestone cemented fine grained chips--cave.
- 2840-2850. As above.
Medium sorted, medium to coarse grained, pyritic, micaceous, glauconitic? sand.

- 2850-2860. Fresh, hard, light olive gray 5Y6/1. Slightly fossiliferous (few forams-no new ones-probably cave), slightly pyritic, slightly micaceous, slightly glauconitic (probably cave). Vitreous, medium sorted, medium to coarse grained (1/2-1.0 mm) sand (100%). Loose colorless quartz grains with a few limestone cemented fine grained chips--cave.
- 2860-2870. Depth correction.
- 2870-2880. Depth correction
- 2880-2890. Depth correction.
- 2885-2890. Leached, brittle, fissile, light gray N7. Dull, non porous
CORE claystone (100%)
- hard to say whether core samples represent thin bed of claystone because all of the cutting samples between 2890-2950 contain much limier, coarser grained (than clay size grains) sand or sandstone.
- not sure what "coring" means on 4 samples-2898-2900, 2900-2903, 2903-2906, 2906-2909.
- 2890-2900. Fresh, hard, light olive gray 5Y6/1. Slightly fossiliferous (few
(note repeat forams-no new ones), slightly pyritic, slightly micaceous.
below) Vitreous, medium sorted, medium to coarse grained (1/2-1.0 mm) sand (100%). Loose colorless quartz grains and few limestone cemented fine grained chips.
- 2898-2900. Fresh, hard, light olive gray 5Y6/1. Slightly fossiliferous (few
CORING forams-no new ones), slightly pyritic, slightly micaceous.
Vitreous, well sorted, fine grained (1/8-1/4 mm) limestone cemented sandstone (100%). Probably all above is the same lithology, fine grained limestone cemented sandstone.
- 2900-2903. Fresh, hard, light olive gray 5Y 6/1. Slightly fossiliferous
CORING (very few forams-no new ones), slightly pyritic, slightly micaceous.
Vitreous, well sorted, fine grained (1/8-1/4 mm) limestone cemented sandstone (100%)
- 2903-2906* Fresh, hard, light olive gray 5Y6/1. Slightly fossiliferous (few
CORING forams, no new ones), slightly pyritic, slightly glauconitic.
Vitreous, well sorted, fine grained (1/8-1/4 mm) limestone cemented sandstone (100%)
- 2890-2900. Fresh, hard, light olive gray 5Y6/1. Slightly fossiliferous (few
(note repeat miscellaneous fossil fragments), slightly pyritic, slightly glau-
above) conitic, slightly micaceous. Vitreous, well sorted, fine grained
(1/8-1/4 mm) limestone cemented sandstone (100%)

- 2900-2910. Fresh, hard, light olive gray 5Y6/1. Slightly fossiliferous (few forams-no new ones), slightly lignitic, slightly pyritic, slightly glauconitic, oyster shell prisms. Vitreous, well sorted, fine grained (1/8-1/4 mm) limestone cemented sandstone (100%).
- 2910-2920. Fresh, hard, light olive gray 5Y6/1. Slightly fossiliferous (few forams, no new ones, and aragonite prisms from oyster shells), slightly pyritic, slightly glauconitic. Vitreous, well sorted, fine grained (1/8-1/4 mm) limestone cemented sandstone (100%).
- 2920-2930. Fresh, hard, light olive gray 5Y6/1. Slightly fossiliferous (few old forams, miscellaneous fossil fragments), slightly glauconitic, slightly pyritic. Vitreous, well sorted, fine grained (1/8-1/4 mm) limestone cemented sandstone (100%).
- 2930-2940. As above.
Well sorted, fine grained limestone cemented sandstone.
- 2940-2950. As above.
Well sorted, fine grained, micaceous, limestone cemented sandstone.
- 2950-2960. Two different lithologies-not sure which is truly in place.
50% fresh, hard, very light gray N7. Slightly glauconitic, well sorted, very fine grained (1/16-1/8 mm) limestone cemented sand (colorless quartz).
50% Leached, brittle, medium light gray N6. Slightly pyritic (some pieces with pyrite growing on them). Slightly limy (5%) claystone (like in core sample 2885-2890). Also a few loose forams-nothing new.
- 2960-2970. Still two different lithologies like above, but about 20% limestone cemented sand and about 80% claystone.
- 2970-2980. Almost entirely claystone lithology, as above, with a few (1/2-1.0 mm) quartz grains, some pyritization on claystone and a few crystals of aragonite from oyster shells.
- 2980-2990. No change from above.
- 2990-3000. Same gray claystone as above.
- 3000-3010. Same gray claystone.
- 3010-3020. No change-gray claystone
- 3020-3030. No change, gray claystone
- 3030-3040. No change, gray claystone. A piece of garnet?--probably cave.
- 3040-3050. Fresh, hard, very light gray N8. Colorless quartz. Micaceous, phosphatic, pyritic, lignitic, fossiliferous. Vitreous, well sorted, medium grained (1/2-1.0 mm) sand.

change in lithology from the gray claystone--still 50% claystone (but probably cave).

- 3050-3060. Fresh, hard, very light gray N8 colorless quartz. Lignitic (rather, 10%), slightly pyritic, slightly micaceous. Vitreous, well sorted, medium grained (1/2-1.0 mm) sand (90%) and lignite (10%)
- 3060-3070*. Fresh, hard, very light gray N8, colorless quartz. Slightly phosphatic, slightly micaceous, slightly pyritic, slightly lignitic (some sulfur coated), aragonite prisms from oyster shells, one strange looking striated piece. Vitreous, well sorted, medium grained (1/2-1.0 mm) sand (100%)
- 3070-3080. Fresh, hard, very light gray N8 colorless quartz. Slightly phosphatic, slightly micaceous, slightly pyritic, slightly lignitic (some yellow-sulfur coated). Vitreous, well sorted, medium grained (1/2-1.0 mm) sand (100%)
- 3080-3090. Fresh, hard, very light gray N8 colorless quartz. Slightly phosphatic, slightly lignitic, aragonite prisms from oyster shells, slightly pyritic, slightly micaceous. Vitreous, well sorted, medium grained (1/2-1.0 mm) sand (100%)
- 3090-3100. As above.
Well sorted, medium grained sand (95%) and lignite (5%)
- 3100-3110. Fresh, hard, very light gray N8 colorless quartz. Slightly lignitic, somewhat sulfur coated (5%), slightly micaceous. Vitreous, well sorted, medium grained (.5-1.0 mm) lignitic (5%) sand.
- 3110-3120. Fresh, hard, very light gray N8 colorless quartz. Slightly lignitic (5%), slightly pyritic, slightly phosphatic, slightly micaceous. Vitreous, well sorted, medium grained (.5-1.0 mm) lignitic (5%) sand.
- 3120-3130. As above.
Well sorted, medium grained, lignitic (5%) sand.
- 3130-3140. As above.
Well sorted, medium grained (.5-1.0 mm), lignitic sand.
- 3140-3150. No change. Feldspar.
Well sorted, medium grained, lignitic (5%) sand.
- 3150-3160. No change.
A few chips of light brown indurated rock.
- 3160-3170. No change. A few chips of light brown indurated rock.
- 3170-3180. No change. Still a few chips of light brown indurated rock.
- 3180-3190. No change. Still a few chips of light brown indurated rock.
- 3190-3200. No change. Still a few chips of light brown indurated rock.
- 3200-3210. Colorless milky quartz, sulfur coated, lignite, mica. Quartz grains polished smooth, subangular, equant and elongate, anhedral, medium grained (.5-1.0 mm)

- 3210-3220. Milky or colorless quartz grains, sulfur coated lignite, 1 piece of light green mica (chlorite?), a few pieces of light green quartz and rose quartz, few pieces of pyrite feldspar, little mica.
- 3220-3230. No change.
- 3230-3240. No change.
- 3240-3250. No change, colorless quartz, feldspar, lignite.
- 3250-3260. Same as above. Little more lignite, not very much feldspar, some mica. Quartz grains milky or colorless (.5-1.0 mm), medium grained.
- 3260-3270. No change. Lignite, mica, feldspar, colorless or milky quartz sand. Very light gray N8, well sorted.
- 3270-3280. No change.
- 3280-3290. No change. Lignite, mica, feldspar, colorless or milky quartz sand, pinkish gray 5YR8/1
- 3290-3300. Leached, weathered, yellowish gray 5Y8/1. Grayish red 10R4/2 siltstone (1st appearance), colorless well sorted quartz grains, feldspar, some lignite-not very much, slightly micaceous.
- 3300-3310. Fresh, hard, yellowish gray 5Y8/1. Feldspar, pyrite, vitreous, colorless quartz. Poorly sorted, very fine to medium grained (1/16-1.0 mm) sand.
- 3310-3320. Fresh, hard, pinkish gray 5YR8/1. Feldspar, mica, pyrite, vitreous, colorless quartz. Well sorted, medium grained (.5-1.0 mm) sand.
- 3320-3330. Fresh, hard, yellowish gray 5Y8/1. Feldspar, mica, pyrite, vitreous. Poorly sorted, fine to medium grained (1/8-1.0 mm) sand.
- 3330-3340. Fresh, hard, lighter than pinkish gray 5YR 8/1. Feldspar, very slightly pyritic, vitreous, colorless or milky quartz. Well sorted, medium to coarse grained (.5-2.0 mm) sand. Polished smooth, subangular, equant or elongate quartz grains.
- 3340-3350. Fresh, hard, pinkish gray 5YR 8/1. Feldspar, few pieces of garnet, vitreous. Well sorted, medium to coarse grained (.5-1.0 mm) sand.
- 3350-3360. Same as above. Few pieces of garnet, feldspar.
- 3360-3370. Same as above. Lignitic again. Well sorted, coarse grained (1-2 mm) lots of feldspar.
- **** change in grain size ****
- 3370-3380. Same as above. Feldspar. Well sorted, coarse grained (1-2 mm) few pieces of garnet, pyrite, and arsenopyrite?

- 3380-3390. Same as above. Feldspar. Well sorted, very coarse grained (1-2 mm), few pieces of garnet, pyrite-several pieces.
- 3390-3400. Same as above. Feldspar, pyrite, few pieces of garnet. Well sorted, very coarse grained (1-2 mm), milky or colorless, sub-angular to subrounded, equant to elongate quartz sand.
- 3400-3410. Same as above. Feldspar, pyrite, few pieces of garnet. Well sorted, very coarse grained (1-2 mm) milky, colorless, or iron stained quartz sand.
- 3410-3420. No change. Few pieces of garnet.
- 3420-3430. No change. Few pieces of garnet.
- 3430-3440. No change, no garnet.
- 3440-3450. No change except for a few pieces of mica, feldspar, pyrite, and a few pieces of lignite. Well sorted, coarse grained (and some very coarse grained) quartz sand.
- 3450-3460. Fresh, hard, pinkish gray 5YR8/1. Slightly feldspathic, slightly pyritic (less than above), vitreous. Well sorted, medium grained (.5-1.0 mm) (with some very coarse grained) milky, colorless or iron stained quartz sand. Polished smooth, subangular to subrounded, equant and elongated quartz sand grains.
- 3460-3470. No change. Not much pyrite, few pieces of garnet.
- 3470-3480. No change. Few pieces of lignite, pyrite, feldspar, garnet.
- 3480-3490. Mica-few pieces, few pieces limonite, yellow and red, dull, earthy, weathered, no garnet. (?chips of claystone probably cave-could be thin beds?)
- 3490-3500. No change. Garnet pieces again-no lignite or limonite; pyrite and feldspar. Well sorted, coarse grained-very coarse grained (1-2mm) quartz sand.
- 3500-3510. Fresh, hard, yellowish gray 5Y8/1. Slightly pyritic, slightly feldspathic, rather micaceous, slightly lignitic, vitreous. Well sorted, coarse grained (.5-1 mm) quartz sand.
mica.
- 3510-3520. No change, except a few pieces of lignite-cave?
- 3520-3530. Some lignite, probably cave. Pieces of limestone cement. Medium grained (1/4-1/2 mm) colorless quartz-new unit? -yes. siltstone aggregate in limestone matrix.
- 3530-3540. Fresh, hard, yellowish gray 5Y8/1. Limestone cement. Well sorted, medium grained (1/4-1/2 mm) quartz sand. Also some loose quartz grains in sample, and mica, lignite.

- 3540-3550. As last sample-probably galuconite in limestone matrix with the medium grained colorless quartz. Also loose quartz grains, lignite, mica, lots of lignite.
- 3550-3560. Limestone cemented quartz-also loose quartz grains, feldspar, pyrite, lignite, mica. Not sure if limestone cemented quartz or loose quartz grains are true lithology.
- 3560-3570. Limestone cemented quartz also loose quartz grains, feldspar, mica, pyrite, and two pieces of bornite-peacock blue, metallic, magnetic. Not sure about true lithology, loose quartz grains or limestone cemented. 1 loose flake of bornite, 1 piece surrounded by pyrite and colorless quartz grains in limestone matrix.
- 3570-3580. Still limestone cemented quartz with some glauconite in limestone matrix also. Medium grained (1/4-1/2 mm) quartz grains. Also loose, colorless, iron stained, or milky, coarse grained (1/2-1.0 mm) quartz grains, some pyrite and some feldspar-not as much as before-some mica.
- 3580-3590. Limestone cemented quartz with glauconite, rather loose, lignitic, 1 piece of bornite, loose quartz grains, mica., a few pieces of limonite.
- 3590-3600. Limestone cemented quartz, loose quartz, milky, iron stained, or colorless quartz, lignite, 1 piece of bornite, mica, pyrite, garnet, maybe 1 piece-some chalcopyrite.
- 3600-3610. Limestone cemented quartz-some. lots of medium gray N5 claystone. also loose quartz grains, pyrite, little chalcopyrite, slightly lignitic.
not sure about bornite.
- 3610-3620. Limestone cemented quartz, with glauconite-20%
Medium gray N5 claystone -50%
also loose quartz, pyrite, chalcopyrite, just a little pyrite and bornite-30%
not sure which is the dominant lithology.
- 3620-3630. Limestone cemented quartz with some glauconite-20%
Medium gray N5 claystone 50%
loose quartz, pyrite, chalcopyrite, 1 flake bornite-30%
- 3630-3640. Medium gray claystone N5-75%
Limestone cemented quartz with glauconite-10%
loose quartz, pyrite, chalcopyrite, bornite-15%
- 3640-3650. Medium gray N5 claystone 75%
Limestone cemented quartz with glauconite-10%
loose quartz, pyrite, just a little bornite and chalcopyrite,
slightly lignitic-15%

- 3650-3660. Medium gray N5 claystone-70% not calcareous.
Limestone cemented quartz with glauconite-5%
loose quartz, pyrite, a little chalcopyrite and bornite-25%
medium grained (1/4-1/2 mm). 1 piece of brown mica-pyrophyllite?
and also some colorless mica.
probably the claystone is the true lithology.
- 3660-3670. Medium gray N5 claystone-dominant lithology.
Leached, brittle, medium gray N5, dull claystone.
- 3670-3680 Fresh, hard, yellowish gray 5Y 8/1. Vitreous, slightly feldspathic,
well sorted, very coarse grained (1-2 mm) sand. Good clean living
sand.
**** change in lithology ****
Milky or colorless quartz, polished smooth, subangular, equant
or elongate, anhedral, very coarse grained (1-2 mm) quartz
sand grains.
- 3680-3690* Fresh, hard, yellowish gray 5Y8/1. Vitreous, slightly feldspathic,
Well sorted, very coarse grained (1-2 mm) sand. Also slightly
pyritic. 1 piece of bornite, little pyrite, and little lignite.
- 3690-3700. 50% medium gray N5 claystone
loose quartz sand, pyrite, bornite-50%
- 3700-3710. Fresh, hard, yellowish gray 5Y8/1. Vitreous, slightly feldspathic,
slightly bornitic?. Well sorted, very coarse grained (1-2 mm) sand.
(medium gray N5 claystone-cave)
- 3710-3720. Fresh, hard, yellowish gray 5Y8/1. Slightly pyritic, slightly
micaceous, slightly bornitic, slightly feldspathic. Vitreous,
well sorted, very coarse grained (1-2 mm) sand.
Colorless, milky, polished smooth, subangular, equant and
elongate, coarse to very coarse grained (1/2-2mm) quartz sand
grains.
(some medium gray claystone-cave)
- 3720-3730. Same as above. Sand 100%. Slightly bornitic, slightly pyritic,
slightly feldspathic, slightly micaceous (some gray claystone as
cave)
- 3730-3740. Same as above-sand 100%. Slightly bornitic, slightly pyritic,
slightly feldspathic, slightly micaceous.
- 3740-3750. No change. very few pieces of bornite, pyrite, mica, feldspar.
- 3750-3760. Same as above, with some limonite. Coarse to very coarse grained
(1/2-2.0 mm) sand. pyrite, rather feldspathic, micaceous.
- 3760-3770. No change. Limonitic, 1 piece of garnet, feldspar, very little
pyrite. Coarse to very coarse grained (1/2-2.0 mm) sand.
Colorless or milky, polished smooth, subangular to subrounded,
equant and elongate, anhedral, coarse to very coarse grained
quartz sand.

- 3770-3780. Same as above. Few pieces of garnet, not as much limonite, micaceous, feldspathic, very coarse grained sand.
- 3780-3790. Same as above. More limonite and hematite than last sample, feldspar, mica, coarse to very coarse grained (1/2-2mm) sand.
- 3790-3800. No change. Hematite, limonite, feldspar, mica, very coarse grained sand.
- 3800-3810. No change. Limonite and hematite, few pieces of garnet, feldspar, mica, very coarse grained sand.
- 3810-3820. No change. Limonite and hematite, feldspar, few pieces of garnet, mica, very coarse grained sand.
- 3820-3830. Fresh, hard, very pale orange 10YR8/2. Slightly micaceous, feldspathic, slightly hematitic, very few pieces of garnet, vitreous. Well sorted, medium to very coarse grained (1/2-2.0 mm) sand.
Colorless, iron stained or milky N9, polished smooth, subangular to subrounded, anhedral quartz sand grains. More iron stained quartz than in awhile. A few pieces of rose quartz also. The quartz is stained by the hematite and limonite above.
- 3830-3840. Same as above. Slightly less iron stained quartz. Mica, feldspar, few pieces of garnet, very coarse grained sand. Little hematite.
- 3840-3850. Same as above. Little garnet, mica, little hematite, feldspar, iron stained quartz sand.
- 3850-3860. Same as above. Few pieces of garnet, mica, feldspar, slightly hematitic and limonitic, iron stained quartz sand. Very pale orange 10YR 8/2.
- 3860-3870. Fresh, hard, very pale orange 10YR 8/2. Slightly feldspathic, slightly micaceous, slightly hematitic. Vitreous, well sorted, porous, coarse to very coarse grained (1/2-2.0 mm) sand.
Milky, iron stained, or colorless, polished smooth, subangular, equant and elongate, coarse to very coarse grained quartz sand grains.
- 3870-3880. No change except brown feldspar, grayish orange 10YR7/4. Have been seeing white feldspar to this point; few pieces of garnet, slightly hematitic, slightly micaceous.
- 3880-3890. No change. Brown feldspar, four pieces of garnet, mica, feldspar, slightly hematitic.
- 3890-3900. No change. Still a lot of brown feldspar-could be stained by hematite and limonite which is still present also. A few pieces of garnet, mica, colorless and iron stained quartz and milky quartz. Milky, colorless or iron stained, polished smooth, subangular, equant and elongate, medium sorted, medium to very coarse grained (1/4-2.0 mm) quartz sand grains.

- 3900-3910. No change. Still kinda dirty sand. Feldspar, mica, grayish orange 10YR 7/4, some hematite.
- 3910-3920. No change. Same dirty sand. Feldspar, mica, still brown feldspar, not much hematite-much less than above. Some large chips of medium gray N5 claystone-probably cave-10% of sample- or could be thin bed.
- 3920-3930. No change. Same dirty sand--this dirty sand is probably rather porous-it is angular to subangular, medium sorted, medium to very coarse grained (1/4-2.0 mm) quartz sand. Milky, iron stained, or colorless quartz, feldspar-white-no brown; some hematite.
- 3930-3940 ****color change, sand not so dirty****
Fresh, hard, very pale orange 10YR 8/2. Slightly feldspathic, slightly micaceous, vitreous, Medium sorted, porous, medium to very coarse grained (1/4-2.0 mm) sand.
Milky, colorless or iron stained, polished smooth, subangular, equant and elongate, medium to very coarse grained quartz sand grains.
- 3940-3950. Fresh, hard, very pale orange 10YR 8/2. Slightly feldspathic, slightly micaceous, vitreous. Medium sorted, porous, medium to very coarse grained (1/4-2.0 mm) sand. Cleaner looking sand, less iron stained quartz.
- 3950-3960. No change. Angular, iron stained colorless, milky quartz sand, slightly feldspathic, slightly micaceous, no hematite.
- 3960-3970. No change. Some colorless quartz with inclusions, maybe pyrite.
- 3970-3980. No change except for pink feldspar, in addition to white feldspar. Fresh, hard, very pale orange 10YR 8/2
Slightly micaceous, vitreous, medium sorted, porous, medium to very coarse grained (1/4-2.0 mm) quartz sand.
Iron stained, colorless and milky, polished smooth, subangular, equant and elongate, medium to very coarse grained sand.
- 3980-3990. No change, same as above.
- 3990-4000. Fresh, hard, very pale orange 10YR 8/2. Slightly feldspathic, slightly micaceous, vitreous, well sorted, porous, medium to coarse grained (1/4-1.0 mm) sand.
Iron stained, colorless or milky, polished smooth, subangular to subrounded, equant and elongate, medium to coarse grained quartz grains
**** grain size and sorting change ****
- 4000-4010. No change. Slightly micaceous, slightly feldspathic, quartz sand. Iron stained, colorless milky, not very much iron stained quartz.
- 4010-4020. No change. Feldspathic and micaceous quartz sand.

- 4020-4030. No change. Few pieces of garnet-feldspathic and micaceous quartz sand.
- 4030-4040. No change. Very few pieces of garnet. Feldspathic and micaceous quartz sand. Very pale orange 10YR 8/2.
- 4040-4050. No change. No garnet-pink feldspar and white feldspar, light brown feldspar. Iron stained colorless and milky quartz. Vitreous well sorted, porous, medium to coarse grained (1/4-1.0 mm) sand (100%).
Iron stained, colorless or milky, polished smooth, subangular to subrounded, equant and elongate, anhedral, medium to coarse grained quartz sand.
- 4050-4060. No change. Good clean sand. Very pale orange 10YR 8/2, feldspathic, micaceous.
- 4060-4070. Fresh, hard, moderate orange pink 5YR8/4. Slightly feldspathic (white), slightly micaceous, few pieces garnet. Vitreous, well sorted, porous, medium to coarse grained (1/4-1.0 mm) sand.
Much more iron staining quartz than last samples in quite a while; also lots more colorless and less milky quartz.
Colorless, iron stained or milky, polished smooth, subangular to subrounded, equant and elongate, medium to very coarse grained (1/4-2.0 mm) quartz sand.
- 4070-4080. Fresh, hard, moderate orange pink 5YR8/4. Slightly feldspathic, slightly micaceous. Vitreous, poor sorted, porous, fine to coarse grained (1/8-1.0 mm) sand.
Colorless, iron stained or milky quartz, polished smooth, subangular to subrounded, equant and elongated, fine to coarse grained quartz grains
***** change in grain size *****
- 4080-4090. Fresh, hard, grayish orange 10YR 7/4. Slightly feldspathic, slightly micaceous, slightly hematitic, slightly limonitic. Vitreous, medium sorted, porous, medium to coarse grained (1/4-1.0 mm) sand.
***** change in color and sorting--also limonite and hematite.*****
- 4090-4100. Sample missing. December 17, 1975.
- 4100-4110. Fresh, hard, grayish orange 10YR7/4. Slightly feldspathic, slightly micaceous, slightly hematitic and limonitic. Vitreous, medium sorted, porous, medium to coarse grained (1/4-1.0 mm) sand (100%).
lots of iron stained and colorless quartz.
- 4110-4120. No change. grayish orange 10YR 7/4. few pieces of garnet, feldspar and quartz, mica. Well sorted, coarse grained (1/2-1.0 mm) sand (100%)
- 4120-4130. No change. Sand. very pale orange 10YR8/2. less iron stained quartz, hematite and limonite.
- 4130-4140. No change. Not as much hematite and limonite-quartz sand and pink feldspar, few pieces of garnet. Mica.

- 4140-4150. Same as above-few pieces of garnet. Feldspar, mica, quartz-iron stained, colorless. Well sorted, coarse grained (1/2-1.0 mm), angular.
- 4150-4160. Same as above. Garnets, pink feldspar, colorless angular quartz, iron stained quartz. Well sorted, coarse grained (1/2-1.0 mm) sand with some limonite and hematite.
- 4160-4170. Fresh, hard, very pale orange 10YR 8/2. Slightly feldspathic (white, brown, and pinkish), slightly micaceous, few pieces of garnet. Vitreous, well sorted, porous, coarse grained (1/2-1.0 mm) sand (100%).
iron stained, colorless or milky, polished smooth, subangular, equant and elongate, anhedral, coarse grained quartz sand grains.
- 4170-4180. No change except maybe a little cleaner sand, i.e., less iron staining quartz, more colorless and milky quartz, few chips of hematite and limonite.
- 4180-4190. No change. Still relatively clean sand with feldspar and mica and a few pieces of garnet.
- 4190-4200. No change. Sand, feldspar and mica, few pieces of garnet, slightly hematitic and slightly limonitic.
- 4200-4210. No change. Sand, feldspar, and mica, few pieces of garnet-a few pieces of limonite and hematite.
- 4210-4220. No change. Sand, feldspar and mica, slightly limonitic and hematitic, few pieces of garnet.
- 4220-4230. No change. Same sand with feldspar, mica, few pieces of garnet, and limonite and hematite.
- 4230-4240. No change. Sand with feldspar, mica, little garnet and hematite limonite, a little less iron stained quartz than last few samples-- (this is a much smaller sample than any of the last few.)
- 4240-4250. Sand as above, but much more hematite and limonite. Fresh, hard, grayish orange 10YR 7/4. Slightly micaceous (very little), slightly feldspathic, slightly hematitic, slightly limonitic. Vitreous, medium sorted, porous, medium to coarse grained (1/4-1.0 mm) sand (100%). Very little mica.
colorless, iron stained or milky, polished smooth, subangular, anhedral, medium to coarse grained (1/4-1.0 mm) quartz grains.
- 4250-4260. Same as last sample, with slightly less hematite and limonite-sand with feldspar and mica.
- 4260-4270* Same sand, with feldspar and very little mica, some hematite and limonite. Also pieces of a well-indurated quartzite?- red with visible quartz grains in it-or maybe a silica cemented sandstone conglomerate of two individual visible grains in one piece. Quartzite? is pale red 10R6/0

- 4270-4275. last sample before coring.
Same sand-feldspar mixture with some pieces of quartzite-with a rind on the outside. A few pieces of garnet, some limonite and hematite. Several pieces of quartzite all ground up. Fresh, hard, grayish orange 10YR8/2. Very little mica, one piece of lignite.
- 4275-4280. No sample. December 18, 1975
- 4275-4279. Core sample. Poorly sorted conglomerate, pebble sized (1.0-64 mm) conglomerate-limestone cement. well rounded, a few quartz pebbles. conglomerate breaks up easily
lots of conglomerate, dull earthy, clayey looking, grayish red 5R4/2. maybe weathered, not really porous looking - the larger chunks crumble easily.
basal conglomerate-still sedimentary
"granite wash"
- 4280-4290. Not very micaceous, probably ground up conglomerate- pieces of quartz, feldspar, quartzite; angular, coarse grained (1/2-1.0 mm) quartz- probably angular because ground up by the drill bit- segmented carapace of some kind of arthropod. Coarse grained sand from this cuttings but probably ground up conglomerate.
- 4290-4300. Same as last sample- angular quartz, feldspar, and quartzite- some with rind. One ostracode, probably cave. A few pieces of hematite and limonite.
- 4300-4310. pink feldspar, pale red 10R6/2. igneous basement.
- 4310-4320. igneous basement. rhyolite, acid, felsic, pale red, About 25% medium gray N5 claystone- probably cave most likely.
- 4320-4330. Same as above. igneous basement, a little vitreous gray claystone-cave.
- 4330-4340. Same as above. igneous basement-a little vitreous gray claystone cave.
- 4340-4350. basement-igneous. T. D.

- 1780-1790. As above. Silty (7%), limy (25%) sand.
- 1790-1800. Fresh, hard, medium light gray N6. Slightly micaceous, slightly pyritic (more pyrite in this sample than any so far in 3127), slightly lignitic, 1 piece of possible garnet, slightly fossiliferous (few miscellaneous fragments). Vitreous, well sorted, fine grained (1/8-1/4 mm), limestone cement (colorless quartz grains and silt (gray) like last sample in limy matrix, 25% of each piece). Silty (7%), limy (25%) sand.
- 1800-1810. Leached, brittle, medium light gray N6. Slightly micaceous (less than any recent samples, slightly pyritic (1 piece), slightly fossiliferous (very few miscellaneous shell fragments). Dull, well sorted, very fine grained (1/16-1/8 mm), limestone cement (mostly gray silt grains and some colorless quartz grains in a limy matrix, about 25% of each piece). Limy (25%), sandy (35%) silt.
- 1810-1820. As above.
Limy (25%) sandy (35%) silt.
- Still trash and paint chips in samples.
- 1820-1830. Leached, brittle, medium gray N5. Slightly micaceous (very few pieces), slightly phosphatic (1 piece), slightly fossiliferous (1 foram like at 1700-1710 and a very few miscellaneous fossil fragments). Dull, well sorted, very fine grained (1/16-1/8 mm), limestone cemented (mostly gray silt grains and some colorless quartz grains in a limy matrix, about 25% of each piece). Limy (25%) sandy (35%) silt.
- 1830-1840. As above.
Limy (25%) sandy (35%) silt.
- 1840-1850. No sample. October 1, 1975.
- 1850-1860* As above.
Limy (20%), sandy (35%) silt.
- 1860-1870. Very small sample.
Leached, brittle, medium gray N5. Dull, well sorted, very fine grained (1/16-1/8 mm) limestone cement (mostly silt grains and some colorless quartz grains in a lime matrix, about 25% lime in each piece). Limy (25%), sandy (35%) silt.
- 1870-1880. No samples. October 1, 1975.
- 1880-1890. No samples. October 1, 1975.

-1.2.35.1/9

GEORGIA
COLQUITT COUNTY

Operator: R.T.Adams GGS. No. 170
Landowner: D.G.Arrington Well 1 Elevation: 270 (est.)
Location: Land District 8, Land Total depth: 4904 ft.
Lot 270, 760 ft. west Completed: Aug. 25, 1948
of east line; 210 ft.
north of south line of
land lot 270.

Summary of Stratigraphy

	Depth to top (feet)	Thickness (feet)
Tertiary		
Not studied		
Cretaceous		
Gulf Series		
Beds of Navarro age	1680	220
Beds of Taylor age	1900	540
Beds of Austin age	2440?	366?
Atkinson Formation upper member	2806	484
do lower member	3290	220
Comanche Series undifferentiated	3510 total depth	1394

Arrington #1

Lithologic and paleontologic descriptions of cuttings and cores. Samples are cuttings unless otherwise stated.

Depth (feet)	Description
0-1680	Samples not studied
	Cretaceous
	Gulf Series
	Beds of Navarro age
1680-1690	Shale, gray, and a little fine-grained sand probably indicate the material drilled at this depth; the fauna consists of a few specimens of other Cretaceous species of Foraminifera. The sample contains many fragments of Limestone from the overlying Clayton (Midway) Formation.
1690-1900	Lithology and fauna like the sample at 1680-1690 ft. Beds of Taylor age
1900-1910	Shale, gray, and many fragments of gray, sandy (very fine grained sand) clay shale, and light-gray, hard, very fine grained sandstone.
1910-1920	Like sample at 1900-1910 ft.; sample contains abundant specimens of <u>Lituola taylorensis</u> .
1920-2060	Samples not studied in detail.
2060-2070	Shale, gray, a little sandy shale, and specimens of <u>Globorotalites conicus</u> , <u>Planulina taylorensis</u> , and <u>Stensioina americana</u> .

2070-2710 Samples not studied in detail.

Beds of Austin age

2710 Sidewall core.

Shale, gray, containing glauconite and pyrite, fragments and prisms of Inoceramus, many specimens of Citharina texana, and a few specimens of other Foraminifera, mainly Globotruncana sp.

2710 Sidewall core.

Shale, gray, soft, chalky, containing abundant Inoceramus prisms and specimens of Citharina texana; specimens of Guembelina sp. and Globigerina sp. are common.

2725 Sidewall core.

Sandstone, cream, moderately hard, chalky, very fine-grained, glauconitic; contains fragments of Ostrea sp.

2731 Sidewall core.

Shale, gray, soft, sandy (very fine grained sand), glauconitic. Fauna consists mainly of specimens of a small Anomalina sp. indicative of the beds of Austin age.

Depth
(feet)

Description

Atkinson Formation

Upper Member

2806

Sidewall core.

Shale, gray, soft, fine-grained, argillaceous, containing a few fragments of phosphatic material, carbonaceous material, and a little mica.

2850-2860

Shale, gray, containing many fragments of Ostrea sp., a little carbonaceous material and a few fragments of white, medium to fine-grained, somewhat phosphatic, slightly glauconitic sandstone. The fragments of Ostrea sp. are probably indigenous, but the few specimens of Foraminifera in the sample seem to have come from higher levels.

2860-2870

Like the sample at 2850-2860 ft.

2870-2880

Like the sample at 2850-2860 ft., and containing a few fragments of grayish-green shale.

2880-3000

No change. The specimens of Foraminifera are species that occur in the lower part of the beds of Austin age; species indicative of the upper member of the Atkinson Formation (Eagle Ford age) were not observed.

3000-3010

Like the samples at 2880-3000 ft., with the addition of grains of coarse sand.

Depth (feet)	Description
3010-3020	Samples not studied.
3020-3030	Sand, coarse to very coarse, and a little nodular sandstone.
3030-3060	Samples not studied
3060-3070	Sand, fine to coarse-grained (coarse grains common). The sample contains a few fragments of white, moderately hard, medium-grained sandstone showing a few pink-tinted grains.
3070-3200	Samples are like the sample at 3060-3070 ft. and contain cavings in variable amounts.
3200-3210	Sand and sandstone like the immediately preceding samples, and also many fragments of white, moderately hard, fine to medium-grained, glauconitic, somewhat phosphatic sandstone.
3210-3220	Like sample at 3200-3210 ft., showing an increase in the amount of glauconitic sandstone.
3220-3230	Sample not studied.

Depth (feet)	Description
3230-3240	Sample is mainly cavings, and the material drilled at this depth is not clearly shown. The material in the sample consists of gray shale (probably from the beds of Austin age), a few fragments of glauconitic sandstone like that in the samples at 3200-3220 ft., and specimens of Foraminifer from higher levels. The sample contains fragments of carbonaceous material that increase progressively with depth from 3240 to 3290 ft.
3240-3290	Samples not studied in detail.
	Atkinson Formation Lower Member
3290-3300	Like sample at 3230-3240 ft., and in addition, many fragments of white, fine to medium-grained, calcareous, glauconitic, somewhat micaceous sandstone containing many fragments of shells (<u>Ostrea</u> sp. and possibly other fossil bivalves).
3300-3320	Samples not studied.
3320-3330	Shale, dark-gray, hard, flaky, is probably the material drilled at this depth. The sample contains much gray clay shale that is caving from higher levels.

Depth (feet)	Description
3330-3340	The sample shows an increase in the amount of dark-gray, micaceous shale described in the sample at 3320-3330 ft. The microfauna seems to be mainly caving from higher levels. Specimens of Foraminifera indicative of the lower member of the Atkinson Formation do not seem to occur in this sample, possibly because of the small amount of dark-gray shale in proportion to the large quantity of cavings. It is possible, also, that specimens, if present, were removed from the sample prior to this study.
3340-3510	Samples are mainly cavings of gray clay shale, dark micaceous shale, fine-grained sand, and glauconite; the microfauna is sparse and seems to have caved from higher levels.
Comanche Series undifferentiated	
3513	Materials similar to those described in the sample from 3340 to 3510 ft., and also a little coarse-grained quartz sand.
3520-3530	Sand, coarse-grained, quartz; a few fragments of waxy, mustard-colored, red mottled shale; many cavings.
3530-3540	Like sample at 3520-3530 ft.

Depth (feet)	Description
3540-3550	Like sample at 3530-3540 ft., and a few fragments of greenish-brown, red and light-gray mottled micaceous shale.
3550-3560	Like sample at 3540-3550 ft.
3560-3570	Sand, fine to very coarse grained (coarse grains common), quartz, and a few grains of feldspar; some of the quartz grains are red-tinted. Sand is about 50 percent of the sample. A few fragments of mottled or varicolored shale and cavings from higher levels compose about 50 percent of the sample.
3570-3600	No change.
3600-3610	Sand, varicolored shale, and cavings, like the sample at 3560-3570 ft., and many fragments of dark purplish-red, micaceous shale.
3610-3630	Samples not described.
3630-3640	Sand, 50 percent of sample, and 50 percent cavings of gray clay shale and a few fragments of red and mottled shale.
3640-3770	No change.

Adams

Arrington #1Depth
(feet)

Description

3770-3780	Sand, fine-grained, many fragments of brownish to purplish-red, gray and mustard-colored, micaceous shale, and many cavings.
3780-3800	No change.
3800-3810	Sand, white, mainly coarse-grained, quartz; a few amber and pink-tinted grains; a few grains of feldspar; a little red and mottled shale; cavings.
3810-4904	T.D. Samples not studied in detail. The material is sand, sandy clay, and varicolored clay, and is seemingly not older than Comanche.